EXHIBIT

VPG-1003

Prosecution History of U.S.

Patent No. 10,043,358

(“‘358 Pros. History”)

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Middle District of Florida on the following

☐ Trademarks or ✖ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
8:18-cv-2548-T-33SPF	October 16, 2018	Middle District of Florida

PLAINTIFF	DEFENDANT
INVUE SECURITY PRODUCTS INC.	VANGUARD PRODUCTS GROUP, INC.

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 see complaint		

In the above—entitled case, the following decision has been rendered or judgment issued:

DECISION/JUDGMENT

CLERK	(BY) DEPUTY CLERK	DATE
ELIZABETH M. WARREN	Katie Meyer	October 17, 2018

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

9818274
10062253
10098481
9747745
9805564
10043358
9972178
10008082

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E

CONFIRMATION NO. 6691

88320
Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

PUBLICATION NOTICE

Title:RECOILER FOR A MERCHANDISE SECURITY SYSTEM

Publication No.US-2018-0211497-A1
Publication Date:07/26/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	08/07/2018	10043358	P1232D/US/E	6691

88320 7590 07/18/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

David N. Berglund, Indian Trail, NC;
InVue Security Products Inc., Charlotte, NC;
Kyle Baker, Waxhaw, NC;
Robert Bisesti, Charlotte, NC;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

CPC						
Symbol					**Type**	**Version**
G08B		13	/	1463	F	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686	6/5/18	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
340	568.2	G	0	8	B	13 / 12 (2006.0)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686	6/5/18	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	22	18												
2	2	23	19												
3	3	24	20												
4	5	25	21												
5	6	26	22												
9	7	27	23												
10	8	31	24												
11	9	19	25												
12	10	29	26												
13	11	32	27												
14	12	6	28												
15	13	7	29												
16	14	8	30												
18	15	17	31												
20	16	30	32												
21	17	28	33												

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686 (Primary Examiner)	6/5/18 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

88320 7590 06/26/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E	6691

TITLE OF INVENTION: RECOILER FOR A MERCHANDISE SECURITY SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	09/26/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
LU, SHIRLEY	2686	340-568200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 InVue Security Products Inc.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: InVue Security Products Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Charlotte, North Carolina

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-6090 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Trent A. Kirk/ Date 2018-06-27

Typed or printed name Trent A. Kirk Registration No. 54223

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	15926326
Filing Date:	20-Mar-2018
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Filer:	Trent Aaron Kirk/Lauren Martin
Attorney Docket Number:	P1232D/US/E

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**500**

Electronic Acknowledgement Receipt

EFS ID:	33021573
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	27-JUN-2018
Filing Date:	20-MAR-2018
Time Stamp:	16:35:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$500
RAM confirmation Number	062818INTEFSW00003596506090
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	P1232D-US-E_IF_Pymt.pdf	248366 be3ed09eee6e981c307a02427e4f193c967e7284	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30228 4a1cc0ecbd7be711a528c2c4c8830fafa77958b0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	278594		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

88320 7590 06/26/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

EXAMINER
LU, SHIRLEY

ART UNIT	PAPER NUMBER
2686	

DATE MAILED: 06/26/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E	6691

TITLE OF INVENTION: RECOILER FOR A MERCHANDISE SECURITY SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	09/26/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

88320 7590 06/26/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E	6691

TITLE OF INVENTION: RECOILER FOR A MERCHANDISE SECURITY SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	09/26/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
LU, SHIRLEY	2686	340-568200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E	6691

88320 7590 06/26/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

EXAMINER	
LU, SHIRLEY	
ART UNIT	**PAPER NUMBER**
2686	

DATE MAILED: 06/26/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/926,326	Applicant(s) BERGLUND ET AL.	
	Examiner SHIRLEY LU	Art Unit 2686	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *5/11/18*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-3 and 5-33*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/SHIRLEY LU/
Primary Examiner, Art Unit 2686

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15926326
Filing Date	2018-03-20
First Named Inventor	David N. Berglund
Art Unit	2686
Examiner Name	Shirley Lu
Attorney Docket Number	P1232D/US/E

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9353552	B1	2016-05-31	Kelsch et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L/

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Art Unit	2686
Examiner Name	Shirley Lu
Attorney Docket Number	P1232D/US/E

	1	

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EXAMINER SIGNATURE

Examiner Signature	/SHIRLEY LU/ (06/09/2018)	Date Considered	06/09/2018

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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(Not for submission under 37 CFR 1.99)

Application Number	15926326
Filing Date	2018-03-20
First Named Inventor	David N. Berglund
Art Unit	2686
Examiner Name	Shirley Lu
Attorney Docket Number	P1232D/US/E

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Trent A. Kirk/	Date (YYYY-MM-DD)	2018-05-10
Name/Print	Trent A. Kirk	Registration Number	54223

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L/

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	704	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:41
L2	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L3	194	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:41
L4	973	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:41
L5	879	L4 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:41
L6	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L7	879	L4 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:41
L8	842	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:41
L9	9134	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:41
L10	36	L9 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L11	28	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L12	9134	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2018/06/09 19:41

			EPO; JPO; DERWENT; IBM_TDB			
L13	36	L12 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L14	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L15	136	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:41
L16	42	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:41
L17	649	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L18	194	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:41
L19	704	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2018/06/09 19:41

			IBM_TDB			
L20	649	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L21	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/09 19:41
L22	43	("9353552" | "20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/06/09 19:43
L23	0	9 and (sensor$1 with merchandise$1 with removal$1 with base with (detect$4 sens$4) with cable near3 connect$4 with (detect$4 sens$4) with base$1 with recoiler with spool$4 with unwind$4 with sensor near3 lift$4 near5 base$1 with retract near3 recoiler with (detect$4 sens$4) with return$4 near3 base$1 and lock$4 with spool$4 near5 sensor$4 near4 base$1 with locked with (detect$4 sens$4) with prevent$4 near3 (detect$4 sens$4) near3 lift$4 near3 base with unlocked near3 removal with (detect$4 sens$4) near3 base$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:46
L24	0	(sensor$1 with merchandise$1 with removal$1 with base with (detect$4 sens$4) with cable near3 connect$4 with (detect$4 sens$4) with base$1 with recoiler with spool$4 with unwind$4 with sensor near3 lift$4 near5 base$1 with retract near3 recoiler with (detect$4 sens$4) with return$4 near3 base$1 and lock$4 with spool$4 near5 sensor$4 near4 base$1 with locked with (detect$4 sens$4) with prevent$4 near3 (detect$4 sens$4) near3 lift$4 near3 base with unlocked near3 removal with (detect$4 sens$4) near3 base$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 19:46
L25	0	9 and (sensor$1 with merchandise$1 with removal$1 with (detect$4 sens$4) with base$1 with auxiliary adj port$4 with connect$4 with auxiliary adj device$1 and cable$1 with connect$4 with sensor$1 with base$1 and base with transfer$4 adj power$4 near4 auxiliary	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 20:03

		adj port$4 near4 power$4 and security adj signal$4 with (transmit$4 send$4) with auxiliary adj port$4 with detect$4 adj remov$4 near3 auxiliary adj port$4 near5 base$1).clm.				
L26	0	(sensor$1 with merchandise$1 with removal$1 with (detect$4 sens$4) with base$1 with auxiliary adj port$4 with connect$4 with auxiliary adj device$1 and cable$1 with connect$4 with sensor$1 with base$1 and base with transfer$4 adj power$4 near4 auxiliary adj port$4 near4 power$4 and security adj signal$4 with (transmit$4 send$4) with auxiliary adj port$4 with detect$4 adj remov$4 near3 auxiliary adj port$4 near5 base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/09 20:03
S1	2	crowd adj sourcing adj data near3 users	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:14
S2	3	crowd adj sourcing adj data with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S3	7	crowd adj sourcing near5 parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S4	15	crowd adj sourcing same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S5	19	crowd adj sourcing and parking adj space	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S6	202	crowd adj sourcing and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:16
S7	349	crowd adj sourc$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:16
S8	0	usert adj interface same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:18
S9	1630	user adj interface same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:18
S10	4	request$4 adj parking$4 near5 updates	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:20
S11	1	request$4 adj updates with parking	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/07/06 14:21

			FPRS			
S12	213	("20070265671" | "20090073991" | "20090138059" | "20090264792" | "20120150008" | "5472453" | "5718242" | "6990373" | "7974689" | "4991217" | "20030095648" | "20050049515" | "20060085049" | "20070161913" | "20080004536" | "20080033495" | "20090076343" | "20090076345" | "20090076348" | "20090076405" | "20090234410" | "20100069735" | "20100298899" | "20120112903" | "5662689" | "5929601" | "6097987" | "6253099" | "6390996" | "6681003" | "6804554" | "7488293" | "8290574" | "20090076341" | "20090076346" | "20090275848" | "20120011382" | "4632122" | "5738102" | "5758443" | "5944669" | "6097982" | "6280461" | "8121683" | "5865736" | "6602191" | "7088233" | "20080266118" | "20030158593" | "20060270952" | "20090076350" | "20090076364" | "20090076397" | "20090287120" | "20100076513" | "5741306" | "5792190" | "6908437" | "7149579" | "6406426" | "20040049233" | "7712373" | "5544661" | "6405082" | "20130325078" | "20030195567" | "20080030656" | "20080058884" | "20080249591" | "20090076344" | "20090076410" | "20090076559" | "20100056881" | "20100234716" | "20110288604" | "20120158075" | "4928690" | "4978926" | "5062834" | "5078134" | "5348008" | "6016445" | "6065154" | "6690969" | "7220235" | "8271082" | "20110080294" | "20120259377" | "20030149462" | "20070169364" | "20080045815" | "20080046015" | "20090076340" | "20090076342" | "20090093687" | "20120146797" | "5365932" | "6169397" | "6827695" | "7340296" | "7427921" | "7831303" | "20080312709" | "5381798" | "20120293323" | "20050131465" | "20060036292" | "20090076336" | "20090076349" | "20090076363" | "20090292194" | "20110288605" | "8140154" | "20100295674" | "20090281394" | "20140004814" | "20030004547" | "20030174049" | "20030212311" | "20070118056" | "20070239220" | "20080306560" | "4094310" | "7453354" | "20060178706" | "5827196" | "3922665" | "20100312297").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/09 20:39
S13	4	("20110191019" | "20110285591" | "20120136997").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/19 15:51
S14	2	S13 and crowd	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/08/19 15:52

			FPRS			
S15	2	S13 and crowd and park$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/19 15:52
S16	8	crowd adj sourc$4 with parking adj space$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:22
S17	2	S16 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:37
S18	2	S17 and crowd adj sourc$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:42
S19	2	S17 and weight$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:43
S20	45	crowd adj sourc$4 with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:57
S21	24	S20 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:57
S22	1716	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:15
S23	72	parking near3 garage$1 same weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:15
S24	1	"20130057686".pn. and (remote$4 second first)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:20
S25	6	"867482".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:37
S26	3	"867482".apn. and facilit$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:41
S27	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/08/21 22:47
S28	2	S27 and park$4	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/08/21 22:54

			FPRS			
S29	1	S27 and time adj stamp$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:17
S30	2	S27 and fram$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:20
S31	3	"867482".apn. and substantially	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:22
S32	218	S22 AND ((G08G1/142 OR G08G1/096791 OR G08G1/16 OR G08G1/163 OR G08G1/166 OR G08G1/09 OR G08G1/0969 OR G08G1/161 OR G08G1/167 OR G08G1/20 OR G08G9/02 OR G08G1/143 OR G08G1/144 OR G08G1/017 OR G08G1/14 OR G08G1/00 OR G08G1/0175 OR G08G1/052 OR G08G1/056 OR G08G1/133 OR G08G1/146 OR G08G1/148 OR G08G1/147 OR G08G1/015 OR G08G1/04 OR G08G1/096716 OR G08G1/09675 OR G08G1/096775 OR H04W4/046 OR H04W64/006 OR H04W74/0816 OR H04W76/002 OR H04W72/005 OR H04W76/023 OR H04W4/06 OR H04W72/0446 OR H04W8/08 OR H04W64/00 OR H04W4/02 OR H04W4/22 OR H04W76/007 OR H04W24/00 OR H04W24/10 OR H04W4/001 OR H04W4/006 OR H04W4/021 OR H04W4/023 OR H04W4/043 OR H04W4/12 OR H04W4/16 OR H04W56/0025 OR H04W64/003 OR H04W84/005 OR H04W88/06 OR H04W8/22).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:25
S33	1736	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S34	225	S33 AND ((G08G1/142 OR G08G1/096791 OR G08G1/16 OR G08G1/163 OR G08G1/166 OR G08G1/09 OR G08G1/0969 OR G08G1/161 OR G08G1/167 OR G08G1/20 OR G08G9/02 OR G08G1/143 OR G08G1/144 OR G08G1/017 OR G08G1/14 OR G08G1/00 OR G08G1/0175 OR G08G1/052 OR G08G1/056 OR G08G1/133 OR G08G1/146 OR G08G1/148 OR G08G1/147 OR G08G1/015 OR G08G1/04 OR G08G1/096716 OR G08G1/09675 OR G08G1/096775 OR H04W4/046 OR H04W64/006 OR H04W74/0816 OR H04W76/002 OR H04W72/005 OR H04W76/023 OR	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59

		H04W4/06 OR H04W72/0446 OR H04W8/08 OR H04W64/00 OR H04W4/02 OR H04W4/22 OR H04W76/007 OR H04W24/00 OR H04W24/10 OR H04W4/001 OR H04W4/006 OR H04W4/021 OR H04W4/023 OR H04W4/043 OR H04W4/12 OR H04W4/16 OR H04W56/0025 OR H04W64/003 OR H04W84/005 OR H04W88/06 OR H04W8/22).CPC.)				
S35	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S36	49	crowd adj sourc$4 with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S37	24	S36 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S38	73	parking near3 garage$1 same weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S39	6	"867482".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S40	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S41	22	crowd adj sourcing same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S42	28	crowd adj sourcing and parking adj space	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S43	246	crowd adj sourcing and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S44	432	crowd adj sourc$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S45	1765	user adj interface same parking	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/12/12 12:59

			FPRS			
S46	4	request$4 adj parking$4 near5 updates	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S47	217	("20070265671" | "20090073991" | "20090138059" | "20090264792" | "20120150008" | "5472453" | "5718242" | "6990373" | "7974689" | "4991217" | "20030095648" | "20050049515" | "20060085049" | "20070161913" | "20080004536" | "20080033495" | "20090076343" | "20090076345" | "20090076348" | "20090076405" | "20090234410" | "20100069735" | "20100298899" | "20120112903" | "5662689" | "5929601" | "6097987" | "6253099" | "6390996" | "6681003" | "6804554" | "7488293" | "8290574" | "20090076341" | "20090076346" | "20090275848" | "20120011382" | "4632122" | "5738102" | "5758443" | "5944669" | "6097982" | "6280461" | "8121683" | "5865736" | "6602191" | "7088233" | "20080266118" | "20030158593" | "20060270952" | "20090076350" | "20090076364" | "20090076397" | "20090287120" | "20100076513" | "5741306" | "5792190" | "6908437" | "7149579" | "6406426" | "20040049233" | "7712373" | "5544661" | "6405082" | "20130325078" | "20030195567" | "20080030656" | "20080058884" | "20080249591" | "20090076344" | "20090076410" | "20090076559" | "20100056881" | "20100234716" | "20110288604" | "20120158075" | "4928690" | "4978926" | "5062834" | "5078134" | "5348008" | "6016445" | "6065154" | "6690969" | "7220235" | "8271082" | "20110080294" | "20120259377" | "20030149462" | "20070169364" | "20080045815" | "20080046015" | "20090076340" | "20090076342" | "20090093687" | "20120146797" | "5365932" | "6169397" | "6827695" | "7340296" | "7427921" | "7831303" | "20080312709" | "5381798" | "20120293323" | "20050131465" | "20060036292" | "20090076336" | "20090076349" | "20090076363" | "20090292194" | "20110288605" | "8140154" | "20100295674" | "20090281394" | "20140004814" | "20030004547" | "20030174049" | "20030212311" | "20070118056" | "20070239220" | "20080306560" | "4094310" | "7453354" | "20060178706" | "5827196" | "3922665" | "20100312297").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S48	8	crowd adj sourc$4 with parking adj space$1	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/12/12 12:59

			FPRS			
S49	4	("20110191019" | "20110285591" | "20120136997").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S50	2	S49 and crowd	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S51	2	S48 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S52	24	S36 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S53	1736	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S54	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S55	7	("20130057686" | "20130231824" | "20110191019" | "20120136997" | "20110285591").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:06
S56	977	(H0424/046.CPC. OR G08G1/00.CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:08
S57	0	S56 and (parking adj space adj availability and parking adj facility and user adj interface and crowd adj sourcing and historical and proximate).clm.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:09
S58	1	(parking adj space adj availability and parking adj facility and user adj interface and crowd adj sourcing and historical and proximate).clm.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:09
S59	11	"820378".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 12:03
S60	14	"534972".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:35
S61	4	("20010052860" | "20130106621" | "8279107").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:39
S62	0	"20130106621".pn. and (strength$4)	US-PGPUB; USPAT;	OR	OFF	2015/12/15 16:49

			USOCR; FPRS			
S63	1	"20130106621".pn. and (signal)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:50
S64	1	"20130106621".pn. and (signal$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:50
S65	1	"20130106621".pn. and intensit$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:53
S66	1	"20130106621".pn. and ("12" concentrator$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:56
S67	1	"20130106621".pn. and bluetooth	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:57
S68	0	"20130106621".pn. and ceiling	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:58
S69	0	"20130106621".pn. and averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:00
S70	1	"20130106621".pn. and light$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:00
S71	1	"20130106621".pn. and vacant	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:01
S72	2	S61 and (ceiling horizontal$4 averag$4 light$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:03
S73	35	parking adj (space$1 spot$1) with (vacant occupied) and (ceiling and averag$4 and light$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:05
S74	35	S73 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:06
S75	14	"534972".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:11
S76	4	"534972".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:11
S77	1	"20070050240".pn. and board$4	US-PGPUB;	OR	OFF	2015/12/15

			USPAT; USOCR; FPRS			17:13
S78	119	parking adj (space$1 spot$1) with (vacant occupied availability) with light$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:14
S79	112	S78 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:14
S80	99	S78 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:15
S81	56	S78 and (@rlad < "20141106" @ad < "20141106") and bluetooth	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:16
S82	21	S78 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:19
S83	1	"20140320318".pn. and (ceiling$1 wall$1)	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:21
S84	0	"20140320318".pn. and bluetooth	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:25
S85	1	"20140320318".pn. and ceiling	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:25
S86	14	parking adj (space$1 spot$1) near5 (vacant occupied availability) same (ceiling)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:26
S87	6	S86 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:26
S88	0	parking adj (space$1 spot$1) with (vacant occupied availability) and signal adj (strength$1 intensit$4) near3 averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S89	0	parking adj (space$1 spot$1) same signal adj (strength$1 intensit$4) near3 averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S90	0	parking adj (space$1 spot$1) same signal adj (strength$1 intensit$4) with averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S91	13	parking adj (space$1 spot$1) same signal$1 with averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:35
S92	0	S91 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:35
S93	8	parking adj (space$1 spot$1) same signal$1 with averag$4	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:35

S95	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:37
S96	10	S95 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:37
S97	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:38
S98	60	S97 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:38
S99	159	signal adj (strength$1 intensit$4) with averag$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:39
S100	125	signal adj (strength$1 intensit$4) near5 averag$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:39
S101	125	S100 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:39
S102	114	signal adj (strength$1 intensit$4) near5 averag$4 and multiple near3 chang$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:40
S103	114	S102 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:40
S104	0	signal adj (strength$1 intensit$4) near5 averag$4 same parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S105	0	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S106	785	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S107	756	S106 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:44
S108	53	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:45
S109	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:45
S110	1	"20090098903".pn. and bluetooth	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/12/15 17:47

			FPRS			
S111	9	(("20130106621") or ("20110099126") or ("20090098903")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/15 17:50
S112	3	S111 and (radio rf bluetooh)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:50
S113	3	S111 and (radio rf bluetooth)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:50
S114	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 19:38
S115	54	S114 AND ((H04W64/00 OR H04W12/06 OR H04W12/08 OR H04W24/10 OR H04W4/006 OR H04W4/008 OR H04W4/02 OR H04W4/023 OR H04W4/025 OR H04W52/0212 OR H04W52/04 OR H04W64/003 OR H04W64/006 OR H04W76/02 OR H04W8/18 OR H04W8/24 OR H04W4/027 OR H04W4/046 OR H04W4/12 OR H04W4/22 OR H04W76/007 OR H04W88/04 OR H04W88/06 OR H04W28/04 OR H04W40/06 OR H04W40/10 OR H04W40/20 OR H04W40/248 OR H04W40/30 OR H04W28/0231 OR H04W40/02 OR H04W4/028 OR H04W4/043 OR H04W8/183 OR G06Q10/0833 OR G06Q10/087 OR G06Q10/083 OR G06Q10/0835 OR G06Q10/0836 OR G06Q10/0838 OR G06Q20/14 OR G06Q20/22 OR G06Q20/325 OR G06Q20/40 OR G06Q30/0269 OR G06Q30/0639).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 19:39
S116	65	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S117	57	S116 AND ((H04W64/00 OR H04W12/06 OR H04W12/08 OR H04W24/10 OR H04W4/006 OR H04W4/008 OR H04W4/02 OR H04W4/023 OR H04W4/025 OR H04W52/0212 OR H04W52/04 OR H04W64/003 OR H04W64/006 OR H04W76/02 OR H04W8/18 OR H04W8/24 OR H04W4/027 OR H04W4/046 OR H04W4/12 OR H04W4/22 OR H04W76/007 OR H04W88/04 OR H04W88/06 OR H04W28/04 OR H04W40/06 OR H04W40/10 OR H04W40/20 OR H04W40/248 OR H04W40/30 OR H04W28/0231 OR	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36

		H04W40/02 OR H04W4/028 OR H04W4/043 OR H04W8/183 OR G06Q10/0833 OR G06Q10/087 OR G06Q10/083 OR G06Q10/0835 OR G06Q10/0836 OR G06Q10/0838 OR G06Q20/14 OR G06Q20/22 OR G06Q20/325 OR G06Q20/40 OR G06Q30/0269 OR G06Q30/0639).CPC.)				
S118	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S119	54	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S120	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S121	825	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:37
S122	118	signal adj (strength$1 intensit$4) near5 averag$4 and multiple near3 chang$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:37
S123	118	S122 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/01 16:37
S125	36246	h04w4/00.cpc. g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:46
S126	0	S125 and (vehicle adj presence adj detection and transmitters and parking adj space and monitor and attached near2 parking adj space and group near2 parking and covers near2 transmitter and radio adj wave adj signal and attached and ceiling and building and central adj portion and signal adj strength and vehicle and threshold adj loss).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:47
S127	0	(vehicle adj presence adj detection and transmitters and parking adj space and monitor and attached near2 parking adj space and group near2 parking and covers near2 transmitter and radio adj wave adj signal and attached and ceiling and building and central adj portion and signal adj strength and vehicle and threshold adj loss).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:48
S128	567	receiver near5 central with transmitters	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/26 13:14

S129	418	receiver near5 central with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:14
S130	408	S129 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:14
S131	43	receiver near5 central near3 (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S132	78	receiver near5 central$4 near3 (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S133	76	S132 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S134	1	"20130106621".pn. and central$4	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:19
S135	17	receiver near5 central$4 adj (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:20
S136	15	S135 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:20
S137	606	receiver near3 central$4 adj (portion locat$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S138	717	receiver near3 central$4 adj (portion locat$4 position$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S139	522	receiver near3 central$4 adj (locat$4 position$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S140	520	S139 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:26
S141	6	S140 and parking and vehicle$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:26
S142	3	("20130106621").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/07/26 13:27
S143	181	central$4 adj (locat$4 position$4) adj receiver	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:27
S144	180	S143 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:28
S145	2	S144 and parking	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:28
S146	49	S143 and transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:29
S147	1743	parking adj space$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:31
S148	1714	S147 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:44
S149	1672	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:46
S150	1666	S149 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:46
S151	91	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S152	89	S151 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S153	759	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48

S154	755	S153 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S155	646	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:49
S156	1	parking adj space$1 and central$2 adj receiver same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:50
S157	6	("20090098903" | "20110099126" | "20130106621").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:44
S158	30953	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S159	646	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S160	12	S158 and S159	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S161	759	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S162	755	S161 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S163	39	S158 and S162	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S164	41	S158 and S161	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S165	1672	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S166	1666	S165 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S167	61	S158 and S166	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S168	1	"9262906".pn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 13:51
S169	2	("20130151088").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/01 13:38
S170	3	("20120108917").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/01 13:40

S171	5	"804274".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:44
S172	6	"985671".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:45
S173	1	"9262906".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:58
S174	1	S173 and (registrat$4 type priority status function location).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:59
S175	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:04
S176	10	S175 and (@rlad < "20130314" @ad < "20130314")	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:06
S177	12	registrat$4 same sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:07
S178	39	registrat$4 same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:07
S179	202	(register$4 registrat$4) same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:08
S180	103	(register$4 registrat$4) with sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:08
S181	93	S180 and (@rlad < "20130314" @ad < "20130314")	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:08
S182	33611	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/01/05 14:45
S183	39344	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:45
S184	3	S183 and ((transmitter$1 transceiver$1) with park$4 adj (space$1 spot$1 slot$1 unit$1) and receiver$1 near5 radio and signal adj strength$1 near2 radio near5 receiver$1 and (vehicle$1 car cars) near3 (transmitter$1 transceiver$1) and signal adj strength with (reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:56
S185	3	((transmitter$1 transceiver$1) with park$4 adj (space$1 spot$1 slot$1 unit$1) and receiver$1 near5 radio and signal adj strength$1 near2 radio near5 receiver$1 and (vehicle$1 car cars) near3 (transmitter$1 transceiver$1) and signal adj strength with (reduc$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:56

		decreas$4)).clm.				
S186	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/01/06 13:14
S187	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S188	34488	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S189	219	(register$4 registrat$4) same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S190	42	registrat$4 same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S191	34488	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S192	829	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S193	44	S191 and S192	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S194	803	S192 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S195	40	S191 and S194	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S196	44	S191 and S192	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S197	97	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S198	93	S197 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S199	4	(("9589465") or ("9373256")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/03/29 11:43
S200	2	("9589465").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/03/29 11:44
S201	1	"9262906".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:51

S202	1	S201 and (registrat$4 type priority status function location).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:51
S203	1829	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S204	1777	S203 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S205	1829	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S206	97	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S207	78	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:51
S208	27	("20160027022" | "7876222" | "7556532" | "20140158574" | "9004366" | "8884764" | "8878654" | "8686861" | "7937829" | "7924158" | "7304578" | "7183924" | "7178417" | "6628199" | "6574166" | "5939984" | "20150254961" | "20130307683" | "20120154120" | "20100164710" | "20090095818" | "20060152364" | "20050218233" | "20050051624" | "20040125972" | "20020188259" | "20020017996").PN.	US-PGPUB; USPAT	OR	OFF	2017/03/29 12:04
S209	27	("20160027022" | "7876222" | "7556532" | "20140158574" | "9004366" | "8884764" | "8878654" | "8686861" | "7937829" | "7924158" | "7304578" | "7183924" | "7178417" | "6628199" | "6574166" | "5939984" | "20150254961" | "20130307683" | "20120154120" | "20100164710" | "20090095818" | "20060152364" | "20050218233" | "20050051624" | "20040125972" | "20020188259" | "20020017996").PN.	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S210	79	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S211	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S212	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S213	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S214	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S215	1797	S214 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S216	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S217	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S218	94	S217 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S219	98	parking adj garage$1 same receiver$1	US-PGPUB;	OR	OFF	2017/05/13

		same transmitter$1	USPAT			18:52
S220	34806	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S221	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S222	44	S220 and S221	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S223	815	S221 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S224	40	S220 and S223	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S225	44	S220 and S221	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S226	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S227	94	S217 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S228	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S229	34806	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S230	16098	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:53
S231	0	S230 and ((vehicle$1 car cars) near3 (presenc$4 present$4) with (sens$4 detect$4 monitor$4) and (transceiver$1 transmitter$1) with (spot$1 slot$1 space$1) adj (park$4) and (receiver$1 transceiver$1) with (radio rf) with (above) near3 (transmitter$1 transceiver$1) and (receiver$1 transceiver$1) with (center central) with (transmitter$1 transceiver$1) and control with (receiver$1 transceiver$1) and (signal$1 adj strength$1 with 9radio rf) and threshold near3 (loss losing lose$1 reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:58
S232	0	((vehicle$1 car cars) near3 (presenc$4 present$4) with (sens$4 detect$4 monitor$4) and (transceiver$1 transmitter$1) with (spot$1 slot$1 space$1) adj (park$4) and (receiver$1 transceiver$1) with (radio rf) with (above) near3 (transmitter$1 transceiver$1) and (receiver$1 transceiver$1) with (center central) with (transmitter$1 transceiver$1) and control with (receiver$1 transceiver$1) and	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:59

		(signal$1 adj strength$1 with 9radio rf) and threshold near3 (loss losing lose$1 reduc$4 decreas$4)).clm.				
S233	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/14 12:06
S234	7	(("5156242") or ("20150028145")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:37
S235	3	("20150028145").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:39
S236	5	("2015028145").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:40
S237	3	("20150028145").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:40
S238	4	("5156242").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:58
S239	6	("3617659").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:10
S240	5	("5375786").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:28
S241	0	lock$4 with sensor$1 near3 base with fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:38
S242	7	lock$4 with sensor$1 with base same fastener$1 and base with sensor with	US-PGPUB; USPAT;	OR	OFF	2017/05/16 15:39

		charg$4 with base$1	USOCR; FPRS			
S243	7	S242 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:41
S244	2	("9443404").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:44
S245	3	("20060097875").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:50
S246	108	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:52
S247	3	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and tether$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:52
S248	107	S246 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:52
S249	92	S246 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/16 15:52
S250	9	lock$4 with base and base with sensor with charg$4 with base$1 and tether$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:53
S251	16	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:54
S252	529	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:55
S253	5	(("20060097875") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:55
S254	1	S253 and (lock$4 fasten$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:01
S255	3	("20060097875").PN.	US-PGPUB;	OR	OFF	2017/05/16

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			16:05
S256	11	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:06
S257	10	S256 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/16 16:06
S258	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 16:32
S259	1	S258 and releasable	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:42
S260	3	("20060097875").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 16:54
S261	11	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/05/16 17:12
S262	10	S251 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S263	5527	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S264	0	S263 and S246	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/05/16 17:14

			FPRS			
S265	0	S263 and S248	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S266	0	S263 and S249	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S267	31	S252 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S268	6	"371525".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:56
S269	9	"299009".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:58
S270	111	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:11
S271	17	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S272	544	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S273	107	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S274	92	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:12
S275	7	lock$4 with sensor$1 with base same fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S276	12	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT;	OR	OFF	2017/07/07 17:12

			USOCR; FPRS			
S277	11	S271 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:13
S279	7393	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:14
S280	0	S279 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and calbe with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:51
S281	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and calbe with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:51
S282	0	S279 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:51
S283	0	(merchandis$4 with security with display$4 with (auxiliary adj device	US-PGPUB; USPAT;	OR	OFF	2017/07/07 17:52

		mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S284	12	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:52
S285	10	S276 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:52
S286	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:52
S287	92	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:52
S288	544	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:52
S289	107	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:53
S290	32	S272 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:53
S291	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" | "6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/08 11:20
S292	111	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT;	OR	OFF	2017/07/08 11:20

			USOCR; FPRS			
S293	107	S292 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/08 11:20
S294	7393	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:22
S295	0	S294 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:23
S296	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:24
S297	0	S294 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:25
S298	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:25
S299	9	"407544".APN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/08 11:51

			DERWENT; IBM_TDB			
S300	1	("4544920").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/08 15:23
S301	9	"407544".APN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:09
S302	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S303	113	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S304	108	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S305	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S306	32	S305 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S307	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" | "6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:10
S308	113	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S309	108	S308 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10

S310	7490	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:10
S311	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:10
S312	93	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/08/10 12:10
S313	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S314	108	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S315	32	S305 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S316	11	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:10
S317	13	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S318	10	S317 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/08/10 12:10
S319	8	lock$4 with sensor$1 with base same fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S320	113	lock$4 with sensor$1 with base and base	US-PGPUB;	OR	OFF	2017/08/10

		with sensor with charg$4 with base$1	USPAT; USOCR; FPRS			12:10
S321	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:20
S322	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:20
S323	7490	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S324	0	S323 and S308	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S325	0	S323 and S302	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S326	0	S323 and S303	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S327	32	S323 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:21
S328	18	"397277".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 15:28
S329	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/09/03 12:18

			IBM_TDB			
S330	32	S329 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:18
S331	18	"397277".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S332	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:19
S333	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/09/03 12:19
S334	17	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S335	11	S334 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/03 12:19
S336	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S337	561	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S338	32	S337 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S339	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/09/03 12:19

			FPRS			
S340	110	S339 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S341	561	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S342	32	S337 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S343	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" | "6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/09/03 12:19
S344	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S345	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S346	110	S344 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S347	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:19
S348	95	S339 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/03 12:19
S349	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/09/03 12:19

			EPO; JPO; DERWENT; IBM_TDB			
S350	20	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S351	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S352	0	S347 and ((merchandis$4 item$1) adj security and (sensor$1 detector$1 monitor$1) with (merchandis$4 item$1) and base with (sensor$1 detector$1 monitor$1) with power with (electric$4 adj contact$1) same (auxiliary aux) adj port$4 and cable$1 with (sensor$1 detector$1 monitor$1) with base$1 and cable$1 with signal$1 with (auxiliary aux) adj port$4 with (cut short$4 discounnect$4) same (auxiliary aux) adj port$4 near5 base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:25
S353	0	((merchandis$4 item$1) adj security and (sensor$1 detector$1 monitor$1) with (merchandis$4 item$1) and base with (sensor$1 detector$1 monitor$1) with power with (electric$4 adj contact$1) same (auxiliary aux) adj port$4 and cable$1 with (sensor$1 detector$1 monitor$1) with base$1 and cable$1 with signal$1 with (auxiliary aux) adj port$4 with (cut short$4 discounnect$4) same (auxiliary aux) adj port$4 near5 base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:25
S354	2	("9443404").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:32
S355	7781	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/15 20:42
S356	125	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/15 20:42
S357	95	S356 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/15 20:42
S358	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/09/15 20:42

			DERWENT; IBM_TDB			
S359	125	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/15 20:42
S360	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S361	23	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S362	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S363	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S364	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:13
S365	98	S362 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:13
S366	23	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S367	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S368	98	S367 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:14
S369	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S370	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S371	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S372	113	S367 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14

S373	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S374	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/11/03 16:14
S375	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S376	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S377	7787	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:14
S378	32	S377 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S379	33	S376 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S380	19	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S381	11	S380 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:14
S382	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14

S383	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S384	7787	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:15
S385	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:16
S386	67	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:16
S387	20	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:17
S388	615	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:17
S389	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:07
S390	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:07
S391	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:07
S392	100	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S393	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S394	590	base$2 with charg$4 and lock$4 with	US-PGPUB;	OR	OFF	2017/12/21

		sensor$1 with base$1	USPAT; USOCR; FPRS			19:08
S395	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S396	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S397	115	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S398	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/12/21 19:08
S399	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S400	590	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S401	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S402	33	S401 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S403	33	S400 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08

S404	23	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S405	14	S404 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S406	14	S404 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S407	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S408	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S409	590	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S410	24	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S411	633	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S412	0	S389 and ((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:13
S413	0	S389 and ((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:14

		removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.				
S414	4	((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:14
S415	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2017/12/21 19:17
S416	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S417	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S418	115	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S419	633	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/12/21 19:23

			EPO; JPO; DERWENT; IBM_TDB			
S420	33	S400 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S421	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:24
S422	68	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:24
S423	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2017/12/21 20:27
S424	4	"867482".apn. and substantially	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 20:27
S425	114	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" |	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/12/21 20:27

		"20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	EPO; JPO; DERWENT; IBM_TDB			
S426	3	"9928704".pn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:14
S427	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:15
S428	188	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
S429	68	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
S430	188	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
S431	687	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
S432	635	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR;	OR	OFF	2018/05/05 14:16

			FPRS			
S433	34	S432 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:16
S434	635	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:16
S435	42	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
S436	136	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
S437	157	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
S438	27	merchandis$4 with (cable$1 tether$4	US-PGPUB;	OR	OFF	2018/05/05

		cord$4) and recoil$4 with sens$4	USPAT; USOCR; FPRS			14:31
S439	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
S440	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
S441	35	S440 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
S442	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
S443	35	S442 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
S444	839	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
S445	968	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
S446	877	S445 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
S447	157	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:34
S448	107	S447 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2018/05/05 14:34
S449	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:09
S450	110	S449 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2018/06/08 21:09
S451	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:09
S452	973	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/06/08 21:09

S453	879	S452 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2018/06/08 21:09
S454	973	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/06/08 21:09
S455	842	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/06/08 21:09
S456	9123	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:09
S457	36	S456 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:09
S458	9123	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:09
S459	9123	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:10
S460	36	S459 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10
S461	28	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10
S462	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10
S463	136	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:10

S464	42	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/06/08 21:10
S465	649	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10
S466	192	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:10
S467	702	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/06/08 21:10
S468	649	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10
S469	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/06/08 21:10

6/ 9/ 2018 8:07:08 PM
C:\ Users\ slu\ Documents\ EAST\ Workspaces\ 15926326.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

CPC						
Symbol					**Type**	**Version**
G08B		13	/	1463	F	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686	6/5/18	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION												
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED							
340	568.2	G	0	8	B	13 / 12 (2006.01.01)								

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686	6/5/18	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	**Art Unit**
	SHIRLEY LU	2686

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	18												
2	2	18	19												
3	3	19	20												
4	5	20	21												
5	6	21	22												
6	7	22	23												
7	8	31	24												
8	9	23	25												
9	10	24	26												
10	11	32	27												
11	12	25	28												
12	13	26	29												
13	14	27	30												
14	15	28	31												
15	16	29	32												
16	17	30	33												

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 32	
/SHIRLEY LU/ Primary Examiner.Art Unit 2686 (Primary Examiner)	6/5/18 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	Art Unit
	SHIRLEY LU	2686

CPC- SEARCHED		
Symbol	Date	Examiner
A61B1/00	4/30/18	SL
H02J1/00	4/30/18	SL
UPDATED ABOVE	6/5/18	SL

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST, INVENTOR SEARCH, KW	4/30/18	SL
UPDATED ABOVE	6/5/18	SL

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
A61B	1/00	6/5/18	SL
H02J	1/00	6/5/18	SL

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/926,326	03/20/2018	David N. Berglund	P1232D/US/E	6691

88320 7590 05/11/2018

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

EXAMINER
LU, SHIRLEY

ART UNIT	PAPER NUMBER
2686	

NOTIFICATION DATE	DELIVERY MODE
05/11/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

trentkirk@invue.com
laurenmartin@invue.com

Office Action Summary	Application No. 15/926,326	Applicant(s) BERGLUND ET AL.	
	Examiner SHIRLEY LU	Art Unit 2686	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/17/18*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-3 and 5-27* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-3 and 5-27* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Double patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9443404. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 19 of U.S. Patent/Application Number 9443404. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9443404.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9443404. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 19 of U.S. Patent/Application Number 9443404. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9443404. Although the conflicting claims are not identical, they are not patentably distinct from each other

because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9761101. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 16 of U.S. Patent/Application Number 9761101. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9761101. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the

patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 16 of U.S. Patent/Application Number 9761101. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9747765. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 28 of U.S. Patent/Application Number 9747765. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if

allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9747765. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 28 of U.S. Patent/Application Number 9747765. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9805564. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if

allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 35 of U.S. Patent/Application Number 9805564. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9805564. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 35 of U.S. Patent/Application Number 9805564. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if

allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9811988. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9811988. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9811988. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if

allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9811988. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9928704. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 1 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9928704. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if

allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 1 of U.S. Patent/Application Number 9928704. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim(s) 24 is/are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim(s) 20 of U.S. Patent/Application Number 9928704. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following one or more reasons: the instant claim(s) is/are broader than the patented/pending claim(s), they are not patentably distinct from each other because the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. Dependent claims rejected under similar reasons.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 5-27 is/are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claim(s) 1, 27 recite "configured to operably," "configured to be operably," "configured to be," "configured to." The limiting scope of the claim is unclear. It is advised to amend limitations to recite limitations in the active tense by eliminating instances of "configured to" and "operably" and recite instead "port to connect," "cable connected," "sensor detects," "connecting the auxiliary device," "signal is transmitted," etc. Any dependent claim(s) and/or similar limitation(s) is/are rejected for similar reason(s). Proper action is required.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shirley Lu whose telephone number is (571) 272-8546. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Lim can be reached on (571) 270-1210. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

/Shirley Lu/

Primary Examiner, Art Unit 2686

Notice of References Cited	Application/Control No. 15/926,326	Applicant(s)/Patent Under Reexamination BERGLUND ET AL.	
	Examiner SHIRLEY LU	Art Unit 2686	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2015/0028145 A1	01-2015	Johnston; Michael R.	A47F7/024	242/390.8
*	B	US-5,156,242 A	10-1992	Ditzig; Albert F.	H01R39/64	191/12.2R
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	"9928704".pn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:14
L2	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:15
L3	188	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
L4	68	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
L5	188	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
L6	687	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:15
L7	635	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR;	OR	OFF	2018/05/05 14:16

			FPRS			
L8	34	L7 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:16
L9	635	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:16
L10	42	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
L11	136	("20060097875" | "20100176945" | "20100315237" | "20110013905" | "20110309928" | "20110309934" | "20120120571" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "20180025598" | "20180033268" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "9805564" | "9818274" | "D793779" | "D798636").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
L12	157	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
L13	27	merchandis$4 with (cable$1 tether$4	US-PGPUB;	OR	OFF	2018/05/05

		cord$4) and recoil$4 with sens$4	USPAT; USOCR; FPRS			14:31
L14	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
L15	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
L16	35	L15 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
L17	9069	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/05 14:31
L18	35	L17 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:31
L19	839	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
L20	968	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
L21	877	L20 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2018/05/05 14:31
L22	157	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2018/05/05 14:34
L23	107	L22 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2018/05/05 14:34
S1	2	crowd adj sourcing adj data near3 users	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:14
S2	3	crowd adj sourcing adj data with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S3	7	crowd adj sourcing near5 parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S4	15	crowd adj sourcing same parking	US-PGPUB; USPAT;	OR	OFF	2015/07/06 14:15

			USOCR; FPRS			
S5	19	crowd adj sourcing and parking adj space	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:15
S6	202	crowd adj sourcing and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:16
S7	349	crowd adj sourc$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:16
S8	0	usert adj interface same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:18
S9	1630	user adj interface same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:18
S10	4	request$4 adj parking$4 near5 updates	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:20
S11	1	request$4 adj updates with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/06 14:21
S12	213	("20070265671" | "20090073991" | "20090138059" | "20090264792" | "20120150008" | "5472453" | "5718242" | "6990373" | "7974689" | "4991217" | "20030095648" | "20050049515" | "20060085049" | "20070161913" | "20080004536" | "20080033495" | "20090076343" | "20090076345" | "20090076348" | "20090076405" | "20090234410" | "20100069735" | "20100298899" | "20120112903" | "5662689" | "5929601" | "6097987" | "6253099" | "6390996" | "6681003" | "6804554" | "7488293" | "8290574" | "20090076341" | "20090076346" | "20090275848" | "20120011382" | "4632122" | "5738102" | "5758443" | "5944669" | "6097982" | "6280461" | "8121683" | "5865736" | "6602191" | "7088233" | "20080266118" | "20030158593" | "20060270952" | "20090076350" | "20090076364" | "20090076397" | "20090287120" | "20100076513" | "5741306" | "5792190" | "6908437" | "7149579" | "6406426" | "20040049233" | "7712373" | "5544661" | "6405082" | "20130325078" | "20030195567" | "20080030656" | "20080058884" | "20080249591" | "20090076344" | "20090076410" | "20090076559" | "20100056881" |	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/07/09 20:39

		"20100234716" | "20110288604" | "20120158075" | "4928690" | "4978926" | "5062834" | "5078134" | "5348008" | "6016445" | "6065154" | "6690969" | "7220235" | "8271082" | "20110080294" | "20120259377" | "20030149462" | "20070169364" | "20080045815" | "20080046015" | "20090076340" | "20090076342" | "20090093687" | "20120146797" | "5365932" | "6169397" | "6827695" | "7340296" | "7427921" | "7831303" | "20080312709" | "5381798" | "20120293323" | "20050131465" | "20060036292" | "20090076336" | "20090076349" | "20090076363" | "20090292194" | "20110288605" | "8140154" | "20100295674" | "20090281394" | "20140004814" | "20030004547" | "20030174049" | "20030212311" | "20070118056" | "20070239220" | "20080306560" | "4094310" | "7453354" | "20060178706" | "5827196" | "3922665" | "20100312297").PN.				
S13	4	("20110191019" | "20110285591" | "20120136997").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/19 15:51
S14	2	S13 and crowd	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/19 15:52
S15	2	S13 and crowd and park$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/19 15:52
S16	8	crowd adj sourc$4 with parking adj space$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:22
S17	2	S16 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:37
S18	2	S17 and crowd adj sourc$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:42
S19	2	S17 and weight$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:43
S20	45	crowd adj sourc$4 with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:57
S21	24	S20 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 21:57

S22	1716	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:15
S23	72	parking near3 garage$1 same weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:15
S24	1	"20130057686".pn. and (remote$4 second first)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:20
S25	6	"867482".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:37
S26	3	"867482".apn. and facilit$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:41
S27	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/08/21 22:47
S28	2	S27 and park$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 22:54
S29	1	S27 and time adj stamp$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:17
S30	2	S27 and fram$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:20
S31	3	"867482".apn. and substantially	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:22
S32	218	S22 AND ((G08G1/142 OR G08G1/096791 OR G08G1/16 OR G08G1/163 OR G08G1/166 OR G08G1/09 OR G08G1/0969 OR G08G1/161 OR G08G1/167 OR G08G1/20 OR G08G9/02 OR G08G1/143 OR G08G1/144 OR G08G1/017 OR G08G1/14 OR G08G1/00 OR G08G1/0175 OR G08G1/052 OR G08G1/056 OR G08G1/133 OR G08G1/146 OR G08G1/148 OR G08G1/147 OR G08G1/015 OR G08G1/04 OR G08G1/096716 OR G08G1/09675 OR G08G1/096775 OR H04W4/046 OR H04W64/006 OR H04W74/0816 OR H04W76/002 OR H04W72/005 OR H04W76/023 OR	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/08/21 23:25

		H04W4/06 OR H04W72/0446 OR H04W8/08 OR H04W64/00 OR H04W4/02 OR H04W4/22 OR H04W76/007 OR H04W24/00 OR H04W24/10 OR H04W4/001 OR H04W4/006 OR H04W4/021 OR H04W4/023 OR H04W4/043 OR H04W4/12 OR H04W4/16 OR H04W56/0025 OR H04W64/003 OR H04W84/005 OR H04W88/06 OR H04W8/22).CPC.)				
S33	1736	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S34	225	S33 AND ((G08G1/142 OR G08G1/096791 OR G08G1/16 OR G08G1/163 OR G08G1/166 OR G08G1/09 OR G08G1/0969 OR G08G1/161 OR G08G1/167 OR G08G1/20 OR G08G9/02 OR G08G1/143 OR G08G1/144 OR G08G1/017 OR G08G1/14 OR G08G1/00 OR G08G1/0175 OR G08G1/052 OR G08G1/056 OR G08G1/133 OR G08G1/146 OR G08G1/148 OR G08G1/147 OR G08G1/015 OR G08G1/04 OR G08G1/096716 OR G08G1/09675 OR G08G1/096775 OR H04W4/046 OR H04W64/006 OR H04W74/0816 OR H04W76/002 OR H04W72/005 OR H04W76/023 OR H04W4/06 OR H04W72/0446 OR H04W8/08 OR H04W64/00 OR H04W4/02 OR H04W4/22 OR H04W76/007 OR H04W24/00 OR H04W24/10 OR H04W4/001 OR H04W4/006 OR H04W4/021 OR H04W4/023 OR H04W4/043 OR H04W4/12 OR H04W4/16 OR H04W56/0025 OR H04W64/003 OR H04W84/005 OR H04W88/06 OR H04W8/22).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S35	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S36	49	crowd adj sourc$4 with parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S37	24	S36 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S38	73	parking near3 garage$1 same weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59

S39	6	"867482".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S40	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S41	22	crowd adj sourcing same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S42	28	crowd adj sourcing and parking adj space	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S43	246	crowd adj sourcing and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S44	432	crowd adj sourc$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S45	1765	user adj interface same parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S46	4	request$4 adj parking$4 near5 updates	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S47	217	("20070265671" | "20090073991" | "20090138059" | "20090264792" | "20120150008" | "5472453" | "5718242" | "6990373" | "7974689" | "4991217" | "20030095648" | "20050049515" | "20060085049" | "20070161913" | "20080004536" | "20080033495" | "20090076343" | "20090076345" | "20090076348" | "20090076405" | "20090234410" | "20100069735" | "20100298899" | "20120112903" | "5662689" | "5929601" | "6097987" | "6253099" | "6390996" | "6681003" | "6804554" | "7488293" | "8290574" | "20090076341" | "20090076346" | "20090275848" | "20120011382" | "4632122" | "5738102" | "5758443" | "5944669" | "6097982" | "6280461" | "8121683" | "5865736" | "6602191" | "7088233" | "20080266118" | "20030158593" | "20060270952" | "20090076350" | "20090076364" | "20090076397" | "20090287120" | "20100076513" | "5741306" | "5792190" | "6908437" | "7149579" | "6406426" | "20040049233" | "7712373" | "5544661"	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59

		| "6405082" | "20130325078" | "20030195567" | "20080030656" | "20080058884" | "20080249591" | "20090076344" | "20090076410" | "20090076559" | "20100056881" | "20100234716" | "20110288604" | "20120158075" | "4928690" | "4978926" | "5062834" | "5078134" | "5348008" | "6016445" | "6065154" | "6690969" | "7220235" | "8271082" | "20110080294" | "20120259377" | "20030149462" | "20070169364" | "20080045815" | "20080046015" | "20090076340" | "20090076342" | "20090093687" | "20120146797" | "5365932" | "6169397" | "6827695" | "7340296" | "7427921" | "7831303" | "20080312709" | "5381798" | "20120293323" | "20050131465" | "20060036292" | "20090076336" | "20090076349" | "20090076363" | "20090292194" | "20110288605" | "8140154" | "20100295674" | "20090281394" | "20140004814" | "20030004547" | "20030174049" | "20030212311" | "20070118056" | "20070239220" | "20080306560" | "4094310" | "7453354" | "20060178706" | "5827196" | "3922665" | "20100312297").PN.				
S48	8	crowd adj sourc$4 with parking adj space$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S49	4	("20110191019" | "20110285591" | "20120136997").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S50	2	S49 and crowd	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S51	2	S48 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S52	24	S36 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S53	1736	parking near3 garage$1 and weigh$4 and (@rlad < "20130422" and @ad < "20130422")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 12:59
S54	5	(("20130057686") or ("20130231824")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/12 12:59
S55	7	("20130057686" | "20130231824" |	US-PGPUB;	OR	OFF	2015/12/12

		"20110191019" | "20120136997" | "20110285591").PN.	USPAT; USOCR; FPRS			13:06
S56	977	(H0424/046.CPC. OR G08G1/00.CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:08
S57	0	S56 and (parking adj space adj availability and parking adj facility and user adj interface and crowd adj sourcing and historical and proximate).clm.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:09
S58	1	(parking adj space adj availability and parking adj facility and user adj interface and crowd adj sourcing and historical and proximate).clm.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/12 13:09
S59	11	"820378".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 12:03
S60	14	"534972".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:35
S61	4	("20010052860" | "20130106621" | "8279107").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:39
S62	0	"20130106621".pn. and (strength$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:49
S63	1	"20130106621".pn. and (signal)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:50
S64	1	"20130106621".pn. and (signal$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:50
S65	1	"20130106621".pn. and intensit$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:53
S66	1	"20130106621".pn. and ("12" concentrator$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:56
S67	1	"20130106621".pn. and bluetooth	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:57
S68	0	"20130106621".pn. and ceiling	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 16:58
S69	0	"20130106621".pn. and averag$4	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/12/15 17:00

			FPRS			
S70	1	"20130106621".pn. and light$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:00
S71	1	"20130106621".pn. and vacant	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:01
S72	2	S61 and (ceiling horizontal$4 averag$4 light$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:03
S73	35	parking adj (space$1 spot$1) with (vacant occupied) and (ceiling and averag$4 and light$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:05
S74	35	S73 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:06
S75	14	"534972".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:11
S76	4	"534972".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:11
S77	1	"20070050240".pn. and board$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:13
S78	119	parking adj (space$1 spot$1) with (vacant occupied availability) with light$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:14
S79	112	S78 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:14
S80	99	S78 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:15
S81	56	S78 and (@rlad < "20141106" @ad < "20141106") and bluetooth	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:16
S82	21	S78 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:19
S83	1	"20140320318".pn. and (ceiling$1 wall$1)	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:21
S84	0	"20140320318".pn. and bluetooth	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:25
S85	1	"20140320318".pn. and ceiling	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:25

S86	14	parking adj (space$1 spot$1) near5 (vacant occupied availability) same (ceiling)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:26
S87	6	S86 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:26
S88	0	parking adj (space$1 spot$1) with (vacant occupied availability) and signal adj (strength$1 intensit$4) near3 averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S89	0	parking adj (space$1 spot$1) same signal adj (strength$1 intensit$4) near3 averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S90	0	parking adj (space$1 spot$1) same signal adj (strength$1 intensit$4) with averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:34
S91	13	parking adj (space$1 spot$1) same signal$1 with averag$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:35
S92	0	S91 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:35
S93	8	parking adj (space$1 spot$1) same signal$1 with averag$4	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:35
S95	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:37
S96	10	S95 and (@rlad < "20141106" @ad < "20141106") and ceiling$1	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:37
S97	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:38
S98	60	S97 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:38
S99	159	signal adj (strength$1 intensit$4) with averag$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:39
S100	125	signal adj (strength$1 intensit$4) near5 averag$4 and parking	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:39
S101	125	S100 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:39
S102	114	signal adj (strength$1 intensit$4) near5 averag$4 and multiple near3 chang$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:40

S103	114	S102 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:40
S104	0	signal adj (strength$1 intensit$4) near5 averag$4 same parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S105	0	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S106	785	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:42
S107	756	S106 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT; USOCR	OR	OFF	2015/12/15 17:44
S108	53	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:45
S109	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:45
S110	1	"20090098903".pn. and bluetooth	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:47
S111	9	(("20130106621") or ("20110099126") or ("20090098903")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/12/15 17:50
S112	3	S111 and (radio rf bluetooh)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:50
S113	3	S111 and (radio rf bluetooth)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 17:50
S114	60	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 19:38
S115	54	S114 AND ((H04W64/00 OR H04W12/06 OR H04W12/08 OR H04W24/10 OR H04W4/006 OR H04W4/008 OR H04W4/02 OR H04W4/023 OR H04W4/025 OR H04W52/0212 OR H04W52/04 OR H04W64/003 OR H04W64/006 OR H04W76/02 OR H04W8/18 OR H04W8/24 OR H04W4/027 OR H04W4/046 OR H04W4/12 OR H04W4/22 OR H04W76/007 OR H04W88/04 OR	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2015/12/15 19:39

		H04W88/06 OR H04W28/04 OR H04W40/06 OR H04W40/10 OR H04W40/20 OR H04W40/248 OR H04W40/30 OR H04W28/0231 OR H04W40/02 OR H04W4/028 OR H04W4/043 OR H04W8/183 OR G06Q10/0833 OR G06Q10/087 OR G06Q10/083 OR G06Q10/0835 OR G06Q10/0836 OR G06Q10/0838 OR G06Q20/14 OR G06Q20/22 OR G06Q20/325 OR G06Q20/40 OR G06Q30/0269 OR G06Q30/0639).CPC.)				
S116	65	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S117	57	S116 AND ((H04W64/00 OR H04W12/06 OR H04W12/08 OR H04W24/10 OR H04W4/006 OR H04W4/008 OR H04W4/02 OR H04W4/023 OR H04W4/025 OR H04W52/0212 OR H04W52/04 OR H04W64/003 OR H04W64/006 OR H04W76/02 OR H04W8/18 OR H04W8/24 OR H04W4/027 OR H04W4/046 OR H04W4/12 OR H04W4/22 OR H04W76/007 OR H04W88/04 OR H04W88/06 OR H04W28/04 OR H04W40/06 OR H04W40/10 OR H04W40/20 OR H04W40/248 OR H04W40/30 OR H04W28/0231 OR H04W40/02 OR H04W4/028 OR H04W4/043 OR H04W8/183 OR G06Q10/0833 OR G06Q10/087 OR G06Q10/083 OR G06Q10/0835 OR G06Q10/0836 OR G06Q10/0838 OR G06Q20/14 OR G06Q20/22 OR G06Q20/325 OR G06Q20/40 OR G06Q30/0269 OR G06Q30/0639).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S118	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S119	54	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S120	3	signal adj (strength$1 intensit$4) near5 averag$4 with (reduction$4 decreas$4 chang$4) with 75%	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:36
S121	825	signal adj (strength$1 intensit$4) near5 averag$4 with threshold$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:37
S122	118	signal adj (strength$1 intensit$4) near5 averag$4 and multiple near3 chang$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/05/01 16:37
S123	118	S122 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT;	OR	OFF	2016/05/01 16:37

			USOCR			
S125	36246	h04w4/00.cpc. g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:46
S126	0	S125 and (vehicle adj presence adj detection and transmitters and parking adj space and monitor and attached near2 parking adj space and group near2 parking and covers near2 transmitter and radio adj wave adj signal and attached and ceiling and building and central adj portion and signal adj strength and vehicle and threshold adj loss).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:47
S127	0	(vehicle adj presence adj detection and transmitters and parking adj space and monitor and attached near2 parking adj space and group near2 parking and covers near2 transmitter and radio adj wave adj signal and attached and ceiling and building and central adj portion and signal adj strength and vehicle and threshold adj loss).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/05/01 16:48
S128	567	receiver near5 central with transmitters	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/26 13:14
S129	418	receiver near5 central with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:14
S130	408	S129 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:14
S131	43	receiver near5 central near3 (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S132	78	receiver near5 central$4 near3 (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S133	76	S132 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:15
S134	1	"20130106621".pn. and central$4	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:19
S135	17	receiver near5 central$4 adj (portion locat$4) with transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:20
S136	15	S135 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:20
S137	606	receiver near3 central$4 adj (portion locat$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S138	717	receiver near3 central$4 adj (portion locat$4 position$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S139	522	receiver near3 central$4 adj (locat$4 position$4)	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:25
S140	520	S139 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:26
S141	6	S140 and parking and vehicle$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:26
S142	3	("20130106621").PN.	US-PGPUB;	OR	OFF	2016/07/26

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			13:27
S143	181	central$4 adj (locat$4 position$4) adj receiver	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:27
S144	180	S143 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:28
S145	2	S144 and parking	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:28
S146	49	S143 and transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:29
S147	1743	parking adj space$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:31
S148	1714	S147 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:44
S149	1672	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:46
S150	1666	S149 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:46
S151	91	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S152	89	S151 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S153	759	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S154	755	S153 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:48
S155	646	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:49
S156	1	parking adj space$1 and central$2 adj receiver same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/26 13:50
S157	6	("20090098903" | "20110099126" | "20130106621").PN.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:44
S158	30953	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S159	646	parking adj space$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S160	12	S158 and S159	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S161	759	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S162	755	S161 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S163	39	S158 and S162	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45

S164	41	S158 and S161	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S165	1672	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S166	1666	S165 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2016/07/27 12:45
S167	61	S158 and S166	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 12:45
S168	1	"9262906".pn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2016/07/27 13:51
S169	2	("20130151088").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/01 13:38
S170	3	("20120108917").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/08/01 13:40
S171	5	"804274".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:44
S172	6	"985671".apn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:45
S173	1	"9262906".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:58
S174	1	S173 and (registrat$4 type priority status function location).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 19:59
S175	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:04
S176	10	S175 and (@rlad < "20130314" @ad < "20130314")	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:06
S177	12	registrat$4 same sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:07
S178	39	registrat$4 same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:07
S179	202	(register$4 registrat$4) same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:08
S180	103	(register$4 registrat$4) with sensor$1	US-PGPUB;	OR	OFF	2016/08/01

		with priorit$4	USPAT; USOCR			20:08
S181	93	S180 and (@rlad < "20130314" @ad < "20130314")	US-PGPUB; USPAT; USOCR	OR	OFF	2016/08/01 20:08
S182	33611	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/01/05 14:45
S183	39344	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:45
S184	3	S183 and ((transmitter$1 transceiver$1) with park$4 adj (space$1 spot$1 slot$1 unit$1) and receiver$1 near5 radio and signal adj strength$1 near2 radio near5 receiver$1 and (vehicle$1 car cars) near3 (transmitter$1 transceiver$1) and signal adj strength with (reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:56
S185	3	((transmitter$1 transceiver$1) with park$4 adj (space$1 spot$1 slot$1 unit$1) and receiver$1 near5 radio and signal adj strength$1 near2 radio near5 receiver$1 and (vehicle$1 car cars) near3 (transmitter$1 transceiver$1) and signal adj strength with (reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/01/05 14:56
S186	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/01/06 13:14
S187	10	registrat$4 with sensors with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S188	34488	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S189	219	(register$4 registrat$4) same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S190	42	registrat$4 same sensor$1 with priorit$4	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:43
S191	34488	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S192	829	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S193	44	S191 and S192	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S194	803	S192 and (@rlad < "20141106" @ad <	US-PGPUB;	OR	OFF	2017/03/29

		"20141106")	USPAT			11:43
S195	40	S191 and S194	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S196	44	S191 and S192	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:43
S197	97	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S198	93	S197 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:43
S199	4	(("9589465") or ("9373256")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/03/29 11:43
S200	2	("9589465").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/03/29 11:44
S201	1	"9262906".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:51
S202	1	S201 and (registrat$4 type priority status function location).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/29 11:51
S203	1829	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S204	1777	S203 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S205	1829	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S206	97	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/03/29 11:51
S207	78	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/03/29 11:51
S208	27	("20160027022" | "7876222" | "7556532" | "20140158574" | "9004366" | "8884764" | "8878654" | "8686861" | "7937829" | "7924158" | "7304578" | "7183924" | "7178417" | "6628199" | "6574166" | "5939984" | "20150254961" | "20130307683" | "20120154120" | "20100164710" | "20090095818" | "20060152364" | "20050218233" | "20050051624" | "20040125972" | "20020188259" | "20020017996").PN.	US-PGPUB; USPAT	OR	OFF	2017/03/29 12:04
S209	27	("20160027022" | "7876222" | "7556532" | "20140158574" | "9004366"	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52

		| "8884764" | "8878654" | "8686861" | "7937829" | "7924158" | "7304578" | "7183924" | "7178417" | "6628199" | "6574166" | "5939984" | "20150254961" | "20130307683" | "20120154120" | "20100164710" | "20090095818" | "20060152364" | "20050218233" | "20050051624" | "20040125972" | "20020188259" | "20020017996").PN.				
S210	79	signal adj (strength$1 intensit$4) with averag$4 and parking adj (spot$1 space$1)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S211	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S212	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S213	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S214	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S215	1797	S214 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S216	1867	parking adj garage$1 and receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S217	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S218	94	S217 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S219	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S220	34806	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S221	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S222	44	S220 and S221	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S223	815	S221 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S224	40	S220 and S223	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S225	44	S220 and S221	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S226	98	parking adj garage$1 same receiver$1 same transmitter$1	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S227	94	S217 and (@rlad < "20141106" @ad < "20141106")	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52
S228	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/13 18:52

S229	34806	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/13 18:52
S230	16098	h04w4/00.cpc. or g06q10/00.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:53
S231	0	S230 and ((vehicle$1 car cars) near3 (presenc$4 present$4) with (sens$4 detect$4 monitor$4) and (transceiver$1 transmitter$1) with (spot$1 slot$1 space$1) adj (park$4) and (receiver$1 transceiver$1) with (radio rf) with (above) near3 (transmitter$1 transceiver$1) and (receiver$1 transceiver$1) with (center central) with (transmitter$1 transceiver$1) and control with (receiver$1 transceiver$1) and (signal$1 adj strength$1 with 9radio rf) and threshold near3 (loss losing lose$1 reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:58
S232	0	((vehicle$1 car cars) near3 (presenc$4 present$4) with (sens$4 detect$4 monitor$4) and (transceiver$1 transmitter$1) with (spot$1 slot$1 space$1) adj (park$4) and (receiver$1 transceiver$1) with (radio rf) with (above) near3 (transmitter$1 transceiver$1) and (receiver$1 transceiver$1) with (center central) with (transmitter$1 transceiver$1) and control with (receiver$1 transceiver$1) and (signal$1 adj strength$1 with 9radio rf) and threshold near3 (loss losing lose$1 reduc$4 decreas$4)).clm.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/13 18:59
S233	850	parking adj garage$1 and receiver$1 same transmitters	US-PGPUB; USPAT	OR	OFF	2017/05/14 12:06
S234	7	(("5156242") or ("20150028145")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:37
S235	3	("20150028145").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:39
S236	5	("2015028145").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:40
S237	3	("20150028145").PN.	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/05/16 12:40

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S238	4	("5156242").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 12:58
S239	6	("3617659").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:10
S240	5	("5375786").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:28
S241	0	lock$4 with sensor$1 near3 base with fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:38
S242	7	lock$4 with sensor$1 with base same fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:39
S243	7	S242 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:41
S244	2	("9443404").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:44
S245	3	("20060097875").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:50
S246	108	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:52
S247	3	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and tether$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:52
S248	107	S246 and (@rlad < "20151012" @ad <	US-PGPUB;	OR	OFF	2017/05/16

		"20151012")	USPAT; USOCR; FPRS			15:52
S249	92	S246 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/16 15:52
S250	9	lock$4 with base and base with sensor with charg$4 with base$1 and tether$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:53
S251	16	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:54
S252	529	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 15:55
S253	5	(("20060097875") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 15:55
S254	1	S253 and (lock$4 fasten$4)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:01
S255	3	("20060097875").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 16:05
S256	11	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:06
S257	10	S256 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/16 16:06
S258	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/05/16 16:32
S259	1	S258 and releasable	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 16:42
S260	3	("20060097875").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/05/16 16:54

			IBM_TDB			
S261	11	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/05/16 17:12
S262	10	S251 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S263	5527	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S264	0	S263 and S246	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S265	0	S263 and S248	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S266	0	S263 and S249	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S267	31	S252 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:14
S268	6	"371525".apn.	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/05/16 17:56

			FPRS			
S269	9	"299009".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/05/16 17:58
S270	111	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:11
S271	17	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S272	544	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S273	107	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S274	92	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:12
S275	7	lock$4 with sensor$1 with base same fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S276	12	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:12
S277	11	S271 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:13
S279	7393	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:14
S280	0	S279 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/07 17:51

		bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and calbe with port$4 with (cut$4 remov$4) near3 cable$1).clm.	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S281	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and calbe with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:51
S282	0	S279 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:51
S283	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:52
S284	12	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:52
S285	10	S276 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:52
S286	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/07 17:52
S287	92	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/07 17:52
S288	544	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/07 17:52

			FPRS			
S289	107	S270 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:53
S290	32	S272 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/07 17:53
S291	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" | "6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/08 11:20
S292	111	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/08 11:20
S293	107	S292 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/07/08 11:20
S294	7393	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:22
S295	0	S294 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keyboard bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:23
S296	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/08 11:24

		with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	DERWENT; IBM_TDB			
S297	0	S294 and (merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:25
S298	0	(merchandis$4 with security with display$4 with (auxiliary adj device mouse stylus speaker$1 keybaord bluetooth) and sens$4 with merchandis$4 and base with sensor$1 with merchandis$4 with power and cable with sensor$1 with base$1 and lock$4 with sensor$1 with base$1 and (auxiliary adj port$1 usb adj port$1) and cable with port$4 with (cut$4 remov$4) near3 cable$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:25
S299	9	"407544".APN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/08 11:51
S300	1	("4544920").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/08 15:23
S301	9	"407544".APN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:09
S302	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S303	113	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S304	108	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S305	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09

S306	32	S305 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:09
S307	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" | "6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:10
S308	113	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S309	108	S308 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S310	7490	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:10
S311	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:10
S312	93	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/08/10 12:10
S313	547	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S314	108	S303 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S315	32	S305 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/08/10 12:10

		OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	FPRS			
S316	11	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:10
S317	13	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S318	10	S317 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/08/10 12:10
S319	8	lock$4 with sensor$1 with base same fastener$1 and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S320	113	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:10
S321	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:20
S322	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/08/10 12:20
S323	7490	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S324	0	S323 and S308	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/08/10 12:21

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S325	0	S323 and S302	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S326	0	S323 and S303	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/08/10 12:21
S327	32	S323 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 12:21
S328	18	"397277".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/08/10 15:28
S329	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:18
S330	32	S329 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:18
S331	18	"397277".apn.	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S332	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:19
S333	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/09/03 12:19
S334	17	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19

S335	11	S334 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/03 12:19
S336	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S337	561	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S338	32	S337 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S339	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S340	110	S339 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S341	561	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S342	32	S337 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S343	16	("3128857" | "3147833" | "4073449" | "20100176945" | "20060097875" |	US-PGPUB; USPAT	OR	OFF	2017/09/03 12:19

		"6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636").PN.				
S344	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S345	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S346	110	S344 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S347	7765	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:19
S348	95	S339 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/03 12:19
S349	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:19
S350	20	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S351	123	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/03 12:19
S352	0	S347 and ((merchandis$4 item$1) adj security and (sensor$1 detector$1 monitor$1) with (merchandis$4 item$1) and base with (sensor$1 detector$1 monitor$1) with power with (electric$4 adj contact$1) same (auxiliary aux) adj port$4 and cable$1 with (sensor$1 detector$1 monitor$1) with base$1 and cable$1 with signal$1 with (auxiliary aux) adj port$4 with (cut short$4 discounnect$4) same (auxiliary aux) adj port$4 near5 base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:25
S353	0	((merchandis$4 item$1) adj security and (sensor$1 detector$1 monitor$1) with (merchandis$4 item$1) and base with (sensor$1 detector$1 monitor$1) with power with (electric$4 adj contact$1) same (auxiliary aux) adj port$4 and	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/09/03 12:25

		cable$1 with (sensor$1 detector$1 monitor$1) with base$1 and cable$1 with signal$1 with (auxiliary aux) adj port$4 with (cut short$4 discounnect$4) same (auxiliary aux) adj port$4 near5 base$1).clm.	IBM_TDB			
S354	2	("9443404").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/03 12:32
S355	7781	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/15 20:42
S356	125	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/15 20:42
S357	95	S356 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/09/15 20:42
S358	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/09/15 20:42
S359	125	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/09/15 20:42
S360	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S361	23	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S362	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S363	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:13
S364	20	(("20150028145") or ("5156242") or ("3617659") or ("5375786") or ("20100176945")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/11/03 16:13

			IBM_TDB			
S365	98	S362 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:13
S366	23	tether$4 and base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S367	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S368	98	S367 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:14
S369	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S370	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S371	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S372	113	S367 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S373	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S374	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/11/03 16:14
S375	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S376	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S377	7787	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:14
S378	32	S377 and base$2 with charg$4 with	US-PGPUB;	OR	OFF	2017/11/03

		sensor$1 with base$1	USPAT; USOCR; FPRS			16:14
S379	33	S376 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S380	19	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S381	11	S380 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/03 16:14
S382	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S383	130	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:14
S384	7787	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:15
S385	577	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/11/03 16:16
S386	67	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:16
S387	20	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/11/03 16:17

			IBM_TDB			
S388	615	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/11/03 16:17
S389	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:07
S390	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:07
S391	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:07
S392	100	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S393	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S394	590	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S395	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S396	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S397	115	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S398	18	("6799994" | "7327276" | "3617659" | "5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	US-PGPUB; USPAT	OR	OFF	2017/12/21 19:08
S399	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S400	590	base$2 with charg$4 and lock$4 with	US-PGPUB;	OR	OFF	2017/12/21

		sensor$1 with base$1	USPAT; USOCR; FPRS			19:08
S401	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S402	33	S401 and base$2 with charg$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S403	33	S400 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S404	23	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S405	14	S404 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S406	14	S404 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/21 19:08
S407	136	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S408	8417	a61b1/00.cpc. h02j1/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S409	590	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS	OR	OFF	2017/12/21 19:08
S410	24	merchandis$4 with (cable$1 tether$4 cord$4) and recoil$4 with sens$4	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/12/21 19:08

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S411	633	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:08
S412	0	S389 and ((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:13
S413	0	S389 and ((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:14
S414	4	((merchandise$1 merchandis$4 item$4 article$1) and auxiliary and (theft$4 deter$4 deterrent$1 tamper$4) and (remov$4 mov$4) with (sensor$1 detector$1) with (merchandise$1 merchandis$4 item$4 article$1) and base$1 with (removable removably remov$4) with auxiliary adj port$1 and cable$1 with (sensor$1 detector$1) with base$1 and lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1 and auxiliary adj port$1 with (transmit$4 send$4) with (removable removably remov$4) with base$1).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:14
S415	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833"	US-PGPUB; USPAT	OR	OFF	2017/12/21 19:17

		| "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.				
S416	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S417	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S418	115	S391 and (@rlad < "20151012" @ad < "20151012")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S419	633	base$2 with charg$4 and lock$4 with sensor$1 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S420	33	S400 AND ((A61B17/068 OR A61B17/07207 OR A61B17/320092 OR A61B2017/00075 OR A61B2017/00314 OR A61B2017/00323 OR A61B2017/00362 OR A61B2017/00398 OR A61B2017/00477 OR A61B2017/00685 OR A61B2017/00734 OR A61B2017/0688 OR A61B2017/07271 OR A61B2017/07278 OR A61B2017/07285 OR A61B2017/2923 OR A61B2017/2927 OR A61B2017/2929 OR A61B2017/2943 OR A61B2090/065 OR A61B2090/0803 OR A61B2090/0811 OR A61B2090/0814 OR A61B34/30 OR A61B34/70 OR A61B34/71 OR A61B34/76 OR A61B50/30 OR A61B50/36 OR A61B90/98 OR H02J7/0031 OR H02J17/00).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:23
S421	160	lock$4 with sensor$1 with base and base with sensor with charg$4 with base$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 19:24
S422	68	("6799994" | "7327276" | "3617659" |	US-PGPUB;	OR	OFF	2017/12/21

		"5156242" | "5375786" | "3128857" | "3147833" | "4073449" | "20110309928" | "20110309934" | "20120268103" | "20120188082" | "20150028145" | "20170032636" | "20100176945" | "20060097875" | "20100315237" | "20130196530").PN.	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:24
S423	36	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT	OR	OFF	2017/12/21 20:27
S424	4	"867482".apn. and substantially	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 20:27
S425	114	("20060097875" | "20100176945" | "20100315237" | "20110309928" | "20110309934" | "20120188082" | "20120268103" | "20130196530" | "20140159898" | "20150028145" | "20160351029" | "20160379455" | "20170032636" | "3128857" | "3147833" | "3617659" | "4073449" | "5003292" | "5156242" | "5375786" | "5912619" | "6050622" | "6799994" | "6888461" | "7209038" | "7239238" | "7327276" | "7667601" | "8558688" | "8698617" | "8698618" | "9443404" | "9747765" | "9761101" | "D793779" | "D798636").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/12/21 20:27

5/ 5/ 2018 2:40:16 PM
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15926326	BERGLUND ET AL.
	Examiner	Art Unit
	SHIRLEY LU	2686

CPC- SEARCHED		
Symbol	Date	Examiner
A61B1/00	4/30/18	SL
H02J1/00	4/30/18	SL

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST, INVENTOR SEARCH, KW	4/30/18	SL

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Berglund
Art Unit	
Examiner Name	
Attorney Docket Number	P1232D/US/E

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6799994	B2	2004-10-05	Burke	
	2	7327276	B1	2008-02-05	Deconinck et al.	
	3	3617659		1971-11-02	Freeman	
	4	5156242		1992-10-20	Ditzig	
	5	5375786		1994-12-27	Ta-Yueh et al.	
	6	3128857		1964-04-14	Walton	
	7	3147833		1964-09-08	McWilliams et al.	
	8	4073449		1978-02-14	Pilat	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Berglund
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P1232D/US/E

	9	7209038	B1	2007-04-24	Deconinck et al.	
	10	5912619	A	1999-06-15	Vogt	
	11	6050622	A	2000-04-18	Gustafson	
	12	7667601	B2	2010-02-23	Rabinowitz et al.	
	13	8558688	B2	2013-10-15	Henson et al.	
	14	8698617	B2	2014-04-15	Henson et al.	
	15	8698618	B2	2014-05-15	Henson et al.	
	16	7239238	B2	2007-07-03	Tester et al.	
	17	5003292		1991-03-26	Harding et al.	
	18	6888461	B2	2005-05-03	Houde	
	19	D793779		2017-08-08	Van Landingham et al.	

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	Application Number	
	Filing Date	
	First Named Inventor	Berglund
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P1232D/US/E

	20	D798636		2017-10-03	Van Landingham et al.	
	21	9761101	A1	2017-09-12	Berglund et al.	
	22	9747765	A1	2017-08-29	Berglund et al.	
	23	9443404	B2	2016-09-13	Grant et al.	
	24	9805564	B1	2017-10-31	Berglund	
	25	9818274	B2	2017-11-14	Fawcett et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110309928	A1	2011-12-22	Henson et al.	
	2	20110309934	A1	2011-12-22	Henson et al.	
	3	20120268103	A1	2012-10-25	Henson et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Berglund
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P1232D/US/E

	4	20120188082	A1	2012-07-26	Berglund et al.	
	5	20150028145	A1	2015-01-29	Johnston et al.	
	6	20170032636	A1	2017-02-02	Henson et al.	
	7	20100176945	A1	2010-07-15	Fawcett et al.	
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	9	20100315237	A1	2010-12-16	Yang	
	10	20130196530	A1	2013-08-01	Cheatham et al.	
	11	20140159898	A1	2014-06-12	Wheeler et al.	
	12	20160351029	A1	2016-12-01	Fawcett et al.	
	13	20160379455	A1	2016-12-29	Grant et al.	
	14	20180025598	A1	2018-01-25	Fawcett et al.	

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	Filing Date	
	First Named Inventor	Berglund
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P1232D/US/E

	15	20110013905	A1	2011-01-20	Wang et al.	
	16	20120120571	A1	2012-05-17	Bisesti et al.	
	17	20180033268	A1	2018-02-01	Berglund et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2015053913	WO	A1	2015-04-16	InVue Security Products Inc.		
	2	2015112670	WO	A1	2015-07-30	InVue Security Products Inc.		
	3	2016033037	WO	A1	2016-03-03	InVue Security Products Inc.		
	4	2011045058	WO	A2	2011-04-21	Logokett GmbH		X
	5	2002073561	WO	A1	2002-09-19	Entreprises Lokkit Inc.		☐
	6	2012069816	WO	A1	2012-05-31	Sector Design & Marketing Limited		☐

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Berglund
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P1232D/US/E

	7	2009103793	WO	A1	2009-08-27	Jorge Escuin Garcia		☐
	8	102009049738	DE	A1	2011-04-28	Logokett GmbH		☒

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"Series S1500 Alarm-on-merchandise: proven to provide superior production.", 2015, 8 pages, InVue Security Products Inc.	
	2	"Series HS150 Easy-Lift™ high security.", 2015, 8 pages, InVue Security Products Inc.	
	3	"Series HS400 Thieves won't beat it. Customers will love it.", 2015, 8 pages, InVue Security Products Inc.	
	4	International Search Report and Written Opinion from corresponding International Application No. PCT/US2016/056239 dated February 1, 2017 (16 pages).	
	5	Extended European Search Report from corresponding European Patent Application No. 16855999.5, dated February 9, 2018 (10 pages).	

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EXAMINER SIGNATURE

Examiner Signature	/SHIRLEY LU/ (05/05/2018)	Date Considered	05/05/2018

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Berglund
Art Unit	
Examiner Name	
Attorney Docket Number	P1232D/US/E

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Berglund
Art Unit	
Examiner Name	
Attorney Docket Number	P1232D/US/E

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Trent A. Kirk/	Date (YYYY-MM-DD)	2018-03-20
Name/Print	Trent A. Kirk	Registration Number	54,223

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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BIB DATA SHEET

CONFIRMATION NO. 6691

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/926,326	03/20/2018	340	2686	P1232D/US/E

APPLICANTS

InVue Security Products Inc., Charlotte, NC;

INVENTORS

David N. Berglund, Indian Trail, NC;
Kyle Baker, Waxhaw, NC;
Robert Bisesti, Charlotte, NC;

**** CONTINUING DATA ***************************

This application is a CON of 15/725,951 10/05/2017 PAT 9928704
which is a CON of 15/649,127 07/13/2017 PAT 9805564
which is a CON of 15/593,640 05/12/2017 PAT 9747765
which is a DIV of 15/474,338 03/30/2017 PAT 9761101
which is a CON of PCT/US2016/056239 10/10/2016
which claims benefit of 62/240,171 10/12/2015
and claims benefit of 62/297,215 02/19/2016

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/16/2018

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /SHIRLEY LU/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		NC	10	24	2

ADDRESS

Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277
UNITED STATES

TITLE

RECOILER FOR A MERCHANDISE SECURITY SYSTEM

FILING FEE RECEIVED		
1085	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Berglund et al.	Confirmation No.:	6691
App. No.:	15/926,326	Art Unit:	2686
Filed:	March 20, 2018	Examiner:	Shirley Lu
Title:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM		

Docket No. P1232D/US/E

Mail Stop Amendment
Commission for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 C.F.R. § 1.121

In response to the Office Action mailed on May 11, 2018, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 6 of this paper.

Amendments to the Claims:

1. (Currently Amended) A merchandise security system for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor;

a base that removably supports the sensor and the article of merchandise thereon, wherein the base further comprises an auxiliary port that operably connects to the auxiliary device; and

a cable operably connected to the sensor and the base,

wherein the base ~~is configured to~~ transfers power to the auxiliary port for powering the auxiliary device, and

wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

2. (Original) The merchandise security system of Claim 1, wherein the auxiliary port is configured to receive an input connector operably connected to the auxiliary device.

3. (Original) The merchandise security system of Claim 2, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting removal of the input connector from the auxiliary port.

4. (Canceled)

5. (Original) The merchandise security system of Claim 1, wherein each of the base and the sensor comprises one or more electrical contacts that are configured to contact one another when the sensor is seated on the base for transferring electrical power for charging the article of merchandise.

6. (Original) The merchandise security system of Claim 1, further comprising a lock mechanism configured to lock the sensor to the base in a locked position when the sensor is seated on the base to thereby prevent the sensor from being lifted off of the base and to be unlocked to allow removal of the sensor from the base in an unlocked position.

7. (Original) The merchandise security system of Claim 1, wherein the auxiliary port is a USB-type input port.

8. (Original) The merchandise security system of Claim 1, wherein the auxiliary port is configured to operably connect to an auxiliary device comprising a stylus, a speaker, a

keyboard, or a Bluetooth device each configured to operate with the article of merchandise.

9. (Original) The merchandise security system of Claim 1, wherein the cable comprises one or more electrical conductors defining a sense loop for conducting the security signal.

10. (Original) The merchandise security system of Claim 9, wherein the sense loop is further defined in the auxiliary port.

11. (Original) The merchandise security system of Claim 1, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting the cable being cut, shorted, or disconnected.

12. (Original) The merchandise security system of Claim 1, wherein each of the sensor and the base comprises an alarm for generating an audible and/or a visible alarm.

13. (Original) The merchandise security system of Claim 1, wherein the base is configured to be disarmed with a wireless key.

14. (Original) The merchandise security system of Claim 1, further comprising a recoiler comprising a rotatable member, wherein the cable is configured to be unwound from and wound on the rotatable member as the cable is extended and retracted.

15. (Previously Presented) The merchandise security system of Claim 1, wherein the base comprises a top surface for supporting the sensor, a bottom surface for being positioned on a display surface, a side surface, and a rear surface, wherein the auxiliary port is disposed on the rear surface, and wherein an opening is defined in the top surface for receiving the cable.

16. (Previously Presented) The merchandise security system of Claim 25, wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor.

17. (Original) The merchandise security system of Claim 16, wherein the cable comprises a releasable connector configured to releasably engage the sensor, wherein the releasable connector is configured to contain the optical transceiver.

18. (Original) The merchandise security system of Claim 16, wherein the cable comprises one or more electrical conductors for providing power to the optical transceiver.

19. (Original) The merchandise security system of Claim 16, wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable.

20. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the cable has been cut or disconnected.

21. (Original) The merchandise security system of Claim 19, further comprising a connector configured to electrically connect the sensor to the article of merchandise, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the connector has been removed from the article of merchandise.

22. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to rotate relative to one another.

23. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to define a sense loop through the cable.

24. (Currently Amended) A method for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

securing a sensor to the article of merchandise that detects removal of the article of merchandise from the sensor;

attaching a base to a support surface that removably supports the sensor and the article of merchandise thereon, the base comprising an auxiliary port;

connecting a cable to the sensor; and

operably connecting the auxiliary device to the auxiliary port, wherein the base ~~is configured to~~ transfers power to the auxiliary port for powering the auxiliary device , and wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

25. (Currently Amended) The merchandise security system of Claim 1, wherein the cable and the sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise.

26. (Currently Amended) The merchandise security system of Claim 1, further comprising a printed circuit board disposed within the base and electrically connected to the cable with a plurality of electrical wires, wherein the auxiliary port is disposed on the printed

circuit board.

27. (Previously Presented) The method of Claim 24, wherein connecting comprises connecting the cable including an optical transceiver to the sensor for communicating optical signals with the sensor for detecting disconnection of the cable from the sensor.

28. (New) The merchandise security system of Claim 6, wherein the lock mechanism is configured to rotate between the locked position and the unlocked position.

29. (New) The merchandise security system of Claim 28, wherein the lock mechanism comprises a fastener.

30. (New) The merchandise security system of Claim 6, wherein the base comprises a top surface for supporting the sensor, a bottom surface for being positioned on a display surface, and a side surface, wherein the lock mechanism is accessible on the side surface and the auxiliary port is accessible on the rear surface.

31. (New) The merchandise security system of Claim 14, further comprising a lock mechanism configured to lock the sensor to the base in a locked position when the sensor is seated on the base to thereby prevent the rotatable member from rotating.

32. (New) The merchandise security system of Claim 25, wherein the cable and the sensor communicate optical signals with one another for detecting disconnection of the cable from the sensor.

33. (New) The merchandise security system of Claim 19, wherein the optical transceiver of the cable is configured to communicate with the optical transceiver of the sensor for detecting disconnection of the cable from the sensor.

REMARKS

This Amendment is submitted in response to the Office Action dated May 11, 2018. In light of the amendments and subsequent remarks, Applicant respectfully submits that the present application in is condition for allowance.

Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1 and 28 of U.S. Pat. No. 9,747,765. Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1 and 35 of U.S. Pat. No. 9,805,564. Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1 and 20 of U.S. Pat. No. 9,928,704.

Applicant has filed concurrently herewith a terminal disclaimer and the respective fee to overcome the Examiner's rejections on the grounds of nonstatutory double patenting as to U.S. Patent Nos. 9,747,765; 9,805,564; and 9,928,704. The present application and U.S. Patent Nos. 9,747,765; 9,805,564; and 9,928,704 are commonly owned by InVue Security Products Inc.

Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1, 19, and 20 of U.S. Pat. No. 9,443,404. Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1 and 16 of U.S. Pat. No. 9,761,101. Claims 1 and 24 are rejected on the grounds of nonstatutory double patenting as being unpatentable over Claims 1 and 20 of U.S. Pat. No. 9,811,988.

Applicant respectfully disagrees with the double patenting rejection in view of the '404, '101, and '988 patents given that no analysis of the claim language is provided in any specificity. Applicant requests that the Examiner provide a sufficient explanation regarding the breadth of the claims and why the claims are allegedly not patentably distinct from each other. Otherwise, the double patenting rejection as currently presented is improper and should be withdrawn. Furthermore, the Examiner issued a restriction requirement during prosecution of the '101 patent in which the Examiner found that the species of the auxiliary port was a separate invention from the claims elected in the '101 patent. Therefore, in light of the Examiner's previous analysis of the claims of the '101 patent, the double patenting rejection over the current claims is improper and should also be withdrawn (*see* MPEP 804.01).

Claims 1-3 and 5-27 are rejected under 35 U.S.C. 112(b) as being indefinite. Although application disagrees with the rejection given that use of "configured to" has long been accepted by the Federal Circuit, Applicant has clarified independent Claims 1 and 24 in an attempt to expedite prosecution. Applicant notes, however, that only one instance of the use of "configured to" was provided in Claims 1 and 24.

Therefore, Applicant respectfully submits that the claims are in condition for allowance.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper, such as fees for a request for an extension of time. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 50-6090.

Respectfully submitted,

/Trent A. Kirk/

Trent A. Kirk

Registration No. 54,223

Customer No. 88320
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, North Carolina 28277
Tel: 704-752-6513
Fax: 704-919-3079

ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT AND TRADEMARK OFFICE ON May 11, 2018.

Electronic Patent Application Fee Transmittal

Application Number:	15926326
Filing Date:	20-Mar-2018
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Filer:	Trent Aaron Kirk/Lauren Martin
Attorney Docket Number:	P1232D/US/E

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	6	50	300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**300**

Electronic Acknowledgement Receipt

EFS ID:	32599589
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	11-MAY-2018
Filing Date:	20-MAR-2018
Time Stamp:	15:18:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$300
RAM confirmation Number	051418INTEFSW00001771506090
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		P1232D-US-E_Amend_5-18.pdf	47767 c168fb8d19697481cc912b048e3d5e987f26256b	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	7	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30306 4a5776a0561e580b28d00a0c2bf2dc0d68468288	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	78073		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	15926326
Filing Date	20-Mar-2018
First Named Inventor	David Berglund
Attorney Docket Number	P1232D/US/E
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
InVue Security Products Inc.	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

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9747765

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request. ○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.
Applicant claims the following fee status: ◉ Small Entity ○ Micro Entity ○ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 54223 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request

Signature	/Trent A. Kirk/
Name	Trent A. Kirk

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	15926326
Filing Date:	20-Mar-2018
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Filer:	Trent Aaron Kirk/Lauren Martin
Attorney Docket Number:	P1232D/US/E

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 15926326

Filing Date: 20-Mar-2018

Applicant/Patent under Reexamination: Berglund

Electronic Terminal Disclaimer filed on May 11, 2018

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	32599714
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	11-MAY-2018
Filing Date:	20-MAR-2018
Time Stamp:	15:20:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$160
RAM confirmation Number	051418INTEFSW00001826506090
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33872 ef5eef9fe20f2a0cb6487b50d22ee2d3cec9d56d	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30410 708ab510ea176ea555fcb3a4f2a7469e5daabe1c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	64282		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/926,326	Filing Date 03/20/2018	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	05/11/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 32	Minus	** 24	= 8		x $50 =	400
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $230 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	400

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	terrance R lawrence
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15926326
Filing Date	2018-03-20
First Named Inventor	David N. Berglund
Art Unit	2686
Examiner Name	Shirley Lu
Attorney Docket Number	P1232D/US/E

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9353552	B1	2016-05-31	Kelsch et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15926326
	Filing Date	2018-03-20
	First Named Inventor	David N. Berglund
	Art Unit	2686
	Examiner Name	Shirley Lu
	Attorney Docket Number	P1232D/US/E

	1	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15926326
Filing Date	2018-03-20
First Named Inventor	David N. Berglund
Art Unit	2686
Examiner Name	Shirley Lu
Attorney Docket Number	P1232D/US/E

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Trent A. Kirk/	Date (YYYY-MM-DD)	2018-05-10
Name/Print	Trent A. Kirk	Registration Number	54223

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	32587926
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	10-MAY-2018
Filing Date:	20-MAR-2018
Time Stamp:	15:21:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	P1232D-US-E_IDS_5-2018.pdf	1034913 1c3d6405ed71f4ec059f6ece2bc51752ca451bc7	no	4

Warnings:

Information:	
Total Files Size (in bytes):	1034913

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/926,326	03/20/2018	2685	985	P1232D/US/E	24	2

CONFIRMATION NO. 6691

88320
Trent A. Kirk
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

FILING RECEIPT

Date Mailed: 04/18/2018

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

David N. Berglund, Indian Trail, NC;
Kyle Baker, Waxhaw, NC;
Robert Bisesti, Charlotte, NC;

Applicant(s)

InVue Security Products Inc., Charlotte, NC;

Power of Attorney: The patent practitioners associated with Customer Number 88320

Domestic Priority data as claimed by applicant

This application is a CON of 15/725,951 10/05/2017 PAT 9928704
which is a CON of 15/649,127 07/13/2017 PAT 9805564
which is a CON of 15/593,640 05/12/2017 PAT 9747765
which is a DIV of 15/474,338 03/30/2017 PAT 9761101
which is a CON of PCT/US2016/056239 10/10/2016
which claims benefit of 62/240,171 10/12/2015
and claims benefit of 62/297,215 02/19/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/16/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/926,326**

Projected Publication Date: 07/26/2018

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

RECOILER FOR A MERCHANDISE SECURITY SYSTEM

Preliminary Class

340

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/926,326

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	24 minus 20 =	* 4	x 50 =	200	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	985		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	David N. Berglund	Confirmation No.:	6691
App. No.:	15/926,326	Art Unit:	2686
Filed:	March 20, 2018	Examiner:	n/a
Title:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM		

Docket No. P1232D/US/E

Mail Stop Amendment
Commission for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

Please enter this Preliminary Amendment before calculating the claim fee and amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 6 of this paper.

Amendments to the Claims:

1. (Currently Amended) A merchandise security system for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor;

a base that removably supports the sensor and the article of merchandise thereon, wherein the base further comprises an auxiliary port that operably connects to the auxiliary device; and

a cable operably connected to the sensor and the base,

wherein the base is configured to transfer power to the auxiliary port for powering the auxiliary device,

~~wherein the cable and the sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise,~~ and

wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

2. (Original) The merchandise security system of Claim 1, wherein the auxiliary port is configured to receive an input connector operably connected to the auxiliary device.

3. (Original) The merchandise security system of Claim 2, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting removal of the input connector from the auxiliary port.

4. (Canceled)

5. (Original) The merchandise security system of Claim 1, wherein each of the base and the sensor comprises one or more electrical contacts that are configured to contact one another when the sensor is seated on the base for transferring electrical power for charging the article of merchandise.

6. (Original) The merchandise security system of Claim 1, further comprising a lock mechanism configured to lock the sensor to the base in a locked position when the sensor is seated on the base to thereby prevent the sensor from being lifted off of the base and to be unlocked to allow removal of the sensor from the base in an unlocked position.

7. (Original) The merchandise security system of Claim 1, wherein the auxiliary

port is a USB-type input port.

8. (Original) The merchandise security system of Claim 1, wherein the auxiliary port is configured to operably connect to an auxiliary device comprising a stylus, a speaker, a keyboard, or a Bluetooth device each configured to operate with the article of merchandise.

9. (Original) The merchandise security system of Claim 1, wherein the cable comprises one or more electrical conductors defining a sense loop for conducting the security signal.

10. (Original) The merchandise security system of Claim 9, wherein the sense loop is further defined in the auxiliary port.

11. (Original) The merchandise security system of Claim 1, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting the cable being cut, shorted, or disconnected.

12. (Original) The merchandise security system of Claim 1, wherein each of the sensor and the base comprises an alarm for generating an audible and/or a visible alarm.

13. (Original) The merchandise security system of Claim 1, wherein the base is configured to be disarmed with a wireless key.

14. (Original) The merchandise security system of Claim 1, further comprising a recoiler comprising a rotatable member, wherein the cable is configured to be unwound from and wound on the rotatable member as the cable is extended and retracted.

15. (Currently Amended) The merchandise security system of Claim 1, wherein the base comprises a top surface for supporting the sensor, a bottom surface for being positioned on a display surface, a side surface, and a rear surface, wherein the auxiliary port is disposed on the rear surface, and wherein an opening is defined in the top surface for receiving the cable.

16. (Currently Amended) The merchandise security system of Claim ~~1~~25, wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor.

17. (Original) The merchandise security system of Claim 16, wherein the cable comprises a releasable connector configured to releasably engage the sensor, wherein the releasable connector is configured to contain the optical transceiver.

18. (Original) The merchandise security system of Claim 16, wherein the cable comprises one or more electrical conductors for providing power to the optical transceiver.

19. (Original) The merchandise security system of Claim 16, wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable.

20. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the cable has been cut or disconnected.

21. (Original) The merchandise security system of Claim 19, further comprising a connector configured to electrically connect the sensor to the article of merchandise, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the connector has been removed from the article of merchandise.

22. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to rotate relative to one another.

23. (Original) The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to define a sense loop through the cable.

24. (Currently Amended) A method for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

securing a sensor to the article of merchandise that detects removal of the article of merchandise from the sensor;

attaching a base to a support surface that removably supports the sensor and the article of merchandise thereon, the base comprising an auxiliary port;

connecting a cable to the sensor; and

operably connecting the auxiliary device to the auxiliary port, wherein the base is configured to transfer power to the auxiliary port for powering the auxiliary device ~~wherein the cable and the sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise~~, and wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

25. (New) The merchandise security system of Claim 1, wherein the cable and the

sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise

26. (New) The merchandise security system of Claim 1, further comprising a printed circuit board disposed within the base and electrically connected to the cable with a plurality of electrical wires, wherein the auxiliary is disposed on the printed circuit board.

27. (New) The method of Claim 24, wherein connecting comprises connecting the cable including an optical transceiver to the sensor for communicating optical signals with the sensor for detecting disconnection of the cable from the sensor.

REMARKS

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper, such as fees for a request for an extension of time. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 50-6090.

Respectfully submitted,

/Trent A. Kirk/

Trent A. Kirk

Registration No. 54,223

Customer No. 88320
InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, North Carolina 28277
Tel: 704-752-6513
Fax: 704-919-3079

ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT AND TRADEMARK OFFICE ON April 17, 2018.

Electronic Patent Application Fee Transmittal

Application Number:	15926326
Filing Date:	20-Mar-2018
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Filer:	Trent Aaron Kirk/Lauren Martin
Attorney Docket Number:	P1232D/US/E

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	2	50	100
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**100**

Electronic Acknowledgement Receipt

EFS ID:	32364890
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	17-APR-2018
Filing Date:	20-MAR-2018
Time Stamp:	16:57:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$100
RAM confirmation Number	041818INTEFSW00003620506090
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		P1232D-US-E_Prelim_Amend.pdf	33157 f67ae712346c10423a1159ecf951d1cb3b40fabb	yes	6
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30306 a0f51e958a1acf7ee4bad3c6421a6f3e0c41555a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63463		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
15/926,326	03/20/2018	

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **04/17/2018**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 24	= 2	X $50 =	100
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $230 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**100**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

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LDRC
/EVA GILLIS/

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Application Number	TBA
Filing Date	Concurrently Herewith
First Named Inventor	David N. Berglund
Title	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
Art Unit	
Examiner Name	
Attorney Docket Number	P1232D/US/E

SIGNATURE of Applicant or Patent Practitioner

Signature	/Trent A. Kirk/	Date (Optional)	
Name	Trent A. Kirk	Registration Number	54223
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)	InVue Security Products Inc.		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 88320

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☐ The address associated with Customer Number:

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: InVue Security Products Inc.
9201 Baybrook Lane
Charlotte, NC 28277

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	/Andrew W. Moock/	Date	May 11, 2017
Name	Andrew W. Moock	Telephone	704-752-6513
Title	Executive Vice President		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/ US2016/056239 (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that the above-identified international application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Name: David N. Berglund

Residence: Charlotte, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 4650 BRIGHT ROAD, LOT 11
CHARLOTTE, NORTH CAROLINA 28214 USA

Inventor's Signature: ..... Date: October 27, 2016
(The signature must be that of the inventor, not that of the agent)

Name: Kyle Baker

Residence: Waxhaw, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 7622 CASPIAN DRIVE
WAXHAW, NORTH CAROLINA 28173 USA

Inventor's Signature: ..... Date: October ____, 2016
(The signature must be that of the inventor, not that of the agent)

Name: Robert Bisesti

Residence: Charlotte, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 119 QUEENSGATE LANE
CHARLOTTE, NORTH CAROLINA 28214 USA

Inventor's Signature: ..... Date: October 27, 2016
(The signature must be that of the inventor, not that of the agent)

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

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I hereby declare that I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/ US2016/056239 (if furnishing declaration pursuant to Rule 26*ter*).

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Residence: Charlotte, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 4650 BRIGHT ROAD, LOT 11
CHARLOTTE, NORTH CAROLINA 28214 USA

Inventor's Signature: ..... Date: October ____, 2016
(The signature must be that of the inventor, not that of the agent)

Name: Kyle Baker

Residence: Waxhaw, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 7622 CASPIAN DRIVE
WAXHAW, NORTH CAROLINA 28173 USA

Inventor's Signature: Kyle Baker Date: November 1, 2016
(The signature must be that of the inventor, not that of the agent)

Name: Robert Bisesti

Residence: Charlotte, North Carolina USA
(city and either US state, if applicable, or country)

Mailing Address: 119 QUEENSGATE LANE
CHARLOTTE, NORTH CAROLINA 28214 USA

Inventor's Signature: ..... Date: October ____, 2016
(The signature must be that of the inventor, not that of the agent)

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RECOILER FOR A MERCHANDISE SECURITY SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Application No. 15/725,951, filed on October 5, 2017, which is a continuation of U.S. Application No. 15/649,127, filed July 13, 2017, now U.S. Pat. No. 9,805,564, which is a continuation of U.S. Application No. 15/593,640, filed on May 12, 2017, now U.S. Pat. No. 9,747,765, which is a divisional of U.S. Application No. 15/474,338, filed on March 30, 2017, now U.S. Pat. No. 9,761,101, which is a continuation of International Appl. No. PCT/US2016/056239, filed on October 10, 2016, which claims the benefit of priority to U.S. Provisional Application No. 62/240,171 filed on October 12, 2015, and U.S. Provisional Application No. 62/297,215 filed on February 19, 2016, the entire disclosures of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] Embodiments of the present invention relate generally to recoilers, security systems, and methods for displaying articles of merchandise in a retail environment.

BACKGROUND OF THE INVENTION

[0003] Retailers routinely display articles of merchandise, such as telephones, portable computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like for customers to evaluate before making a purchase. These articles of merchandise are continually being made smaller and lighter in weight due to advances in technology and materials. As a result, such merchandise is increasingly vulnerable and susceptible to theft. At the same time, the retail price, and hence the profit margin, for such merchandise continues to decline. Accordingly, these articles of merchandise need to be secured by a security device that effectively and cost efficiently protects the merchandise from theft.

BRIEF SUMMARY

[0004] Embodiments of the present invention are directed to recoilers, merchandise security systems, and methods for displaying and protecting an article of merchandise from theft. In one example, the merchandise security system includes a sensor configured to be secured to the article of merchandise and a base for removably supporting the sensor and the item of merchandise thereon. The system also includes a recoiler operably coupled to the sensor. The recoiler includes

a rotatable member defining a helical recess. The system further includes a cable configured to connect to the sensor and to be unwound from and wound on the rotatable member as the cable is extended and retracted. The cable is configured to be extended from the recoiler in response to the sensor being lifted off of the base, and the cable is configured to be retracted into the recoiler in response to the sensor being moved to a seated position on the base. The helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member.

[0005] In one embodiment, a method for displaying and protecting an article of merchandise from theft is provided. The method includes securing a sensor to the article of merchandise, wherein a recoiler is operably coupled to the sensor and comprises a rotatable member defining a helical recess. The method further includes attaching a base to a support surface for removably supporting the sensor and the item of merchandise thereon and connecting a cable to the sensor. The cable is configured to be extended from the base in response to the sensor being lifted off of the base, wherein the cable is configured to be retracted into the base in response to the sensor being moved to a seated position on the base, and the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member.

[0006] In another embodiment a recoiler is provided. The recoiler includes a rotatable member defining a helical recess on an outer surface thereof and a cable configured to be unwound from and wound on the rotatable member as the cable is extended and retracted. The helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member.

[0007] In one embodiment, a merchandise security system includes a sensor configured to be secured to the article of merchandise and a base for removably supporting the sensor and the item of merchandise thereon. The merchandise security system also includes a cable configured to be operably connected to the sensor and the base and an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the item of merchandise. The base is configured to transfer power to the item of merchandise and the auxiliary device, and a sense loop is defined in the cable and the auxiliary port for detecting a security event

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0008] The detailed description of the invention provided hereafter may be better understood

with reference to the accompanying drawing figures, in which embodiments of a merchandise security system for displaying an article of merchandise are disclosed, and in which like reference characters indicate the same or similar parts.

[0009] FIG. 1 is a side view of a merchandise security system for displaying and protecting an article of merchandise according to an embodiment of the invention.

[0010] FIG. 2 is a partial perspective view of a merchandise security system according to one embodiment of the present invention.

[0011] FIG. 3 is a perspective view of the base according to one embodiment of the present invention.

[0012] FIG. 4 is a partial perspective view of the base shown in FIG. 3.

[0013] FIG. 5 is another partial perspective view of the base shown in FIG. 3.

[0014] FIG. 6 is a front view of a merchandise security system according to one embodiment of the present invention.

[0015] FIG. 7 is a front view of a recoiler according to one embodiment of the present invention.

[0016] FIG. 8 is a perspective view of a base according to one embodiment of the present invention.

[0017] FIG. 9 is a rear view of the base shown in FIG. 8.

[0018] FIG. 10 is a side view of a base and a recoiler according to one embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0019] One or more embodiments of a merchandise security system for displaying an article of merchandise are shown in the accompanying drawing figures and described below. The article of merchandise is typically a display model or an operational sample of electronic merchandise, such as portable telephones, smart phones, computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like, for a customer to examine before making a decision whether to purchase the article. The article of merchandise is typically displayed in a manner that permits a prospective purchaser to evaluate the operation and features of the merchandise, while protecting the merchandise from theft. In one embodiment, a sensor may be attached to the article of merchandise for detecting various alarming conditions, such as the article being removed from the sensor. A cable may be operably engaged with the sensor at one end, while the opposite end may

be secured to a recoiler. As explained in further detail below, the sensor may also be configured to detect an alarming condition of the cable, such as a cutting, severing, removing, or detaching of the cable.

[0020] According to one embodiment shown in FIG. 1, the security system 10 generally comprises a sensor 12 configured to be secured to an item of merchandise 14. The sensor 12 may be electrically connected to a connector 17 that is configured to electrically connect to an input jack of the item of merchandise 14. The security system 10 may also include a base 18 that is configured to removably support the sensor 12 and the item of merchandise 14 thereon. In some embodiments, the base 18 and the sensor 12 include one or more contacts 28, 40 for facilitating contact charging when the sensor is supported on the base (see, e.g., FIGS. 1 and 8). In addition, the security system 10 also includes a cable 20 that is coupled to the sensor 12 at one end and operably engaged with a recoiler 22 at an opposite end. As explained in further detail below, in some embodiments, a sense circuit or loop defined through the cable 20 and the sensor 12 may be electrically isolated from any charging circuit used to charge the sensor 12 and/or the item of merchandise 14. As such, the sense loop may be used to detect various security events associated with the cable 20, such as the cable being cut, shorted, and/or disconnected. The charging circuit allows for charging of the item of merchandise 14 and/or a power source 46 carried by the sensor 12 and/or the base 18. The sensor 12 may also be used to detect security events associated with the sensor and/or the item of merchandise 14, such as the item of merchandise being removed from the sensor.

[0021] The sensor 12 may be secured to the item of merchandise 14 using any desired technique, such as an adhesive and/or mechanical brackets. The sensor 12 may have a variety of shapes and sizes for being secured to the item of merchandise 14. In one embodiment shown in FIG. 1, the sensor 12 may include a sensing device 15, such as a pressure or plunger switch, for detecting removal of the item of merchandise 14. In addition, the connector 17 may be configured to be removably inserted into the input jack of the item of merchandise 14. Thus, the sensor 12 and the item of merchandise 14 may be electrically connected via the connector 17. The sensor 12 may include a printed circuit board (PCB) 21, circuitry, or the like. For example, the sensor 12 may include charging circuitry for facilitating power transfer between the base 18 and the item of merchandise 14. The connector 17 may be electrically connected to the PCB 21 using various techniques, such as via a cable 16. In the illustrated embodiment, the connector 17 is mounted to

and extends from the sensor 12 but could be positioned at other locations depending on the location of the input port of the item of merchandise 14.

[0022] As noted above, the sensor 12 may include one or more electrical contacts 28. In some embodiments, the sensor 12 includes a plurality of electrical contacts 28. The electrical contacts 28 may be in electrical communication with the PCB 21 in the sensor 12 and the connector 17. Alternatively, the electrical contacts 28 may be electrically connected to only the connector 17. In some embodiments, the sensor 12 may not supply power to the item of merchandise 14 when the item is lifted from the base 18. Rather, the item of merchandise 14 may operate using its own power source when lifted from the base 18.

[0023] The base 18 may be configured to be supported by a fixed support or display surface 25, such as a counter, shelf, fixture, or the like. The base 18 may be secured to the support surface 25 using any desired technique such as an adhesive, brackets, and/or fasteners. The base 18 may include one or more magnets 34 or magnetic material, and the sensor 12 may include one or more magnets 36 or magnetic material for releasably holding the sensor on the base. The magnets 34, 36 may aid in aligning the item of merchandise 14 in a desired display orientation.

[0024] The security system 10 may include a recoiler 22 and a cable 20 as discussed above. The base 18 may include an opening for receiving the cable 20. As such, the cable 20 may be extended through the opening when the sensor 12 and the item of merchandise 14 are lifted from the base, and the cable may be retracted through the opening when the sensor and the item of merchandise are returned to the base. The recoiler 22 may be spring biased in some embodiments such that the cable 20 is automatically retracted within the recoiler. The recoiler 22 may be mounted to an underside of the support surface 25 (see, e.g., FIG. 1), although in other embodiments, the recoiler may be housed within the base 18 and mounted on top of the support surface. Furthermore, the recoiler 22 may be in electrical communication with the cable 20. In this regard, the cable 20 may include one or more electrical conductors extending along the length of the cable. In some cases, the cable 20 may include a pair of conductors for defining a sense loop or circuit and conducting an electrical signal. In other cases, the cable 20 may include a single conductor, such as an optical conductor for conducting an optical signal (e.g., a fiber optic cable).

[0025] As discussed above, the base 18 may include one or more electrical contacts 40. The contacts 28, 40 of the base 18 and the sensor 12 are configured to align with one another and contact one another when the sensor is supported on the base. Thus, the base 18 and the sensor 12

are in electrical communication with one another when the sensor is supported on the base. The base 18 may be electrically connected to a power source 38 which is configured to provide power to the base and/or the one or more electrical contacts 40 in the base. The base 18 may include one or more printed circuit boards (PCB) 21, circuitry, or the like for facilitating power transfer. The base 18 may also include charging circuitry that is configured to facilitate power transfer from the external power source 38 and the electrical contacts 40. Thus, when the sensor 12 is supported on the base 18, power is able to be transferred between the contacts 28, 40 and to the sensor 12. The connector 17 is electrically connected to the sensor contacts 28 as power is delivered such that power is provided to the item of merchandise 14. Therefore, the item of merchandise 14 may be powered by power transferred thereto and may be used to charge a battery associated with the item of merchandise. In some embodiments, any voltage adaption occurs prior to being delivered to the sensor 12. Voltage adaption may be needed in order to accommodate different items of merchandise 14 that require different operating voltages. Any voltage adaption may occur prior to power being provided to the contacts 28 on the sensor 12. Thus, the sensor 12 and adapter cable 16 do not provide any voltage adaption. However, in other embodiments, the sensor 12 may include a resistor or other identifier that detects the voltage requirements of the item of merchandise 14 which provides a signal to the base 18 for adjusting the voltage as necessary before providing power to the sensor. Although the aforementioned embodiments describe that power may be transferred via contact charging, it is understood that other techniques could be used to transfer power to sensor 12 and the item of merchandise 14. For example, inductive charging functionality could be employed for transferring power. Moreover, in some cases, the cable 20 may include one or more conductors for transferring power to the sensor 12 and/or the item of merchandise 14.

[0026] In some cases, the base 18 and the sensor 12 may include an electrical contact that detects that the sensor is lifted off of the base. For example, the sensor 12 and base 18 may each include a contact that is configured to engage one another when the sensor is supported on the base. These contacts may not transfer power. However, the contact on the base 18 may communicate with the PCB to indicate when the sensor 12 has been lifted off of the base and to cease transferring power to the electrical contacts 28, 40. This arrangement of contacts may reduce arcing and power surges when the sensor 12 is placed back on the base 18 since power will no longer be transferred to the contacts on the base after the sensor is lifted.

[0027] The base 18 may include one or more openings 32 defined about its perimeter for facilitating sound transfer from within the base. Thus, where the base 18 includes an alarm 48, the openings 32 may allow for sound to be more readily transmitted from the base. In the embodiment shown in FIG. 3, four openings 32 are defined about the perimeter of the base 18 adjacent to the display surface 25, although any number of openings may be used if desired. For example, FIGS. 8-9 show another embodiment of a base 18'. In this embodiment, the base 18' has a different base configuration, namely, a pair of openings 32 defined on the front and rear surfaces of the base.

[0028] Furthermore, the base 18, 18' may include one or more auxiliary ports 35 for connecting to corresponding auxiliary devices for the item of merchandise 14 (see, e.g., FIGS. 9-10). Thus, in addition to securing an item of merchandise 14 and electrically connecting to a power cord and associated input power source 38, the base 18, 18' may be configured to electrically connect to an auxiliary device, such as, for example, an auxiliary device for the item of merchandise 14 on display (e.g., a stylus, speaker, keyboard, Bluetooth device, etc.). The auxiliary port 35 may be an input port (e.g., a micro-USB port) that is configured to receive a corresponding input connector 37 on the auxiliary device (see, e.g., FIG. 10). When the auxiliary device is connected to the auxiliary port 35, the auxiliary port may be configured to receive power, if necessary, and/or define a sense loop that may be used to detect various security events associated with the auxiliary device, such as the auxiliary device being removed from the base 18, 18' in an unauthorized manner. The auxiliary port 35 may be part of the same sense loop defined with the sensor 12 and the cable 20, or may define a separate sense loop. In the instance where the auxiliary port 35 is configured to provide power, the charging circuit may be configured to determine the power requirements of the auxiliary device and provide the necessary power level to effectuate charging. In some cases, the charging circuit may be configured to reduce the amount of power being provided to the sensor 12 and/or the item of merchandise 14 so that power may be provided to the auxiliary device while still facilitating charging of the sensor and/or the item of merchandise. Therefore, the auxiliary port 35 allows an auxiliary device to be displayed and used by a prospective consumer in connection with an item of merchandise 14, while the retailer is able to also power and protect both the item of merchandise 14 and the auxiliary device from theft with a single security device rather than requiring two separate security devices.

[0029] It is understood that the cable 20 may be any suitable cord, tether, or the like. In addition, the cable 20 may include one or more electrical conductors for transmitting electrical,

security, and/or communication signals. In addition, the cable 20 may be a single strand, multi-strand, or braided. The cable 20 may be flexible to facilitate extension and retraction relative to the recoiler 22, and in some embodiments, may be formed of a cut-resistant material. Furthermore, the cable 20 may have various cross sections, such as round or flat.

[0030] In one embodiment, an end of cable 20 may be mechanically and optically connected to the sensor 12. Thus, the cable 20 may not be electrically connected to the sensor 12 in any way, and the conductors in the cable are electrically isolated from the power transmitted to the sensor and the item of merchandise 14. In one embodiment, the sensor 12 may define an opening for receiving an end of the cable 20. In some embodiments, the end of the cable 20 includes an optical transceiver 42 for communicating with the sensor 12 and/or the item of merchandise 14. Likewise, the sensor 12 may include an optical transceiver 42 for communicating with the optical transceiver at the end of the cable 20 (see, e.g., FIG. 1). The optical transceivers 42 may be used to transmit optical signals in predetermined sequences or patterns and/or receive optical signals and convert the optical signals into electrical signals. In addition, the optical transceivers 42 may be separated by an air gap so as to not be in physical contact with one another and such that the optical transceivers are electrically isolated from one another. The cable 20 may include one or more conductors for providing power to the optical transceiver 42, as well as sending and receiving signals to and from the optical transceiver in the sensor 12. Similarly, the sensor 12 may include a power source 46 that is configured to provide power to the sensor for interpreting signals provided by the optical transceiver 42, as well as power the optical transceiver for sending and receiving optical signals. Furthermore, the end of the cable 20 may be mechanically coupled to the sensor 12 using a variety of techniques and may be configured to rotate or swivel in some embodiments. In one example, the optical transceivers 42 may be configured to rotate relative to one another. Moreover, the conductors in the cable 20 may be connected to the optical transceiver 42 and a printed circuit board (PCB) or circuitry at one end. Similarly, the connector 17 may include conductors connected to the optical transceiver 42 and a printed circuit board or circuitry in the sensor 12. The end of the cable 20 may include a releasable connector that is configured to contain the optical transceiver 42 and PCB. The releasable connector may be configured to mechanically engage a cooperating connector on the sensor 12. Moreover, FIG. 1 shows that in the case where the charging circuit and sense loop are separate and electrically isolated from another, a cable 44 may be used to electrically connect the contacts 40 and the input power source

38 along with any other data connections.

[0031] The optical transceivers 42 may be used to define a sense loop and detect various security events, such as when the cable 20 is cut or removed from the sensor 12 and/or the connector 17 is removed from item of merchandise 14 in an unauthorized manner. It is understood that various types of sensing techniques may be used for detecting when the cable 20 is attached or detached from the sensor 12 and/or item of merchandise 14, as well as when the connector 17 is removed from the item of merchandise. For example, the optical transceiver 42 at the end of the cable 20 may communicate an optical signal to the optical transceiver in the sensor 12 where the sensor can determine that the item of merchandise 14 and the cable 20 are secure. The optical transceiver 42 in the sensor 12 may then communicate an optical signal to the optical transceiver at the end of the cable 20 to indicate that the item of merchandise 14 is secure. The optical signals may be coded in a particular manner that is recognizable and/or expected for determining whether a security event has occurred. Should the optical signals be interrupted or an unexpected optical signal is received, the base 18 or other alarm unit may detect the interruption and generate an alarm signal. For example, the base 18 or other alarm unit may be configured to generate an audible and/or a visible alarm. For example, FIG. 1 shows that the base 18 may include an alarm 48, such as a piezoelectric device, for generating an audible alarm. The sensor 12 may likewise or alternatively include an alarm 48 for generating an audible and/or a visible alarm. The base 18 may be configured to be armed and/or disarmed via a key, such as a wireless key. For instance, FIG. 1 shows that the base 18 may include a port 45 for facilitating communication with a key. In some embodiments, the optical transceiver(s) is similar to that disclosed in U.S. Provisional Application No. 62/167,382, entitled Merchandise Security System with Optical Communication and filed on May 28, 2015, and U.S. Application No. 15/163,846, entitled Merchandise Security System with Optical Communication and filed on May 25, 2016, the entire contents of which are incorporated herein by reference.

[0032] FIGS. 2-7 illustrate embodiments of a recoiler 22. The recoiler 22 generally includes a spool 52 or rotatable member that is configured to rotate within the base 18. The base 18 defines an opening 56 configured to receive the cable 20 so that the cable can be extended and retracted relative to the base as the cable is unwound from and wound onto the spool 52. The cable 20 may be wound about the spool 52 along an axis "L", which may be perpendicular or about perpendicular (e.g., 85-90 degrees) to the axis of the cable 20. As shown in FIG. 7, the outer surface of the spool

52 may include a helical recess 55 that extends along at least a portion of the length of the spool. The helical recess 55 may be sized and configured to receive a portion of the cable 20 as it is wound about the spool 52. The helical recess 55 may define a plurality of windings about the spool 52. As the spool 52 is rotated via tension being applied on the cable 20, the spool is able to rotate about a spindle 58 or other support member. A spring may be used to urge the cable 20 back into the housing 54 as tension is removed from the cable. In some examples, the helix angle of the helical recess 55 is between 0 and about 20 degrees (+/- 1 degree), between 0 and about 10 degrees (+/- 1 degree), or between 0 and about 5 degrees (+/- 1 degree). Moreover, in some embodiments, the pitch of the helical recess 55 may be between 0 and about 5 mm (+/- 1 mm), between 0 and about 10 mm (+/- 1 mm), or between 0 and about 15 mm (+/- 1 mm). In some cases, the spool 52 may be similar to that disclosed in U.S. Provisional Application No. 62/189,274, entitled Winch Recoiler for a Merchandise Security Device and filed on July 7, 2015, the entire contents of which are incorporated herein by reference.

[0033] In some cases, at least one winding of cable 20 is configured to be wound about the spool 52, and a plurality of windings may be defined about the spool as the cable is wound on the spool. In one example, the length of the spool 52 may be about the same as the outer diameter of the spool, or the length of the spool may be longer than the outer diameter of the spool. The cable 20 may be configured to wrap about the helical recess 55 from one end of the spool 52 to the other end of the spool. In one embodiment, the helical recess 55 may allow for a single row of cable 20 to be wound about the spool 52 in a predetermined helical direction. Once the cable 20 has been wound about the helical recess 55 in one helical direction as the cable is withdrawn into the base 18, the cable is configured to wind about the spool and the first layer of cable in a second helical direction to form a second layer of cable. Thus, the helical recess 55 may facilitate a first row of cable 20 being wrapped about the spool 52 in one direction, and the cable 20 may be biased towards a direction opposite to the first helical direction such that the cable forms a second layer of cable. Due to the helical recess 55 urging the cable 20 in a first helical direction, the cable may be biased to wind in an opposite direction once the cable has been wound to the end of the helical recess. Furthermore, FIG. 6 shows that the second layer of cable 20 may have a length that is about half (e.g., +/- 5 mm) of the first layer of cable. In this way, the second layer of cable 20 may end at about the midpoint (e.g., +/- 5 mm) of the spool 52 thereby allowing the end of the cable to align with the opening 56 of the base 18. As such, the helical recess 55 may allow for more compact

and orderly cable management within the base 18.

[0034] The recoiler 22 may also include a spring 64 in some embodiments. For example, the spring 64 may be secured to one end of the spool 52. In one embodiment, the spring 64 is a variable-force or variable-torque spring, a constant-force or constant-torque spring, or a power spring. When tension on the cable 20 is removed, the spring force of the spring 64 causes the spool 52 to rotate in an opposite direction thereby returning the cable 20 onto the spool.

[0035] As discussed above, the cable 20 may include one or more electrical conductors and the base 18 may facilitate power transfer to the sensor 12. In order to facilitate an electrical connection with the cable 18, such as for transmitting and receiving power, security, and/or data signals, the recoiler 22 may include a slip ring 72. The slip ring 72 may be electrically connected to the cable 20 and a printed circuit board 21, such as with one or more electrical wires. The slip ring 72 may be configured to rotate with the spool 52 in some cases. And FIGS. 4 and 7 show that in some embodiments the slip ring 72 may be mounted at an end of the spool 52 opposite the spring 64.

[0036] In another embodiment, a locking feature may be provided for locking the sensor 12 to the base 18. In this regard and with reference to FIG. 5, a lock mechanism 80 may be configured to lock the sensor 12 to the base 18 when the sensor is seated on the base 18 thereby prevent the spool 52 from rotating and, therefore, the cable 20 from being retracted relative to the base. Such a lock mechanism 80 may be useful for retailers who wish to secure the sensor 12 and item of merchandise 14 to the base 18, such as after hours, since the cable 20 will be inaccessible due to the inability to lift the sensor from the base. In the illustrated embodiment, the lock mechanism 80 includes a locking member 82 that is configured to rotate between locked and unlocked positions. In this instance, the locking member 82 may be a proprietary fastener. In another embodiment, the lock mechanism 80 may be configured to engage the spool 52 to prevent rotation thereof.

[0037] Embodiments of the present invention may provide several advantages. For example, the recoiler allows greater flexibility in installing the recoiler since the recoiler may be disposed entirely within the base. In addition, the size of the base may be more flexible given that the length of the recoiler may be reduced where the cable is configured wrap about itself in an orderly manner. Moreover, the configuration of the spool and helical recess may provide for a better user experience given that the pull force on the cable may be more constant and less than conventional

recoilers.

[0038] The foregoing has described one or more embodiments of recoilers, merchandise security systems, and methods for displaying and protecting an article of merchandise from theft. Those of ordinary skill in the art will understand and appreciate that numerous variations and modifications of the invention may be made without departing from the spirit and broad scope of the invention. Accordingly, all such variations and modifications are intended to be encompassed by the appended claims.

That which is claimed is:

1. A merchandise security system for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor;

a base that removably supports the sensor and the article of merchandise thereon, wherein the base further comprises an auxiliary port that operably connects to the auxiliary device; and

a cable operably connected to the sensor and the base,

wherein the cable and the sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise, and

wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

2. The merchandise security system of Claim 1, wherein the auxiliary port is configured to receive an input connector operably connected to the auxiliary device.

3. The merchandise security system of Claim 2, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting removal of the input connector from the auxiliary port.

4. The merchandise security system of Claim 1, wherein the base is configured to transfer power to the auxiliary device.

5. The merchandise security system of Claim 1, wherein each of the base and the sensor comprises one or more electrical contacts that are configured to contact one another when the sensor is seated on the base for transferring electrical power for charging the article of merchandise.

6. The merchandise security system of Claim 1, further comprising a lock mechanism configured to lock the sensor to the base in a locked position when the sensor is seated on the base to thereby prevent the sensor from being lifted off of the base and to be unlocked to allow removal of the sensor from the base in an unlocked position.

7. The merchandise security system of Claim 1, wherein the auxiliary port is a USB-type input port.

8. The merchandise security system of Claim 1, wherein the auxiliary port is configured to operably connect to an auxiliary device comprising a stylus, a speaker, a keyboard,

or a Bluetooth device each configured to operate with the article of merchandise.

9. The merchandise security system of Claim 1, wherein the cable comprises one or more electrical conductors defining a sense loop for conducting the security signal.

10. The merchandise security system of Claim 9, wherein the sense loop is further defined in the auxiliary port.

11. The merchandise security system of Claim 1, wherein the security signal is configured to be transmitted through the cable and the auxiliary port for detecting the cable being cut, shorted, or disconnected.

12. The merchandise security system of Claim 1, wherein each of the sensor and the base comprises an alarm for generating an audible and/or a visible alarm.

13. The merchandise security system of Claim 1, wherein the base is configured to be disarmed with a wireless key.

14. The merchandise security system of Claim 1, further comprising a recoiler comprising a rotatable member, wherein the cable is configured to be unwound from and wound on the rotatable member as the cable is extended and retracted.

15. The merchandise security system of Claim 1, wherein the base comprises a top surface for supporting the sensor, a bottom surface for being positioned on a display surface, a side surface, and a rear surface, wherein the auxiliary port is disposed on the rear surface.

16. The merchandise security system of Claim 1, wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor.

17. The merchandise security system of Claim 16, wherein the cable comprises a releasable connector configured to releasably engage the sensor, wherein the releasable connector is configured to contain the optical transceiver.

18. The merchandise security system of Claim 16, wherein the cable comprises one or more electrical conductors for providing power to the optical transceiver.

19. The merchandise security system of Claim 16, wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable.

20. The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the cable has been cut or disconnected.

21. The merchandise security system of Claim 19, further comprising a connector

configured to electrically connect the sensor to the article of merchandise, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to determine if the connector has been removed from the article of merchandise.

22. The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to rotate relative to one another.

23. The merchandise security system of Claim 19, wherein the optical transceiver of the cable and the optical transceiver of the sensor are configured to communicate with one another to define a sense loop through the cable.

24. A method for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft, comprising:

securing a sensor to the article of merchandise that detects removal of the article of merchandise from the sensor;

attaching a base to a support surface that removably supports the sensor and the article of merchandise thereon, the base comprising an auxiliary port;

connecting a cable to the sensor; and

operably connecting the auxiliary device to the auxiliary port, wherein the cable and the sensor communicate optical signals with one another for detecting a security event associated with the sensor, the cable, or the item of merchandise, and wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base.

ABSTRACT

Embodiments of the present invention are directed to recoilers, merchandise security systems, and methods for displaying and protecting an article of merchandise from theft. In one example, the merchandise security system includes a sensor configured to be secured to the article of merchandise and a base for removably supporting the sensor and the item of merchandise thereon. The system also includes a recoiler operably coupled to the sensor. The recoiler includes a rotatable member defining a helical recess. The system further includes a cable configured to connect to the sensor and to be unwound from and wound on the rotatable member as the cable is extended and retracted. The cable is configured to be extended from the recoiler in response to the sensor being lifted off of the base, and the cable is configured to be retracted into the recoiler in response to the sensor being moved to a seated position on the base. The helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member.

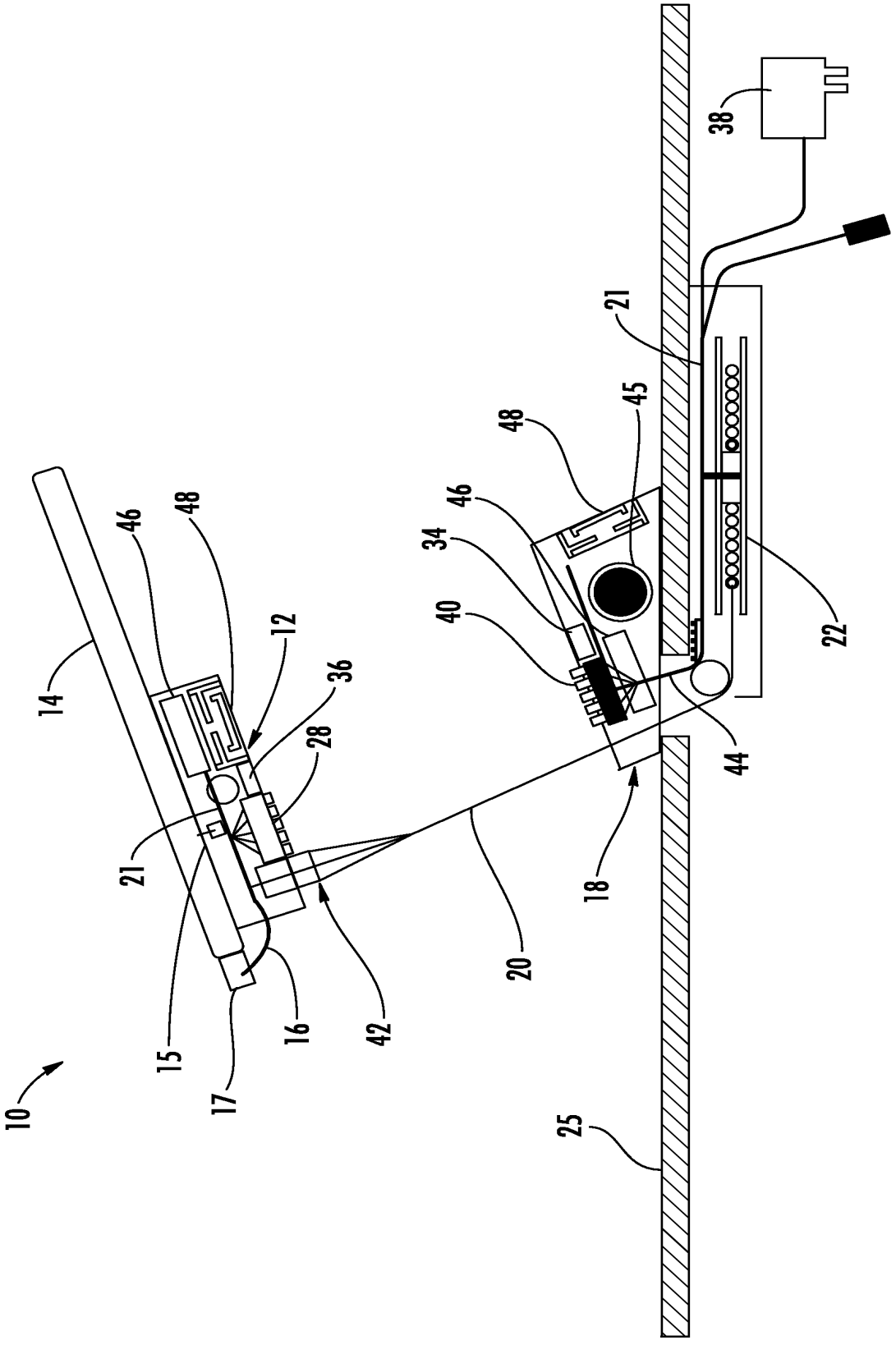

FIG. 1

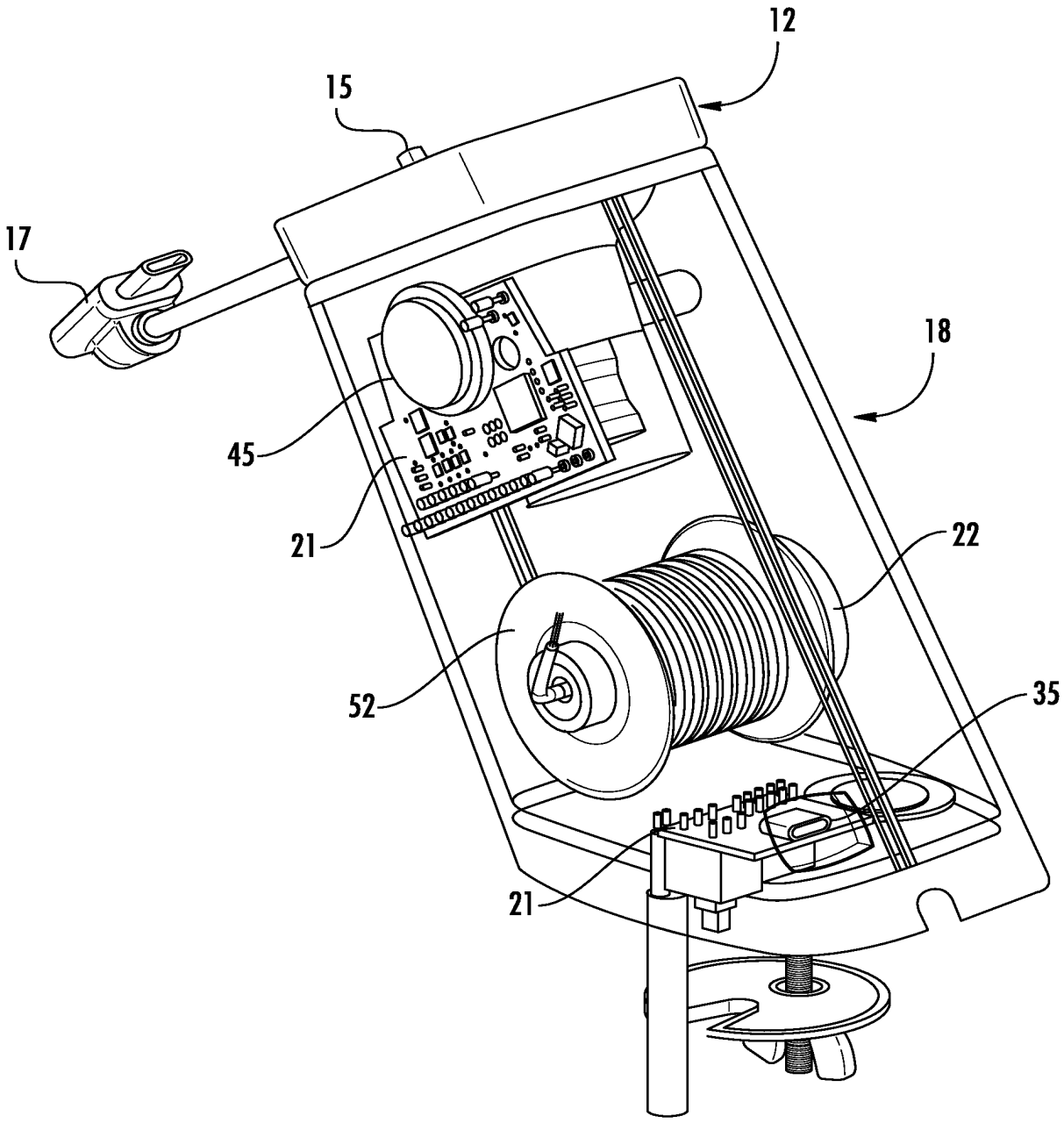

FIG. 2

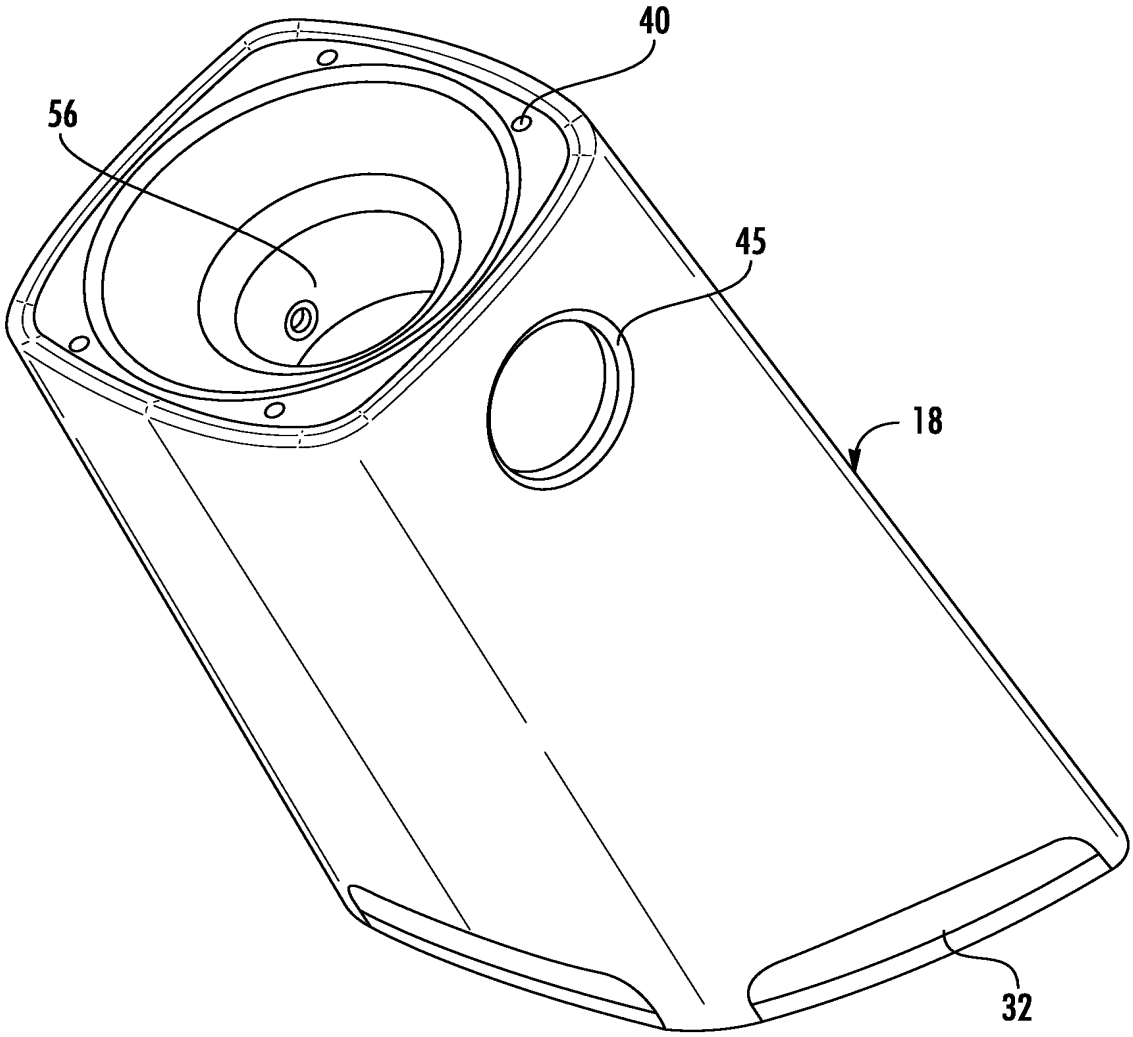

FIG. 3

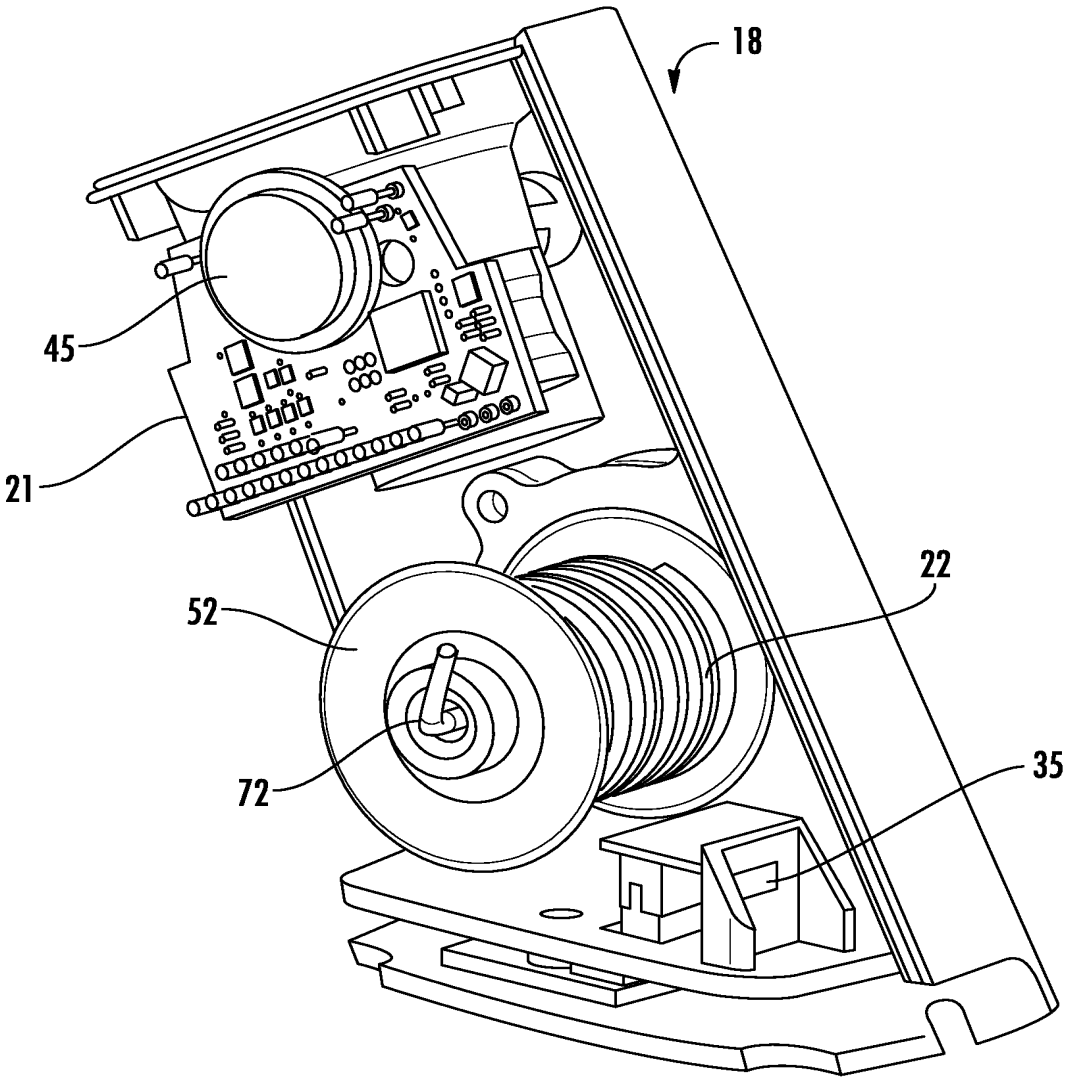

FIG. 4

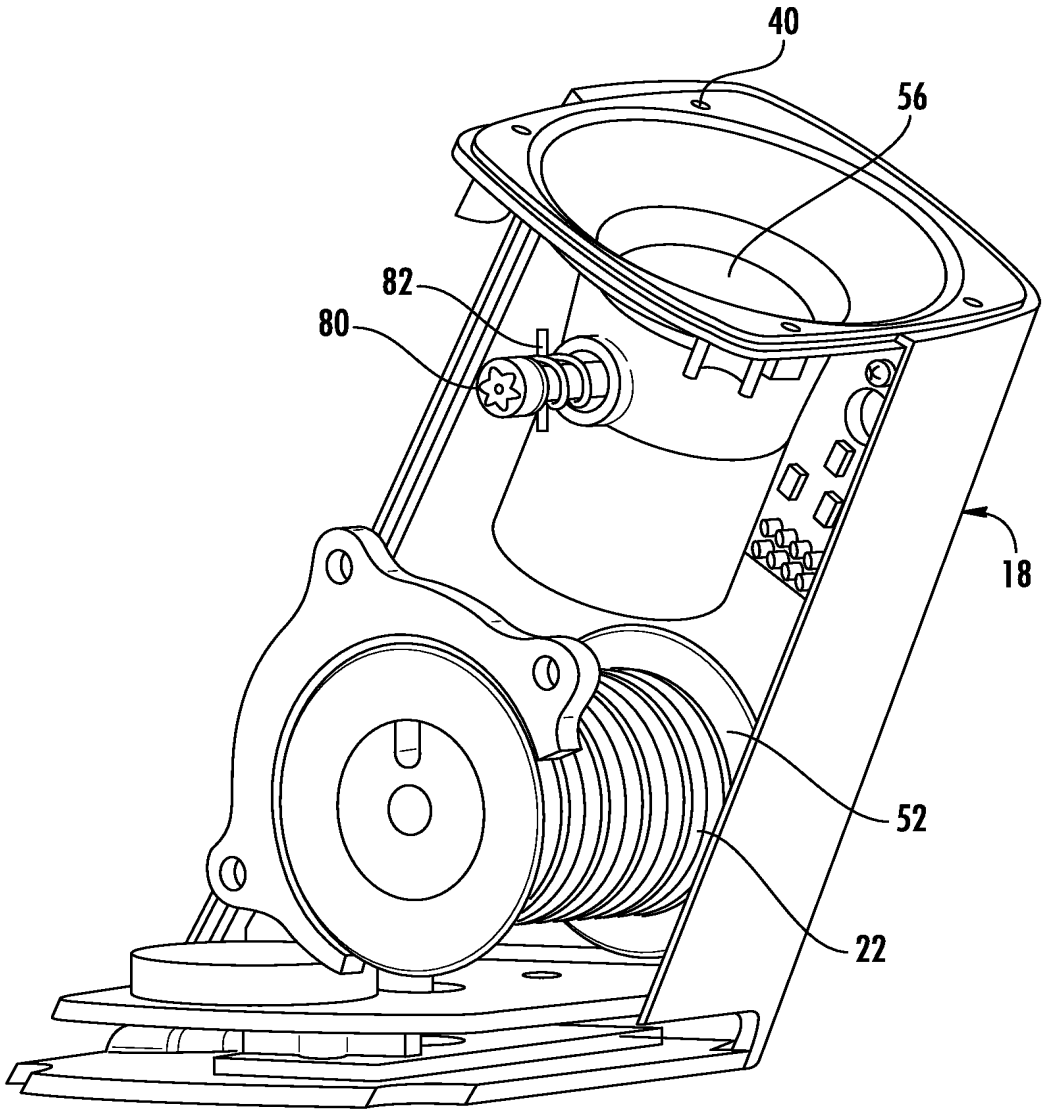

FIG. 5

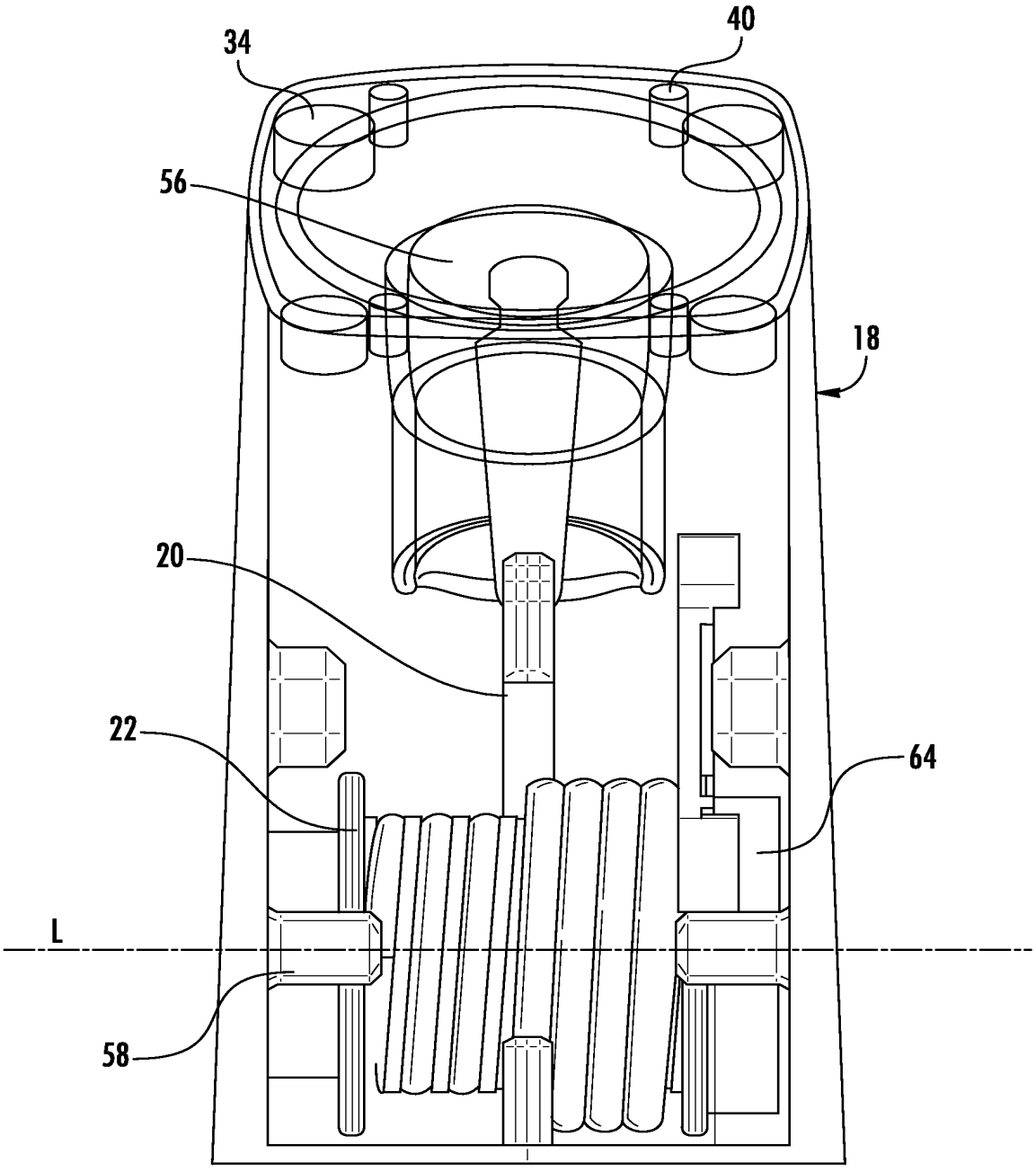

FIG. 6

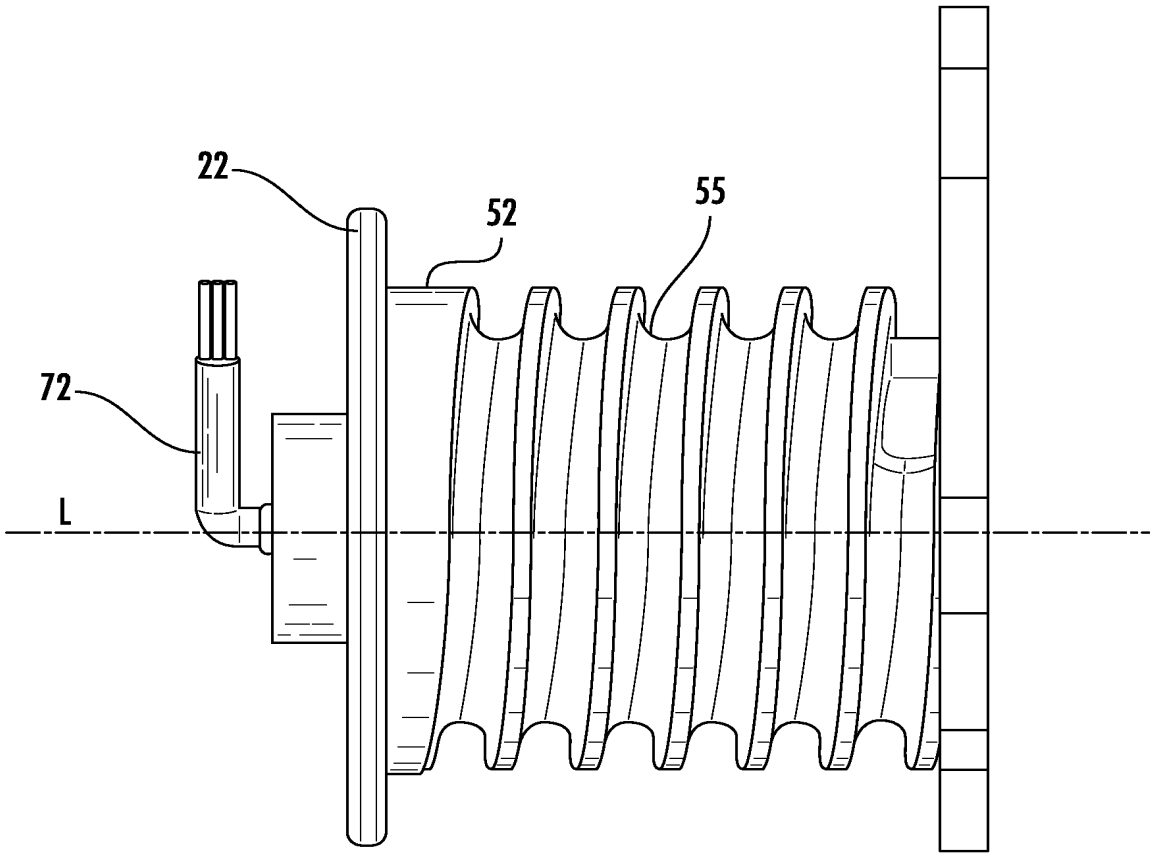

FIG. 7

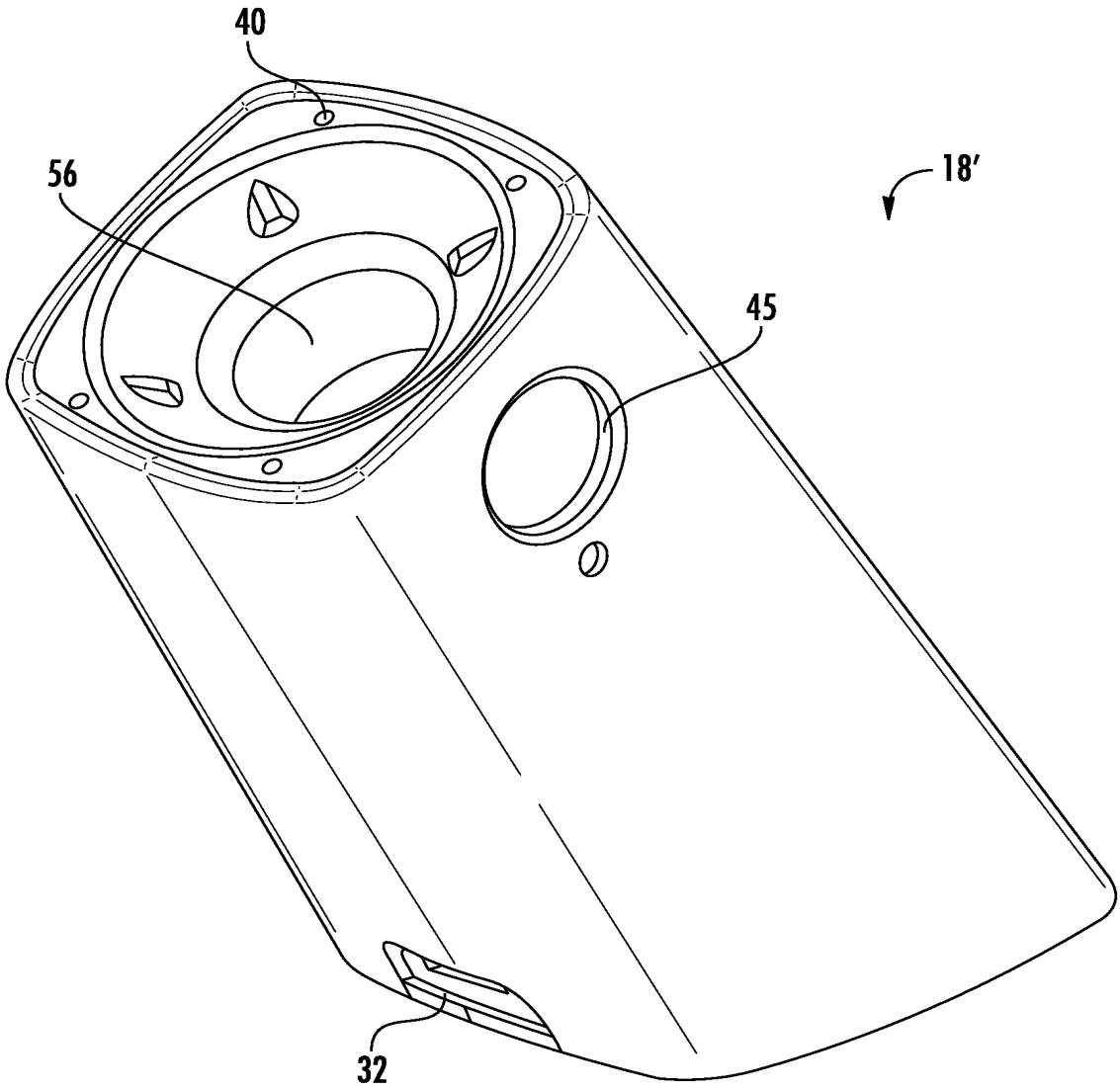

FIG. 8

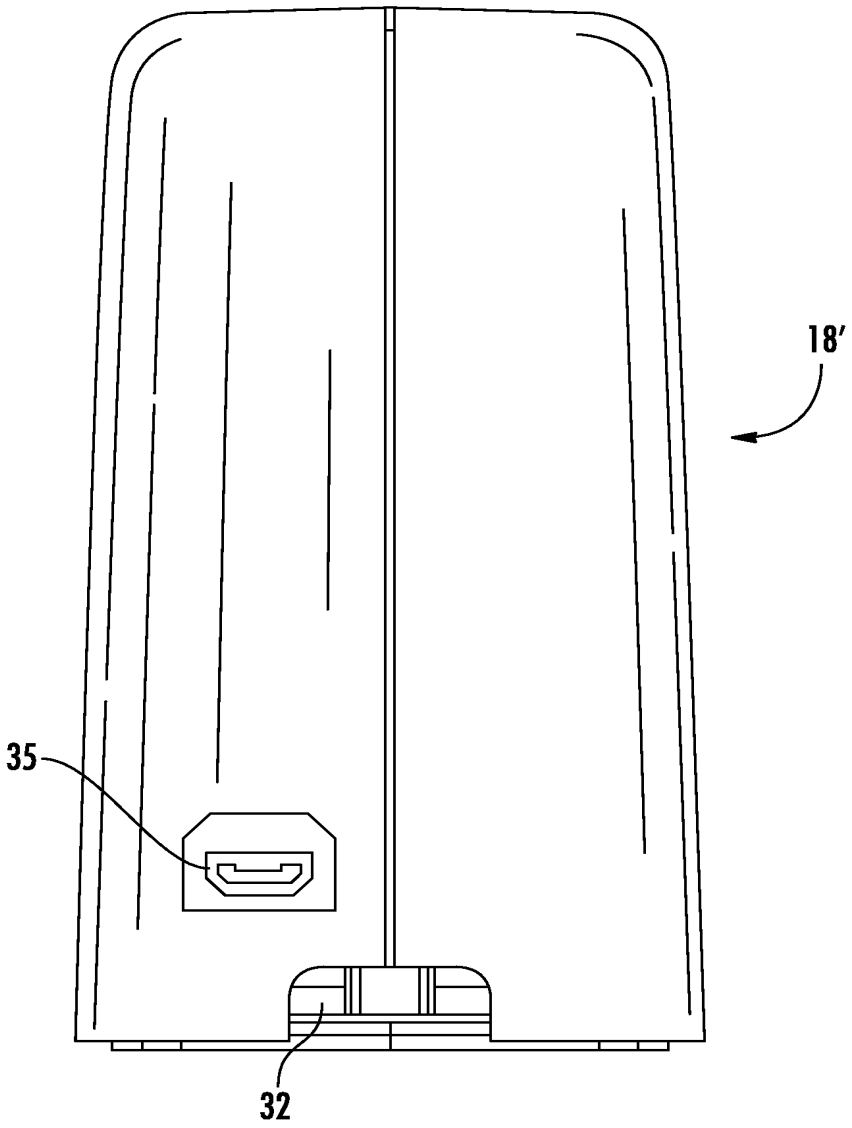

FIG. 9

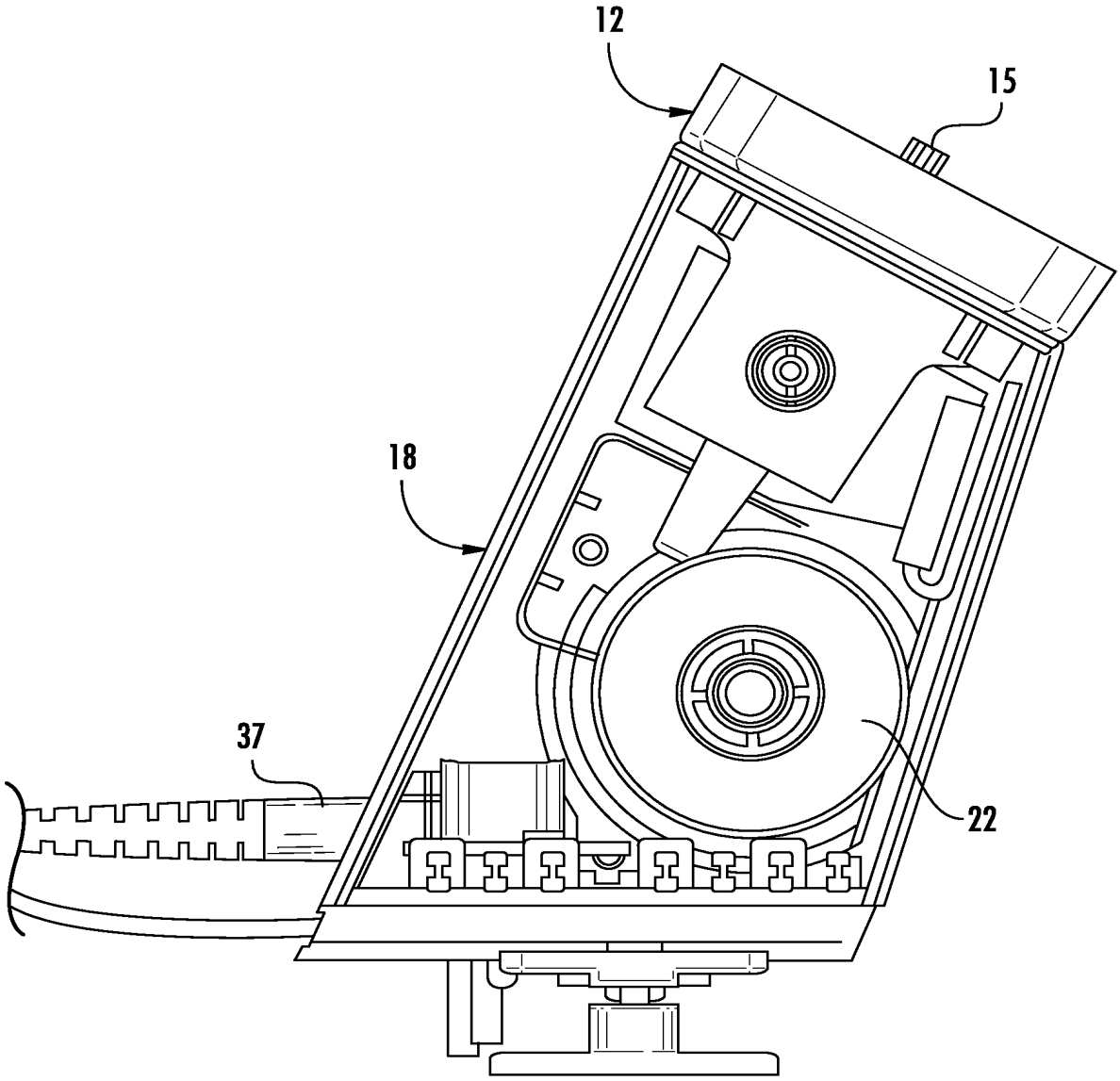

FIG. 10

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	5	Extended European Search Report from corresponding European Patent Application No. 16855999.5, dated February 9, 2018 (10 pages).	

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That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Trent A. Kirk/	Date (YYYY-MM-DD)	2018-03-20
Name/Print	Trent A. Kirk	Registration Number	54,223

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(71) **Applicant**: **INVUE SECURITY PRODUCTS INC.** [US/US]; 15015 Lancaster Highway, Charlotte, NC 28277 (US).

(72) **Inventors**: **TAYLOR, Gary, A.**; 3455 Dobys Bridge Road, Fort Mill, SC 29715 (US). **BERGLUND, David, N.**; 4650 Bright Road, Lot 11, Charlotte, NC 28214 (US).

(74) **Agent**: **KIRK, Trent, A.**; Invue Security Products Inc., 15015 Lancaster Highway, Charlotte, NC 28277 (US).

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(54) **Title**: MERCHANDISE DISPLAY SECURITY DEVICE WITH ANTENNA

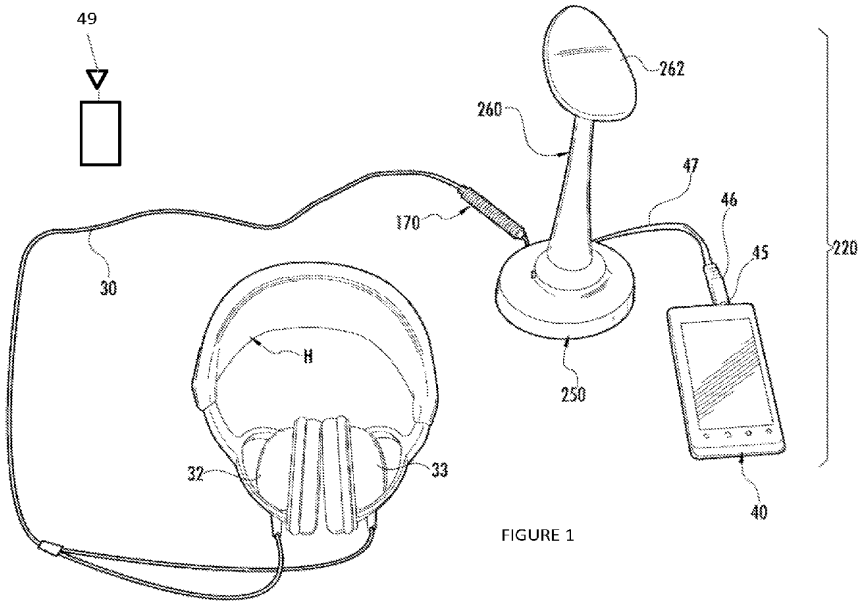

FIGURE 1

(57) **Abstract**: In one embodiment, a merchandise display security device for an article of merchandise is provided. The security device includes a controller for monitoring the status of a cable and a radio receiver in electrical communication with the controller. The radio receiver is configured to cooperate with the cable to provide an antenna for detecting one or more signals. The controller is configured to activate an alarm based on one or more signals detected by the antenna.

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MERCHANDISE DISPLAY SECURITY DEVICE WITH ANTENNA

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of the filing date of U.S. Provisional Application No. 61/888,104, filed on October 8, 2013, the disclosure of which is incorporated herein by reference in its entity.

FIELD OF THE INVENTION

[0002] Embodiments of invention relate generally to merchandise display systems for displaying and protecting articles of merchandise from theft.

BACKGROUND OF THE INVENTION

[0003] Retailers routinely display relatively expensive electronic articles of merchandise, including media players and headphones, for a potential purchaser to examine before making a purchase. Retailers often desire the electronic articles of merchandise to be displayed in an operational mode so that the potential purchaser can evaluate (e.g. test) the features and function of the merchandise as well. For example, the retailer might desire to permit a potential purchaser to experience the sound quality of audio equipment and components, such as MP3 players and headphones. At the same time, the retailer does not want the articles of merchandise being displayed to be stolen or removed from the display area by an unauthorized person. Accordingly, the articles of merchandise are oftentimes physically attached and/or electrically connected to a merchandise display security device that monitors and protects the article from the theft or removal. Such merchandise display security devices typically include a security sensor attached to the article of merchandise that houses a sensor for monitoring whether the article remains securely attached to the security sensor. In the event that the article of merchandise is detached from the security sensor, an audible and/or visible alarm is activated to alert store personnel of a possible theft or removal.

[0004] Most audio players are of a sufficient size and have a suitable surface for

attaching a security sensor to the display article of merchandise without the security sensor interfering with the manipulation and operation of the audio player by the potential purchaser. In addition, a relatively short power cord can be provided between the audio player and the security sensor that does not become entangled with an electrical sense cord of the merchandise display security device. Headphones, on the other hand, oftentimes have little or no surface geometry suitable for attaching a security sensor, such as a relatively flat surface large enough to securely attach the mounting surface of the security sensor and rigid enough to prevent the introduction of an unauthorized removal tool. Headphones also typically have a relatively long audio cord that electrically connects the headphones to an audio player. The audio cord can easily become entangled with the sense cord that extends between the security sensor and a base, or display stand, of the merchandise display security device. Furthermore, the presence of a sense cord from the merchandise display security device in addition to the audio cord results in a significantly greater number of electrical cables that detracts from the visual aesthetics of the display area. However, if only the audio player is attached to a security sensor electrically connected to the merchandise display security device, the audio cord of the headphones can simply be unplugged from the audio player and the headphones stolen or removed from the display area without activating an alarm of the security device. Moreover, attempting to use a conventional sense signal through the headphones may compromise the audio signals.

BRIEF SUMMARY

[0005] Embodiments of the present invention are directed to merchandise display security devices and methods for articles of merchandise. In one embodiment, the merchandise display security device includes a cable and a controller for monitoring the status of the cable. The security device also includes a radio receiver in electrical communication with the controller. The radio receiver is configured to cooperate with the cable to provide an antenna for detecting one or more signals, and the controller is configured to activate an alarm based on one or more signals detected by the antenna.

[0006] In another embodiment, a merchandise display security device includes a

cable configured to conduct at least one radio signal and a controller for monitoring the status of the cable. The security device also includes a radio receiver in electrical communication with the controller, wherein the radio receiver is configured to cooperate with the cable to provide an antenna for detecting one or more radio signals. The controller is configured to activate an alarm based on one or more radio signals detected by the antenna.

[0007] In one embodiment, a method for securing an article of merchandise from theft is provided. The method comprises detecting one or more radio signals with an antenna operably engaged with a cable and storing the one or more radio signals. The method also includes detecting one or more current radio signals and comparing the one or more current radio signals to the one or more stored radio signals. The method further includes activating an alarm when a strength of the one or more of the current radio signals is less than the one or more stored signals.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of a merchandise display security device according to one embodiment of the present invention.

[0009] FIG. 2 is another perspective view of the merchandise display security device shown in FIG. 1.

[0010] FIG. 3 is a schematic of a merchandise display security device according to one embodiment of the present invention.

[0011] FIG. 4 is a schematic of a merchandise display security device according to another embodiment of the present invention.

[0012] FIG. 5 is a schematic of a merchandise security device according to one embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0013] Referring now to the accompanying drawing figures wherein like reference

numerals denote like elements throughout the various views, embodiments of merchandise security systems and methods for displaying and protecting an article of merchandise are shown. More particularly, some embodiments are provided for a merchandise display security device for displaying and protecting headphones, indicated generally by reference character H, from theft or removal. In some embodiments, the merchandise display security device is configured to activate an audible and/or visible alarm in the event that the headphones are separated from the security device. For example, the alarm may be activated when the audio cord of the headphones is unplugged or severed. In one embodiment, the merchandise display is configured to also detect the unauthorized removal or theft of a media device, indicated generally by reference character 40, for example, an audio or media player, a mobile phone, or any electronic device configured to output an audio signal. In addition, the merchandise display security device may be configured to display and protect the headphones H, while at the same time permitting a potential purchaser to evaluate the operation of the headphones H with various media devices 40, including the customer's own audio player. Although the following description is discussed in conjunction with headphones, it is understood that embodiments of the present invention are applicable to a variety of different types of articles of merchandise (e.g., cellular phones, tablets, computers, cameras, etc.).

[0014] FIG. 1 illustrates one embodiment of a merchandise display security device 220 for displaying and protecting headphones H from theft or removal by an unauthorized person from a display area of a retail store. The headphones H may be any conventional type, model or style having an audio cord 30 for electrically connecting the headphones to a media player 40 configured to produce an audio signal. Furthermore, headphones H may be supported on an optional display stand 260 in a desired orientation for display in a retail store.

[0015] As shown and described herein, the media player 40 is an audio player and the audio cord 30 is a conventional electrical cable comprising at least a pair of conductors for conducting an electrical audio signal from the audio player to the headphones H. In a conventional manner, the headphones H comprise a pair of earpieces 32, 33 (e.g. left and right), and a first conductor of the pair of conductors of the audio cord 30 is routed to a

speaker disposed within one earpiece 32, while a second conductor of the pair of conductors of the audio cord 30 is routed to the other earpiece 33. Alternatively, the first conductor and the second conductor of the audio cord 30 may both be routed to a first earpiece 32 and the second earpiece 33 may be electrically connected to the first earpiece through the headphones H via one or more additional conductors. Furthermore, the audio cord 30 may comprise a connector, such as an audio plug (not shown), for engaging a corresponding connector, such as an audio jack (not shown), provided on the headphones H. As shown herein, the audio cord 30 is hard-wired to the headphones H, and more particularly, to the earpieces 32, 33.

[0016] In one embodiment, the merchandise display security device 220 comprises an alarming base 250 and a display stand 260 attached to, or alternatively, removably supported on the alarming base. It is understood that the alarming base 250 and stand 260 may be a single component in some embodiments. Notably, the security device 220 does not comprise a security sensor attached to the headphones or the media player 40. Furthermore, the alarming base 250 is not mechanically or electrically connected to a security sensor or to a display stand. As a result, the need for a sense cord may be eliminated and the headphones are instead mechanically and electrically connected directly to the alarming base and the media player through the audio cord 30. In addition, the headphones H may be evaluated with different types, styles and models of media players 40, and more particularly, with various audio players, including an audio player provided by a potential purchaser of the headphones.

[0017] The alarming base 250 comprises an internal electrical control circuit, also referred to herein as power electronics and/or sensor electronics. The sensor electronics in the alarming base 250 may monitor the state of one or more sensors in a known manner. For example, the sensor electronics may monitor whether the headphones have become detached from the media device 40. The merchandise display security device 220 may include an audible and/or visible alarm in electrical communication with the electrical control circuit disposed within the alarming base 250 that is activated in response to a security event. The electronics disposed within the alarming base 250 monitor the status of the audio cord 30 and activate the alarm if the audio cord is severed

(e.g. electrical continuity along the conductors of the audio cord is interrupted), or if the audio cord is unplugged at the media player.

[0018] Accordingly, the control electronics and the sensor electronics may be disposed within the alarming base 250 of the security device. As such, the audio cord 30 electrically connects the headphones H directly to the control electronics and the sensor electronics disposed within the alarming base 250, as well as the media player 40. An excess length of the audio cord 30 may be coiled around and stored on a collecting spool 170. Furthermore, a cradle 262 may be formed on the display stand 260 opposite alarming base 250 to support the headphones H in a manageable and more aesthetically pleasing display.

[0019] In one embodiment, the audio player 40 comprises a conventional power input jack and a conventional audio output jack. The free end the audio cord 30 may include a connector, and in particular an audio plug 34 or 46, configured to engage a corresponding audio connector, and in particular an audio jack, of the media device 40. A portion 47 of the audio connector cord 30 may have a suitable connector 46, such as a conventional audio plug, at one end for engaging the audio output jack of the audio player 40. Thus, a portion of the audio connector cord 30 may be configured to be routed through the display stand 260, as explained in further detail below. In other embodiments, the free end of the audio cord 30 comprises a connector, and in particular an audio plug 34, configured to engage a corresponding audio connector, and in particular an audio jack 266 provided on the alarming base (see, e.g., FIG. 2).

[0020] If desired, the display stand may include an AC/DC transformer and a regulator for converting the power input voltage to the appropriate power operating voltage for the audio player 40. Accordingly, the alarming base 50 of the merchandise display security device 220 may comprise an internal power source, or alternatively, may be electrically connected to an external power source (not shown).

[0021] FIG. 3 illustrates an embodiment of a merchandise display security device 10. In this embodiment, a base 12, such as an alarming base discussed above, comprises a radio receiver 14. The base 12 is configured to operably engage an audio cord 30 similar

to that described above. The audio cord 30 may be configured to operably engage the base via a connector 34. In this regard, base 12 may include a corresponding connector 16 configured to releasably engage the connector 34. A portion 47 of the audio connector cord 30 extending from the connector 16 may have a suitable connector 46 at its end for releasably engaging an audio player 40. It is understood that the audio cord may extend through the base 12 such that the connector 34 is configured to plug directly into an audio player 40 and such that connector 46 is unnecessary (see, e.g., FIG. 4). For example, the base 12 may be configured to receive a portion of audio cord 30 therein such that the cord is unable to be removed from the base 12 in an unauthorized manner. The base 12 could lock the audio cord 30 in any suitable manner, such as using a hinged connection that traps the cord within the base. Namely, the base 12 may define an opening having a diameter that closely matches the diameter of the audio cord 30 but having a smaller diameter than the connector 34. Thus, when positioned within the base 12, the connector 34 may not be displaced through the opening in the base.

[0022] As discussed above, audio cord 30 may include a pair of conductors 24 for transmitting audio signals. In one embodiment, the audio cord 30 includes a conductive outer sheath 18 or ground. The radio receiver 14 may be operably engaged with a controller 22. For example, the radio receiver 14 may include a radio receiver circuit, and the controller 22 may include an electrical control circuit that is in electrical communication with the radio receiver circuit. In addition, the radio receiver 14 may include an antenna circuit 20 that is operably engaged with the outer sheath 18. Thus, the radio receiver 14 may utilize the outer sheath 18 in conjunction with its antenna circuit 20 to provide an antenna. The radio receiver 14 may be configured to detect one or more signals utilizing the outer sheath 18 as an antenna. For example, the radio receiver 14 could monitor for a plurality of radio signals or radio waves (e.g., AM and/or FM signals) and store one or more radio signals into memory. Alternatively, the base 12 may include a memory that is separate from the radio receiver 14 for storing the radio signals. The stored radio signals could be a predetermined number of signals having the strongest detected frequency (e.g., 5-10 signals). Once the radio signals have been stored, the controller 22 may be configured to communicate with the radio receiver 14 to determine if one or more signals have weakened or been lost. A lost or weakened signal may be

indicative of a security event (e.g., the audio cord 30 has been cut or disconnected). For example, the controller 22 may be configured to interrogate the radio receiver 14 to obtain a current signal strength of the stored radio signals. The controller 22 may interrogate the radio receiver 14 in predetermined increments of time (e.g., every 1 second). Alternatively, the radio receiver 14 may be configured to automatically detect the current radio signal(s) in predetermined increments of time and communicate the same to the controller 22. Should the current signal strength be less than the stored signal strength, the controller 22 may be configured to generate an audio and/or visible alarm. Where a plurality of radio signals are stored in memory, the weakening or loss of only one signal may not result in generation of a security signal. However, where all or a majority of the plurality of radio signals are weakened or lost, the controller 22 may recognize this occurrence as a security event.

[0023] By utilizing the outer sheath 18 rather than the conductors 24 for the antenna, the radio receiver 14 does not jeopardize the audio quality of the headphones. In addition, the radio receiver 14 is not utilizing or generating "sound" for detecting security events but, rather, the status of the signal(s) detected by the antenna. It is understood that the radio receiver 14 may detect signals other than or addition to radio signals. For example, the radio receiver 14 may detect, for example, the signal strength, stereo strength, signal-to-noise ratio, and/or any other signals made available by the radio receiver. Thus, any desired signal(s) may be used to determine if the headphones H are present, or if the audio cord 30 has been severed, and thereby activate an audible and/or visible alarm.

[0024] In some cases, the radio receiver 14 may be unable to detect radio signals. For example, the radio receiver 14 may be positioned in a location that has poor radio reception. Where the radio receiver 14 is unable to detect radio signals, the merchandise display security system may include a transmitter 49 for transmitting detectable radio signals (see, e.g., FIG. 1). Thus, the transmitter 49, such as a low power transmitter, may be used to generate one or more signals that are detectable by the antenna. The merchandise display security device may be configured to receive radio signals from the transmitter 49 and function in a similar manner as discussed above.

[0025] FIG. 5 illustrates another embodiment of a merchandise display security device. In this embodiment, the security device 50 may include a mounting member 52 operably engaged with a cable 54. The mounting member 52 is configured to be attached to an article of merchandise 55, and in some embodiments, the mounting member is configured to be removably seated on an alarming base 58 and/or stand. Thus, a customer is able to lift the article of merchandise 55 and the mounting member 52 off of the base 58 for inspection. In some cases, the cable 54 is coupled to a recoiler configured to extend and retract the cable, although the cable may be elastically extendable or non-elastic in other embodiments. The cable 54 may include one or more conductors 24 as discussed above, although the cable may also or alternatively be a mechanical cable configured to transmit one or more radio signals. The cable 54 may include one or more conductors for transmitting power and/or security signals between the base 58 and the mounting member 52 and/or article of merchandise 55.

[0026] Similar to the embodiments discussed above, the cable 54 is operably engaged with a controller 60. The mounting member 52 and/or the base 58 may include the controller 60. In addition, the mounting member 52 and/or the base 58 may include a radio receiver 56, wherein the radio receiver may be similar to that described in the embodiments above. The radio receiver 56 may be operably engaged with the cable 54. Thus, the radio receiver 56 may utilize the cable 54 to provide an antenna as discussed above. For example, the radio receiver 56 may be operably engaged with one or more conductors in the cable 54 for providing an antenna. Alternatively, the cable 54 may be a mechanical cable formed of a conductive material or may include a conductive outer sheath for providing an antenna. The radio receiver 56 may be configured to detect one or more signals utilizing the cable 54 as an antenna, such as one or more radio waves as discussed above. Should the cable 54 be tampered with in any manner (e.g., cutting or disconnection), the controller 60 is configured to detect changes in the strength of the radio waves and to generate an audible and/or visible alarm in response to any changes that are indicative of a security event.

[0027] In some embodiments, the controller 60 may be configured to determine a difference in signal strength based on the position of the mounting member 52 relative to

the base 58. For instance, a change in length of the cable 54 and corresponding antenna may result in a change in the corresponding radio signal strength. Thus, the controller 60 may be configured to detect different signal strengths depending on whether the cable 54 is fully extended relative to the base 58, the mounting member 52 is resting on the base, or the cable 54 has been tampered with (e.g., cut). Therefore, the controller 60 may be configured to differentiate between different signal strengths to determine when a security event occurs (e.g., the cable 54 being cut).

[0028] Embodiments of a merchandise display security device have been shown and described herein for purposes of illustrating and enabling the best mode of the invention. Those of ordinary skill in the art, however, will readily understand and appreciate that numerous variations and modifications of the invention may be made without departing from the spirit and scope of the invention. Accordingly, all such variations and modifications are intended to be encompassed by the appended claims.

That which is claimed is:

1. A merchandise display security device for an article of merchandise, the device comprising:

a cable;

a controller for monitoring the status of the cable; and

a radio receiver in electrical communication with the controller, the radio receiver configured to cooperate with the cable to provide an antenna for detecting one or more signals,

wherein the controller is configured to activate an alarm based on one or more signals detected by the antenna.

2. The merchandise display security device according to Claim 1, wherein the antenna is configured to detect at least one radio signal.

3. The merchandise display security device according to Claim 1, wherein the antenna is configured to detect a plurality of radio signals.

4. The merchandise display security device according to Claim 1, wherein the radio receiver is configured to store at least one signal, and wherein the controller is configured to activate an alarm based on a current signal being less than a stored signal.

5. The merchandise display security device according to Claim 4, wherein the radio receiver is configured to store a plurality of signals, and wherein the controller is configured to activate an alarm based on one or more current signals being less than one or more of the stored signals.

6. The merchandise display security device according to Claim 1, wherein the controller is configured to activate an alarm in response to the cable being severed.

7. The merchandise display security device according to Claim 1, wherein the cable comprises an audio cord.

8. The merchandise display security device according to Claim 7, wherein the audio cord comprises an audio plug for engaging an audio jack, and wherein the

controller is configured to activate an alarm in response to the audio cord being unplugged from the audio jack.

9. The merchandise display security device according to Claim 7, wherein the audio cord is adapted for receiving an audio signal from a media player.

10. The merchandise display security device according to Claim 9, wherein the article of merchandise is headphones having at least one earpiece and wherein the audio cord is electrically connected to the at least one earpiece for providing an audio signal from the media player to the headphones.

11. The merchandise display security device according to Claim 1, wherein the radio receiver comprises an antenna circuit.

12. The merchandise display security device according to Claim 11, wherein the cable comprises a conductive outer sheath, and wherein the conductive outer sheath is electrically coupled to the antenna circuit to provide the antenna.

13. The merchandise display security device according to Claim 1, further comprising a base configured to activate the alarm, wherein the cable is operably engaged with the base, and wherein the base is configured to removably support the article of merchandise thereon.

14. The merchandise display security device according to Claim 1, wherein the cable comprises at least one conductor, and wherein the at least one conductor is the antenna.

15. A merchandise display security device for an article of merchandise, the device comprising:

a cable configured to conduct at least one radio signal; and

a controller for monitoring the status of the cable; and

a radio receiver in electrical communication with the controller, the radio receiver configured to cooperate with the cable to provide an antenna for detecting one or more radio signals,

wherein the controller is configured to activate an alarm based on one or more radio signals detected by the antenna.

16. The merchandise display security device according to Claim 15, wherein the radio receiver comprises an antenna circuit.

17. The merchandise display security device according to Claim 16, wherein the cable comprises a conductive outer sheath, and wherein the conductive outer sheath is electrically coupled to the antenna circuit to provide the antenna.

18. The merchandise display security device according to Claim 14, wherein the radio receiver is configured to detect a plurality radio signals and to store the plurality of detected radio signals.

19. A method for securing an article of merchandise from theft, the method comprising:

detecting one or more radio signals with an antenna operably engaged with a cable;

storing the one or more radio signals;

detecting one or more current radio signals;

comparing the one or more current radio signals to the one or more stored radio signals; and

activating an alarm when a strength of the one or more of the current radio signals is less than the one or more stored signals.

20. The method of Claim 18, wherein storing comprises storing a plurality of radio signals, and wherein activating comprises activating an alarm based on one or more current radio signals being less than one or more of the stored radio signals.

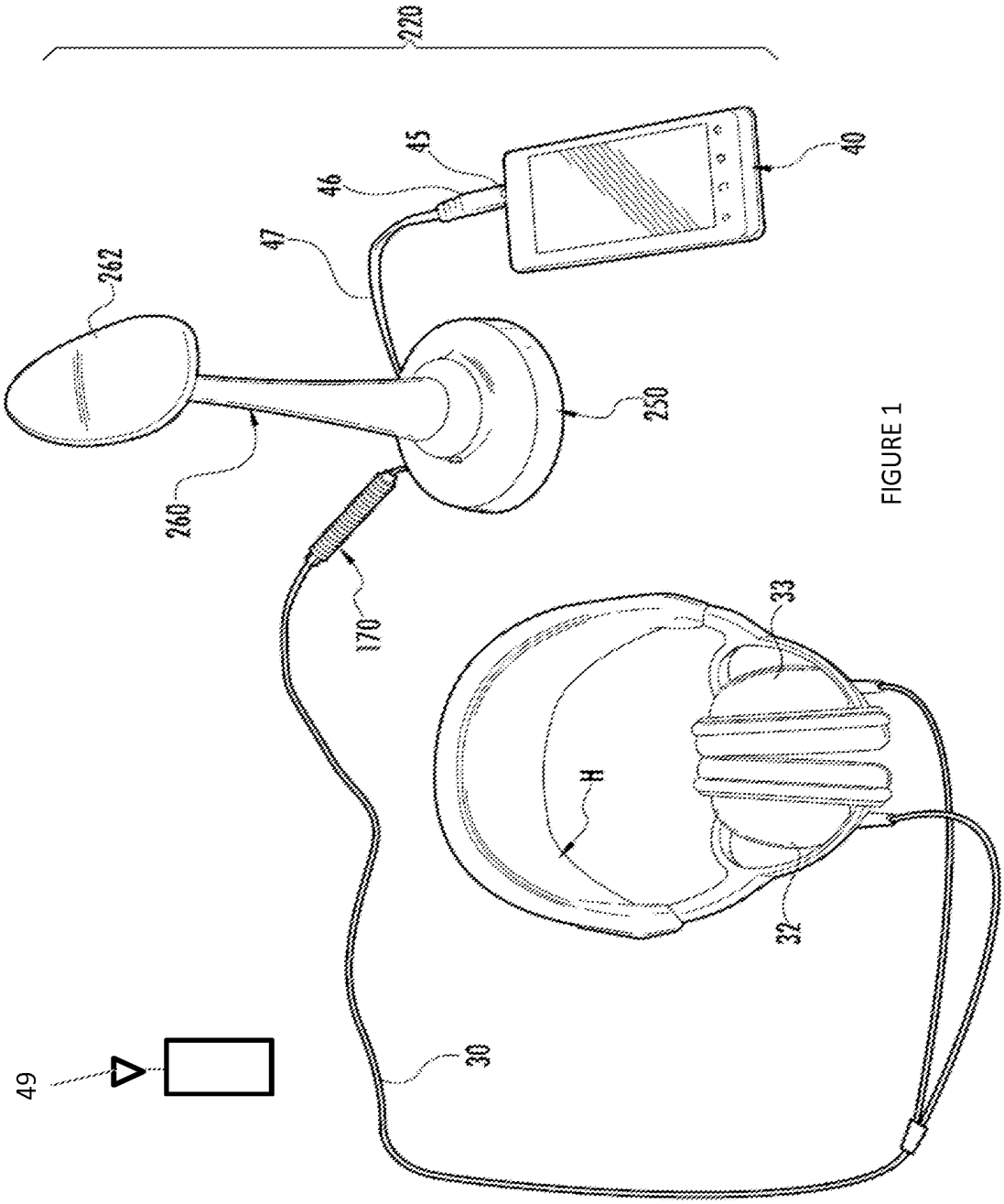

FIGURE 1

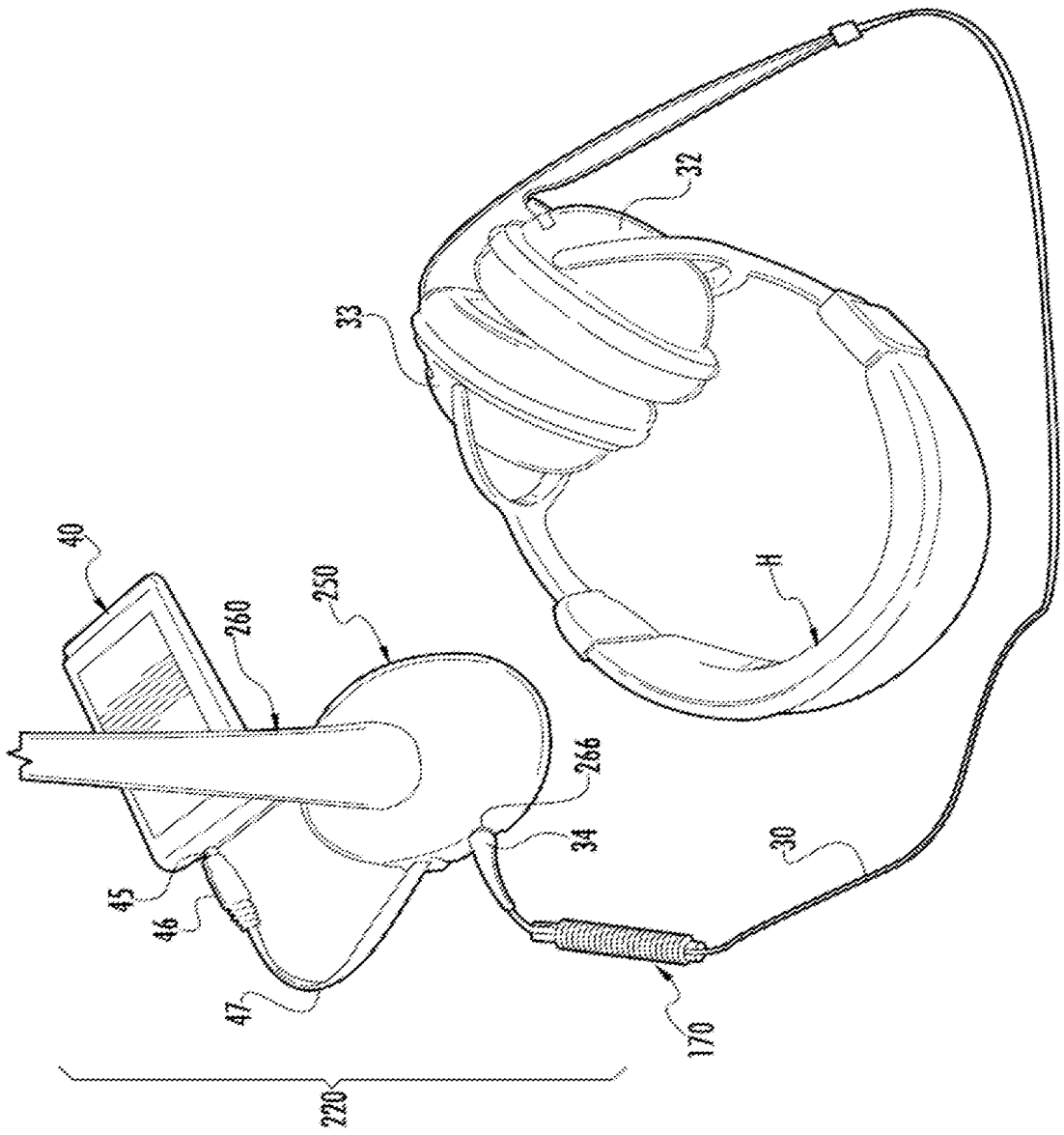

FIGURE 2

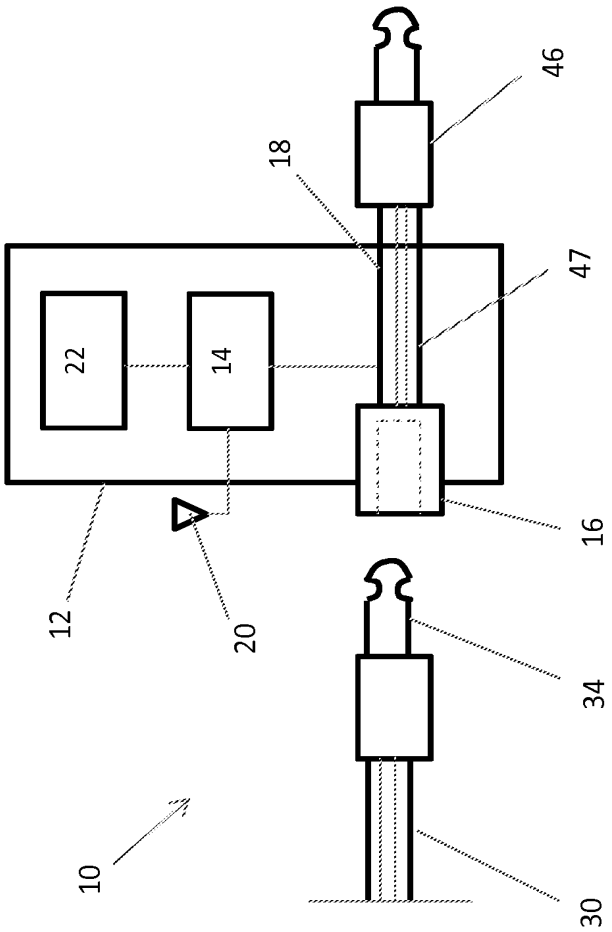

FIGURE 3

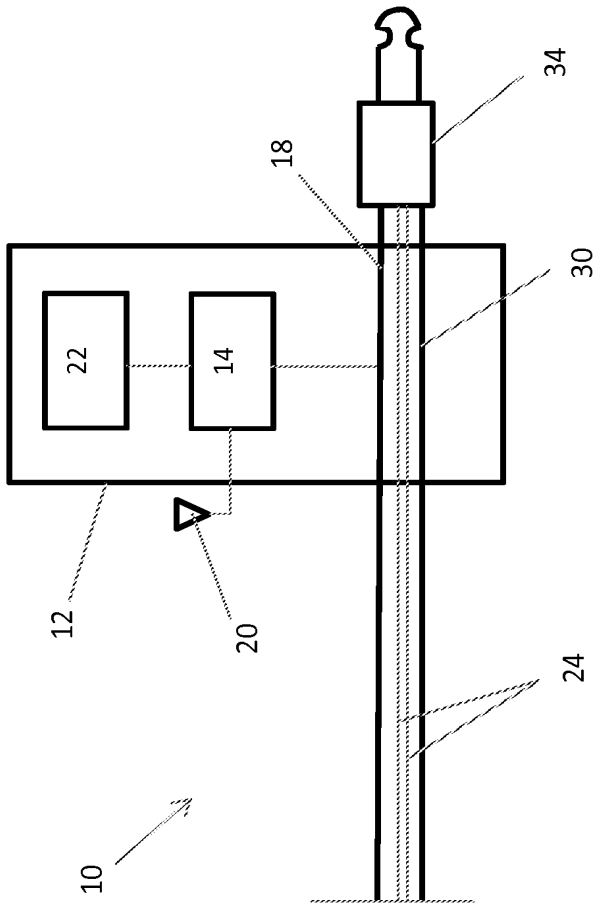

FIGURE 4

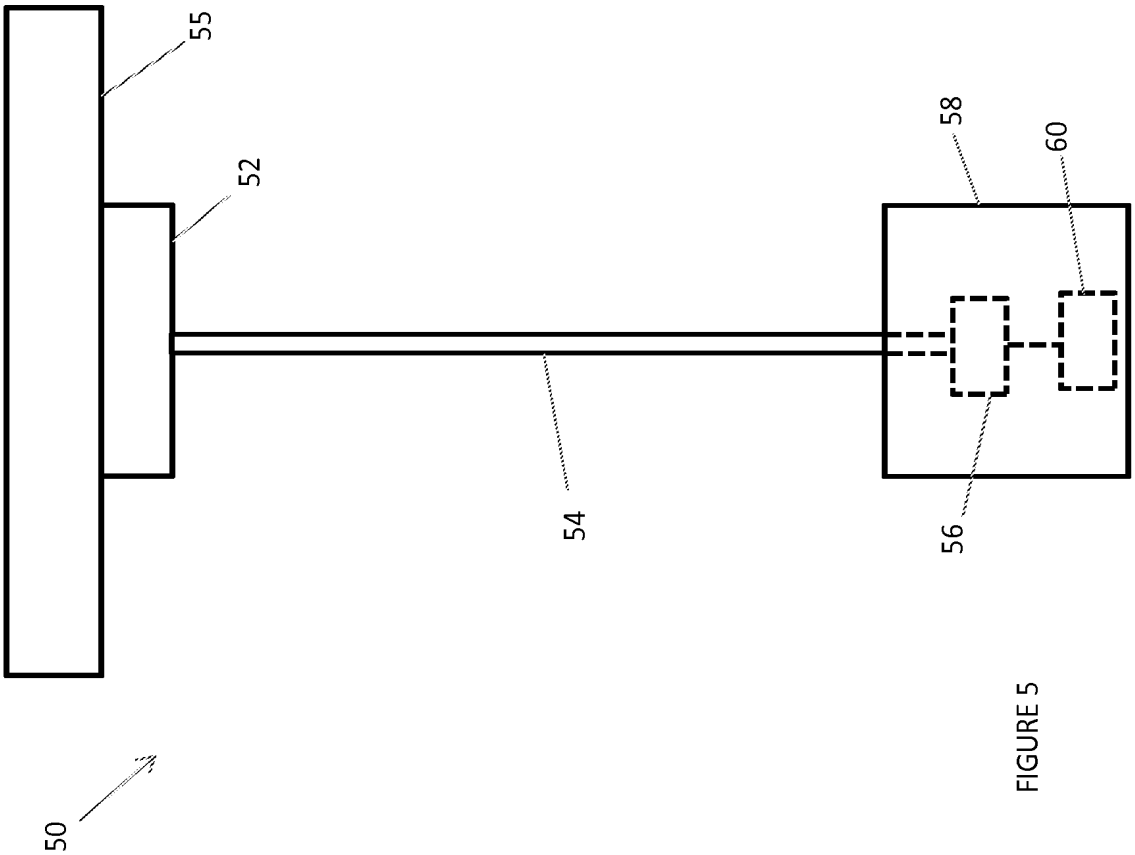

FIGURE 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/056227

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G08B 13/14 (2014.01)
CPC - G08B 13/1445 (2014.11)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - G08B 1/08, 13/12, 13/14 (2014.01)
CPC - G08B 13/128, 13/1409, 13/1427, 13/1445 (2014.11)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 235/128; 340/3.1, 568.1, 568.2, 571, 573.4; 455/410; 711/100 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Scholar, Google
Search terms used: merchandise display, security, antenna, controller, cable, headphone, anti-theft, radio receiver, activate alarm

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,962,369 A (CLOSE) 09 October 1990 (09.10.1990) entire document	15-20
Y	US 2012/0182146 A1 (BERGLUND et al) 19 July 2012 (19.07.2012) entire document	1-14
Y	US 7,825,820 B2 (LEE) 02 November 2010 (02.11.2010) entire document	1-14
A	US 2010/0182153 A1 (JENSEN) 22 July 2010 (22.07.2010) entire document	1-20
A	US 8,212,672 B2 (BRENNER) 03 July 2012 (03.07.2012) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 November 2014	31 DEC 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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(71) Applicant: **INVUE SECURITY PRODUCTS INC.** [US/US]; 15015 Lancaster Highway, Charlotte, NC 28277 (US).

(72) Inventors: **RICHARDSON, Justin, A.**; 9816 Tompkins Lane, Maxhaw, NC 28173 (US). **PHILLIPS, Jonathon, D.**; 5040 Timber Falls Drive, Fort Mill, SC 29707 (US). **TAYLOR, Gary, A.**; 3455 Dobys Bridge Road, Fort Mill, SC 29715 (US).

(74) Agent: **KIRK, Trent, A.**; Invue Security Products Inc., 15015 Lancaster Highway, Charlotte, NC 28277 (US).

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(54) Title: SYSTEMS AND METHODS FOR SECURITY SENSING IN A POWER CABLE FOR AN ARTICLE OF MERCHANDISE

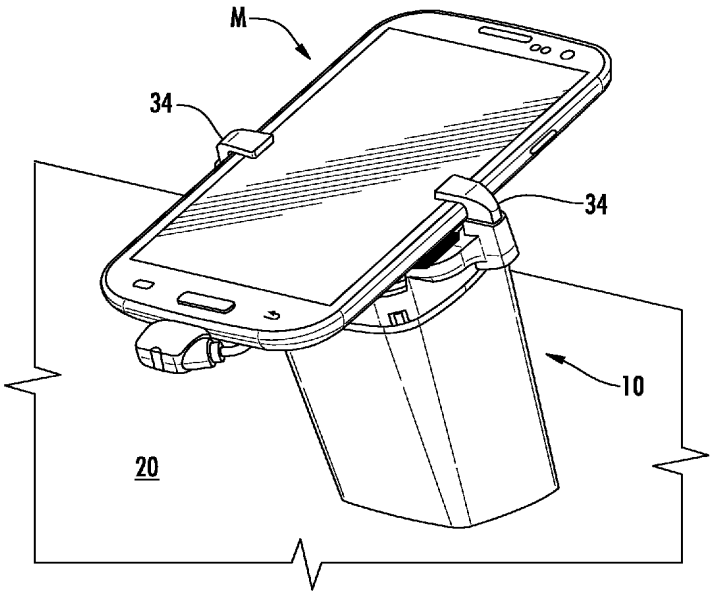


FIG. 1

(57) Abstract: Embodiments of the present invention are directed to merchandise security systems and methods for displaying and protecting an article of merchandise from theft. In one example, the system includes a sensor configured to be secured to the article of merchandise, wherein the sensor includes alarming circuitry. The system also includes a tether comprising a pair of conductors electrically connected to the alarming circuitry, wherein the pair of conductors is configured to transfer power to the sensor and/or to the article of merchandise. In response to power ceasing to be transferred, the alarming circuitry is configured to monitor an electrical signal transmitted through the pair of conductors in order to determine whether the tether has been cut or removed from the sensor.

WO 2015/112670 A1

SYSTEMS AND METHODS FOR SECURITY SENSING IN A POWER CABLE FOR AN ARTICLE OF MERCHANDISE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of priority to United States Provisional Application No. 61/930,529 filed on January 23, 2014, the entire disclosure of which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] Embodiments of the present invention relate generally to security systems and methods for displaying articles of merchandise in a retail environment. More particularly, the invention relates to systems and methods for security sensing in a tether for an article of merchandise.

BACKGROUND OF THE INVENTION

[0003] Retailers routinely display articles of merchandise, such as telephones, portable computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like for customers to evaluate before making a purchase. These articles of merchandise are continually being made smaller and lighter in weight due to advances in technology and materials. As a result, such merchandise is increasingly vulnerable and susceptible to theft. At the same time, the retail price, and hence the profit margin, for such merchandise continues to decline. Accordingly, these articles of merchandise need to be secured by a security device that effectively and cost efficiently protects the merchandise from theft.

[0004] It is common in the field of retail merchandise security to tether electronic devices to a store fixture to prevent theft, yet still allowing a customer to interact with the device. The retailers and their customers want these tethers to be as unobtrusive as possible, making smaller diameter tethers desirable. One problem with keeping tether size small is the number of conductors needed to supply power and sensing signals. Typically, a plurality of conductors is needed to provide both power and security. As a result, reducing the number of conductors while maintaining necessary functionality and security can be challenging.

SUMMARY OF THE INVENTION

[0005] In one aspect, the invention is a merchandise security system for displaying and protecting an article of merchandise. The system includes a sensor configured to be secured to the article of merchandise, wherein the sensor including alarming circuitry. The system further includes a tether including a pair of conductors electrically connected to the alarming circuitry, wherein at least one of the pair of conductors is configured to transfer power to the sensor and/or to the article of merchandise. In response to power ceasing to be transferred, the alarming circuitry is configured to monitor an electrical signal transmitted through the pair of conductors in order to determine whether the tether has been cut or removed from the sensor.

[0006] In one embodiment, the pair of conductors consists of a positive power conductor and a negative ground conductor. In another embodiment, the tether is coupled to a recoiler such that the tether is extendable and retractable relative to the recoiler. In yet another embodiment, each of the sensor and the recoiler has at least one resistor electrically connected to the pair of conductors in a sense loop circuit, and the alarming circuitry is configured to determine a change in resistance in the sense loop circuit. In still another embodiment, the alarming circuitry and the pair of conductors define the sense loop circuit, and the resistor in the recoiler is disposed across the pair of conductors. In still another embodiment, the alarming circuitry is configured to generate a visual and/or an audible alarm signal in response to the sensor being removed from the article of merchandise, the tether being removed from the sensor, and/or the tether being cut.

[0007] In another aspect, the invention is a method for displaying and protecting an article of merchandise. The method includes transferring power through a tether to a sensor attached to the article of merchandise and/or to the article of merchandise, wherein the tether includes a pair of conductors electrically connected to the sensor. The method further includes monitoring, in response to power ceasing to be transferred, an electrical signal transmitted through the pair of conductors in order to determine whether the tether has been cut or removed from the sensor.

[0008] In one embodiment monitoring includes repeatedly determining a voltage level in predetermined increments of time. In another embodiment, determining includes determining whether the voltage level is greater than a predetermined voltage level. In yet another embodiment, the method further includes generating a visual and/or an audible alarm signal

when the voltage level is greater than the predetermined voltage level. In still another embodiment, the method further includes repeating the step of determining the voltage level if the voltage level is greater than the predetermined voltage level. In still another embodiment, the method further includes generating the electrical signal on the pair of conductors prior to determining the voltage level. In still another embodiment, monitoring includes determining a change in total resistance in a sense loop circuit defined at least by the sensor, the pair of conductors, and a plurality of resistors. In still another embodiment, the method further includes determining whether the pair of conductors has been shorted.

Brief Description Of The Drawing Figures

[0009] The detailed description of the invention provided hereafter may be better understood with reference to the accompanying drawing figures, in which embodiments of a merchandise security system for displaying an article of merchandise are disclosed, and in which like reference characters indicate the same or similar parts.

[0010] FIG. 1 is a perspective view of a merchandise security system for displaying and protecting an article of merchandise according to an embodiment of the invention.

[0011] FIG. 2 is a perspective view of another embodiment of a merchandise security system according to the invention shown with the article of merchandise and a sensor attached thereto removed from a base.

[0012] FIG. 3 is a perspective view showing the merchandise security system of FIG. 2 electrically connected to a recoiler secured to a support surface of a display fixture and electrically connected to an external source of power.

[0013] FIG. 4 is a perspective view of the merchandise security system of FIG. 3 showing the recoiler detached from a mounting plate secured to the support surface of the display fixture.

[0014] FIG. 5 is an exploded perspective view showing an embodiment of a sensor for use with a merchandise security system according to the invention.

[0015] FIG. 6 is an exploded perspective view of the sensor of FIG. 5 shown with an upper portion of the sensor attached to an article of merchandise and a lower portion of the sensor

detached from the upper portion.

[0016] FIG. 7 is a perspective view of another embodiment of a sensor for use with a merchandise security system according to the invention shown with an upper portion of the sensor detached from a lower portion of the sensor.

[0017] FIG. 8 is a perspective view of a portion of the merchandise security system of FIG. 1 illustrating the use of a key to arm and/or disarm the alarming circuitry of the sensor.

[0018] FIG. 9 is a schematic illustrating a pair of conductors configured for transmitting electrical power to the sensor and/or the article of merchandise according to the invention.

[0019] FIG. 10 is a schematic illustrating a sense loop circuit for generating an alarm signal according to the invention.

[0020] FIG. 11 is a graph depicting the voltage in the sense loop circuit of FIG. 10 when a tether is intact and there is a loss of electrical power.

[0021] FIG. 12 is a graph depicting the voltage in the sense loop circuit of FIG. 10 when the tether has been cut or removed.

[0022] FIG. 13 is a graph depicting the voltage in the sense loop circuit of FIG. 10 for an intact and connected tether, referred to as a "good cable," and a cut or removed tether, referred to as a "bad cable."

[0023] FIG. 14 is a graph depicting an example of the voltage in the sense loop circuit of FIG. 10 where the voltage level is initially at an input power level and thereafter the input power ceases.

[0024] FIG. 15 is a graph depicting another example of the voltage in the sense loop circuit of FIG. 10 where the voltage level is initially at the input power level and thereafter input power ceases.

[0025] FIG. 16 is a flowchart of a method for displaying and protecting an article of merchandise according to an embodiment of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0026] One or more embodiments of a merchandise security system for displaying an article of merchandise are shown in the accompanying drawing figures and described below. The article of merchandise, indicated generally herein by reference character M, is typically a display model or an operational sample of electronic merchandise, such as portable telephones, smart phones, computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like, for a customer to examine before making a decision whether to purchase the article. The article of merchandise is typically displayed in a manner that permits a prospective purchaser to evaluate the operation and features of the merchandise, while protecting the merchandise from theft. In one embodiment, a sensor with alarming circuitry may be attached to the article of merchandise for detecting various alarming conditions, such as the article being removed from the sensor. A tether may be operably engaged with the sensor at one end, while the opposite end may be secured to a base or to a surface of a display fixture. As explained in further detail below, the alarming circuitry of the sensor may also be configured to detect an alarming condition of the tether, such as a cutting, severing, removing or detaching of the tether. As also explained in further detail below, the tether may consist of only a pair of conductors. Thus, unlike conventional tethers that include three, four, or more conductors, the tether according to one embodiment may have only two conductors for providing both power and security functionality. Regardless, the alarming circuitry is configured to monitor an electrical signal in the conductors in order to determine if an alarming condition has occurred.

[0027] FIGS. 1-4 illustrate embodiments of a merchandise security system, indicated generally herein by reference character 10, for displaying an article of merchandise M and securing the merchandise from theft or unauthorized removal. The system 10 generally includes a sensor 12, a tether 14, a base 16, and a recoiler 18, as shown in the embodiment of FIGS. 2-4. The sensor 12 is configured to be secured to the article of merchandise M, such as with a pressure-sensitive adhesive. Alternatively, or in addition, the sensor 12 may be secured to the article of merchandise M by two or more retaining arms 34, as illustrated in the embodiment of FIG. 1. A first end of the tether 14 may be electrically connected to the recoiler 18, as shown in FIG. 4, while the opposite second end of the tether may include a jack or connector 22 for electrically connecting the tether to the sensor 12, as shown in FIG. 2. Thus, connector 22 may

be releasably engaged with sensor 12 to establish electrical communication therebetween. The connector 22 may be further secured in position with a lock mechanism 21, such as a clip, as indicated by the arrow in FIG. 2. As such, when lock mechanism 21 is engaged with connector 22, the connector may not be removed from the sensor 12 without first disengaging the lock mechanism. The lock mechanism 21 may allow tension to be applied to the tether 14 without causing the connector 22 to become inadvertently disconnected from the sensor 12. Furthermore, the lock mechanism 21 may provide stress relief for the electrical connection between the sensor 12 and the tether 14.

[0028] The base 16 is configured to removably support the sensor 12 thereon such that a prospective purchaser may remove the article of merchandise M and the sensor secured thereto from the base for inspection, and subsequently return the merchandise to the base for display. The base 16 may define an opening 15 therethrough that allows the tether 14 to extend and retract relative to the base. Recoiler 18 may be disposed within the base 16, or alternatively, the recoiler may be secured below a support surface 20 (e.g., a counter, shelf, or the like) of a display fixture, as shown in FIG. 3. In this regard, the recoiler 18 may include a mounting plate 23 that is configured to be secured to the underside of the support surface 20, in which case the recoiler is configured to engage the mounting plate and be secured thereto. As shown in FIG. 3 and illustrated schematically in FIG. 10, the recoiler 18 may be electrically connected to a power source 24 via an input power cable 25 that is configured to provide power to the recoiler and to the tether 14. A plug or other connector, for example, an AC power plug and AC/DC power converter, may be disposed at a first end of the input power cable 25 for electrically connecting the input power cable to an external source of electrical power, for example, a conventional 110V AC power outlet. A second opposite end of the input power cable 25 may be electrically connected to an input cable 27 of the recoiler 18. In some embodiments, the sensor 12 is also electrically connected to a power cable 26 that is configured to provide electrical power to the article of merchandise M, as shown in FIG. 2. Thus, the power cable 26 may be utilized to facilitate demonstration of the operation of the article of merchandise M on display, as well as for charging a rechargeable battery of the merchandise. FIG. 2 further shows that the power cable 26 may include a connector 28 that is configured to operably engage an input port provided on the article of merchandise M. In some embodiments, the alarming circuitry of the sensor 12 may be configured to detect removal of the connector 28 and to generate an audible and/or a

visual alarm signal in response to removal of the connector 28 from the sensor 12.

[0029] As discussed above, the sensor 12 may include alarming circuitry, a processor, a central processing unit, or the like, that is configured to determine whether various security events have occurred for generating an audible and/or a visual alarm signal. The sensor 12 may also include an alarm (e.g., a piezoelectric device) that is configured to generate an audible alarm. Thus, the sensor 12 may be configured as "alarm-on-product," whereby the sensor is operable to alarm when attached to the article of merchandise M and/or when detached from the article of merchandise. In some cases, the sensor 12 may include a visual indicator (e.g., an LED) for indicating the alarming circuitry is armed and/or alarming. Moreover, the sensor 12 may include a transfer port 30 that is configured to communicate with a key 32 (see, FIG. 8) for arming and/or disarming the alarming circuitry. In one embodiment, the transfer port 30 is configured to communicate wirelessly with key 32 to determine whether the key is authorized to arm and/or disarm the alarming circuitry. According to some embodiments, the key 32 is similar to that described in U.S. Patent No. 7,737,845, the contents of which are hereby incorporated by reference in their entirety. According to one embodiment, the sensor 12 may include a contact, limit or pressure switch 33 (see, FIG. 7), or the like, that is configured to detect when the article of merchandise M has been removed from the sensor. The alarming circuitry may be configured to detect the removal of the article of merchandise M from the sensor 12 and to generate and an audible and/or a visual alarm signal in response thereto.

[0030] In some embodiments, the sensor 12 is a one-piece design that is configured to be attached to the article of merchandise M. FIGS. 5-8 illustrate embodiments wherein the sensor 12 may include an upper portion 35 and a lower portion 37. The upper portion 35 may be configured to be secured to the lower portion 37, such as with a proprietary fastener 39. In addition, the upper portion 35 may be configured to be secured to the article of merchandise M, while the lower portion 37 may be configured to receive the connector 22. FIG. 7 shows that a first end of the power cable 26 may be enlarged and configured to be inserted into a recess 31 formed in the lower portion 37, which secures the power cable therein when the upper portion 35 and the lower portion 37 are secured together. In addition, FIG. 6 shows that upper portion 35 may include an engagement member 40 and FIG. 7 shows that lower portion may include an opening 42 configured to receive the engagement member therein. Engagement between the

engagement member 40 and the opening 42 may be used to align the upper portion 35 and the lower portion 37 relative to one another prior to securing the upper and lower portions together.

[0031] Furthermore, FIGS. 1, 5-6, and 8 illustrate that sensor 12 may include one or more retaining arms 34 for securing the article of merchandise M to the sensor. In one example, FIG. 5 shows that the upper portion 35 may include a pair of slots 36 that are each configured to receive a respective retaining arm 34 therein. Thus, retaining arms 34 may be configured to slide within the slots 36 to adjust the position of the retaining arms relative to the width or length of the article of merchandise M. As illustrated by FIGS. 5-6, the lower portion 37 may be secured to the upper portion 35 such that the retaining arms 34 are secured therebetween and cannot be removed without first detaching the lower portion from the upper portion.

[0032] Embodiments of the present invention provide for the delivery of electrical power to the article of merchandise M and/or to the sensor 12 through a pair of conductors 50 (see, e.g., FIG. 9) disposed within the tether 14 (removed for purposes of clarity). In some examples, the tether 14 includes only two conductors 50, such as a positive power line and a ground line. An input power source 24 may be in electrical communication with the conductors 50 for transmitting power through the tether 14 and to the article of merchandise M and/or the sensor 12. In order to obtain a sense signal using only the power lines, one technique is to simply detect when the electrical power stops flowing. The problem with this method is that the sensor 12 and/or the article of merchandise M typically do not receive power when there is a power outage, which could cause a false alarm in the merchandise security system 10. Instead, one embodiment of the invention provides security sensing over the same conductors 50 used to supply power to the article of merchandise M and/or the sensor 12. As such, the diameter of the tether 14 may be reduced in comparison to conventional tethers, and the incidence of false alarms may be reduced.

[0033] According to some embodiments, the merchandise security system 10 utilizes a security scan for determining whether the tether 14 has been cut or removed from the sensor 12, and/or whether the power cable 26 has been removed from the article of merchandise M. This scan may be performed when input power is no longer being provided. In this case, the sensor 12 and associated alarming circuitry may operate on battery power for carrying out the security

scan.

[0034] FIG. 10 schematically illustrates one embodiment of a sense loop circuit 55 defined between the alarming circuitry or a central processing unit (CPU) and the recoiler 18. In this embodiment, the sense loop circuit 55 includes a plurality of resistors R comprising a voltage divider network. One or more resistors R may be disposed in both the sensor 12 and the recoiler 18. The resistor R in the recoiler 18 may be disposed across the pair of conductors. The sense loop circuit 55 may be further defined by the pair of conductors 50 extending through the tether 14. If the tether is cut or disconnected, the total resistive load detected by the alarming circuitry and/or the CPU changes.

[0035] FIG. 11 shows a graph depicting the voltage in the sense loop circuit 55 when the tether 14 is intact (i.e., not cut or removed) and there is a loss of electrical power, for example as a result of a power outage. As shown, the voltage in the sense loop circuit 55 is about 1.4 volts. FIG. 12 shows a graph depicting the voltage in the sense loop circuit 55 when the tether 14 has been cut (whether partially or completely) or removed (e.g., disconnected or detached). As shown, the voltage in the sense loop circuit 55 is about 2.4 volts. Thus, the detected voltage level is higher when the tether 14 has been cut or removed (e.g., disconnected or detached). FIG. 13 shows another graph depicting the voltage in the sense loop circuit 55 where an intact and connected tether 14, indicated as a "good cable" in FIG. 13, has a lower voltage than a cut or removed (e.g., disconnected or detached) tether, indicated as a "bad cable" in FIG. 13.

[0036] In one embodiment, the security scan commences immediately after power is lost. For example, input power may be provided at about 18 volts, and when power is lost, the detected voltage would be 0 volts. The merchandise security system 10 may include capacitors that do not allow for a sudden drop in voltage, but there is typically a delay before the voltage level drops to the lower level. As the capacitors discharge, the voltage level passes from the initial input power (e.g., about 18 volts), to the "bad cable" range (e.g., about 2.4 volts), and to the "good cable" range (e.g., about 1.4 volts). If the security scan was performed immediately after the power is lost and the tether 14 was intact and connected, the "bad cable" range would be detected, and the tether would be incorrectly indicated as cut or disconnected. However, it is understood that if the scan is initiated immediately after power ceases, the alarming circuitry

and/or CPU is able to compare the measured voltage level and the expected voltage level during the voltage decay period. If the measured and expected voltage levels are within a predetermined range during the decay period following a power loss, an alarm is not generated.

[0037] FIG. 14 shows a graph depicting another example of the voltage in the sense loop circuit 55 where the voltage level is initially at about 18 volts and thereafter the input power ceases at about 3.0 seconds. There is a sharp decline in the voltage level to about 6.8 volts at about 3.3 seconds. This drop may occur in about 250 ms. Then the voltage drops further to about 1.5 volts at about 5.3 seconds, wherein the further drop takes about 2 seconds. FIG. 15 shows a similar graph depicting another example of the voltage in the sense loop circuit 55 where the voltage level is initially at about 18 volts and thereafter the input power is lost. FIG. 15 demonstrates that a security scan may be initiated after a predetermined period of time and after the voltage transition so that false alarms are reduced. In this example, there is about 3 seconds after power is lost before the security scan begins.

[0038] FIG. 16 shows a flowchart of an embodiment of a method 60 for determining the integrity and connection of the tether 14 according to the present invention. In the illustrated embodiment, the alarming circuitry and/or CPU may be configured to initially determine whether a voltage level is equal to about "X" volts, as indicated by reference character 62. For example, "X" volts may be the normal input voltage provided, such as about 18 volts. If the voltage is equal to "X" volts, there is no alarm event. If the voltage does not equal "X" volts, a security scan is initiated, as indicated by reference character 64. The security scan may be cyclical in that the scan may be performed repeatedly in predetermined increments of time. The security scan may be initiated immediately after power ceases, or alternatively, after a predetermined delay (e.g., about 2-4 seconds), as discussed above, to allow the voltage in the tether 14 to decay. The security scan may first determine whether the tether 14 has been shorted (e.g., the conductors 50 are crimped together), as indicated by reference character 66. In the case that the tether 14 is shorted, the voltage level will be zero, or close to zero, and an alarm signal will be generated, as indicated by reference character 76. In one embodiment, a cycle of the security scan may be about 200 ms in duration to determine whether the tether 14 is shorted.

[0039] If the tether 14 is not shorted, the alarming circuitry or CPU may generate an

electrical signal on the pair of conductors 50, as indicated by reference character 68. For example, the electrical signal could be a ping, current, pulse, frequency, or the like. In one embodiment, generating an electrical signal may include setting the bit high on one of the conductors 50 to the alarming circuitry and/or CPU and waiting for the tether 14 to charge. For example, the bit may be set to about 3.0 volts. FIGS. 11 and 13 show that the bit may be set high at time "T1" and then a pause is effectuated (e.g., about 250 ms). The voltage level in the tether 14 is then determined, and if the voltage level is greater than "Y" volts (e.g., about 2.0 volts), as indicated by reference character 70, the security scan is repeated at least one more time, as indicated by reference character 72. If the voltage level is still greater than "Y" volts, as indicated by reference character 74, an alarm signal is generated, as indicated by reference character 76. However, if the voltage level is not greater than "Y" volts, either after the first measurement or the second measurement, the security scan is restarted, as indicated by reference character 64, and no alarm signal is generated.

[0040] It is understood that the voltage levels and scanning intervals may be any desired value in order to determine whether to generate an alarm signal and that the aforementioned values are intended only as examples to illustrate the broad principles and concepts of the invention. The determined voltage level may be analog levels (ADC readings), although other values or levels may be determined in order to perform the aforementioned method 60. In addition, it is understood that the steps of the flowchart shown in FIG. 16 are meant for illustrative purposes only and that the steps may be performed in any desired order and that certain steps may be combined or eliminated in various embodiments. For example, the step 66 of determining if the tether 14 is shorted may be eliminated, as the step 70 of determining the voltage level "Y" after the step 68 of generating an electrical signal may be used to determine if the tether 14 has been shorted.

[0041] The foregoing has described one or more embodiments of merchandise security systems and methods for displaying and protecting an article of merchandise from theft. Those of ordinary skill in the art will understand and appreciate that numerous variations and modifications of the invention may be made without departing from the spirit and broad scope of the invention. Accordingly, all such variations and modifications are intended to be encompassed by the appended claims.

That which is claimed is:

1. A merchandise security system for displaying and protecting an article of merchandise comprising:

a sensor configured to be secured to the article of merchandise, the sensor comprising alarming circuitry; and

a tether comprising a pair of conductors electrically connected to the alarming circuitry,

wherein at least one of the pair of conductors is configured to transfer power to the sensor and/or to the article of merchandise, and

wherein, in response to power ceasing to be transferred, the alarming circuitry is configured to monitor an electrical signal transmitted through the pair of conductors in order to determine whether the tether has been cut or removed from the sensor.

2. The merchandise display system of Claim 1, wherein the pair of conductors comprises a positive power conductor and a ground conductor.

3. The merchandise display system of Claim 1, wherein the tether is coupled to a recoiler such that the tether is extendable and retractable relative to the recoiler.

4. The merchandise display security device of Claim 3, wherein each of the sensor and the recoiler comprises at least one resistor electrically connected to the pair of conductors in a sense loop circuit, and wherein the alarming circuitry is configured to determine a change in resistance in the sense loop circuit.

5. The merchandise display system of Claim 4, wherein the alarming circuitry and the pair of conductors define the sense loop circuit, and wherein the resistor in the recoiler is disposed across the pair of conductors.

6. The merchandise display system of Claim 3, wherein an end of the tether comprises a connector configured to releasably engage the sensor.

7. The merchandise display system of Claim 1, wherein the alarming circuitry is

configured to generate a visual and/or an audible alarm signal in response to the sensor being removed from the article of merchandise, the tether being removed from the sensor and/or the tether being cut.

8. The merchandise display system of Claim 1, wherein the sensor comprises a transfer port configured to facilitate wireless communication with a key for arming and/or disarming the alarming circuitry.

9. The merchandise display system of Claim 1, further comprising a base for removably supporting the sensor thereon.

10. The merchandise display system of Claim 1, wherein the tether consists of only the pair of conductors.

11. A method for displaying and protecting an article of merchandise comprising:

transferring power through a tether to a sensor attached to the article of merchandise and/or to the article of merchandise, the tether comprising a pair of conductors electrically connected to the sensor; and

monitoring, in response to power ceasing to be transferred, an electrical signal transmitted through the pair of conductors in order to determine whether the tether has been cut or removed from the sensor.

12. The method of Claim 11, wherein monitoring comprises repeatedly determining a voltage level in predetermined increments of time.

13. The method of Claim 12, wherein determining comprises determining whether the voltage level is greater than a predetermined voltage level.

14. The method of Claim 13, further comprising generating a visual and/or an audible alarm signal when the voltage level is greater than the predetermined voltage level.

15. The method of Claim 13, further comprising repeating the step of determining the voltage level if the voltage level is greater than the predetermined voltage level.

16. The method of Claim 12, further comprising generating the electrical signal on the pair of conductors prior to determining the voltage level.

17. The method of Claim 11, wherein monitoring comprises determining a change in total resistance in a sense loop circuit defined at least by the sensor, the pair of conductors, and a plurality of resistors.

18. The method of Claim 17, further comprising determining whether the pair of conductors has been shorted.

19. The method of Claim 11, further comprising determining a voltage level in a sense loop circuit defined at least by the sensor and the pair of conductors.

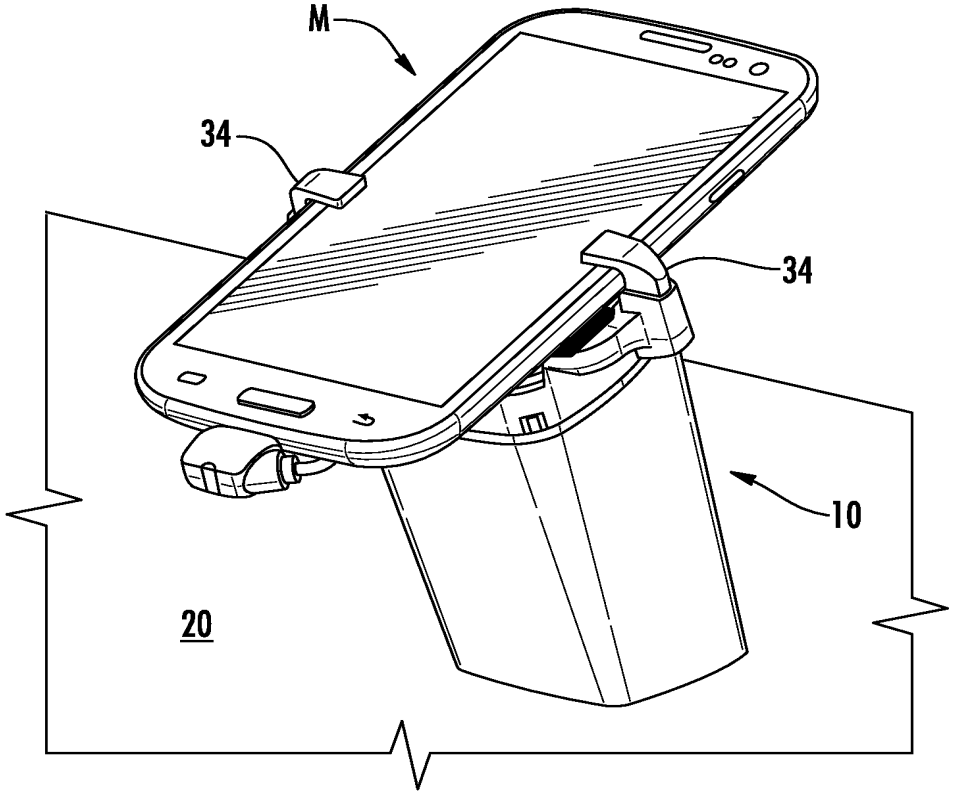


FIG. 1

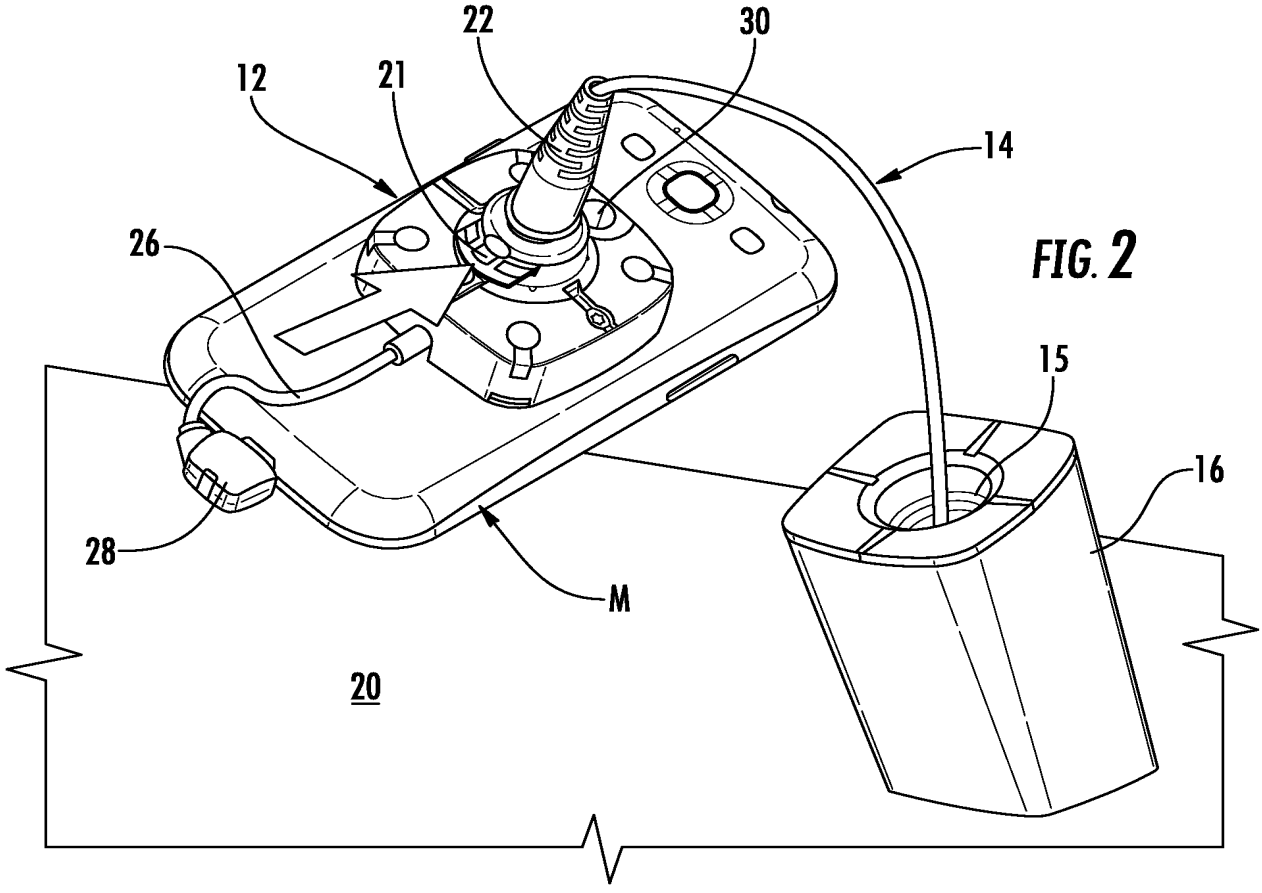


FIG. 2

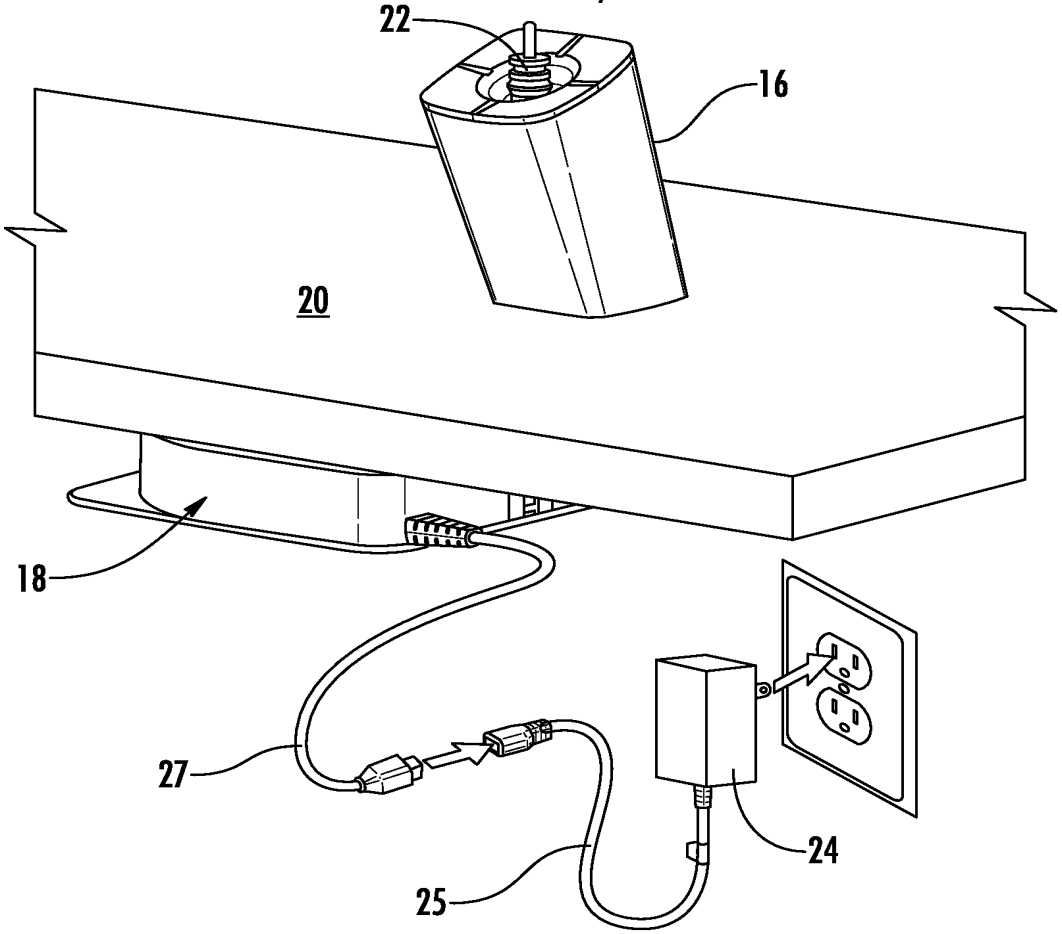


FIG. 3

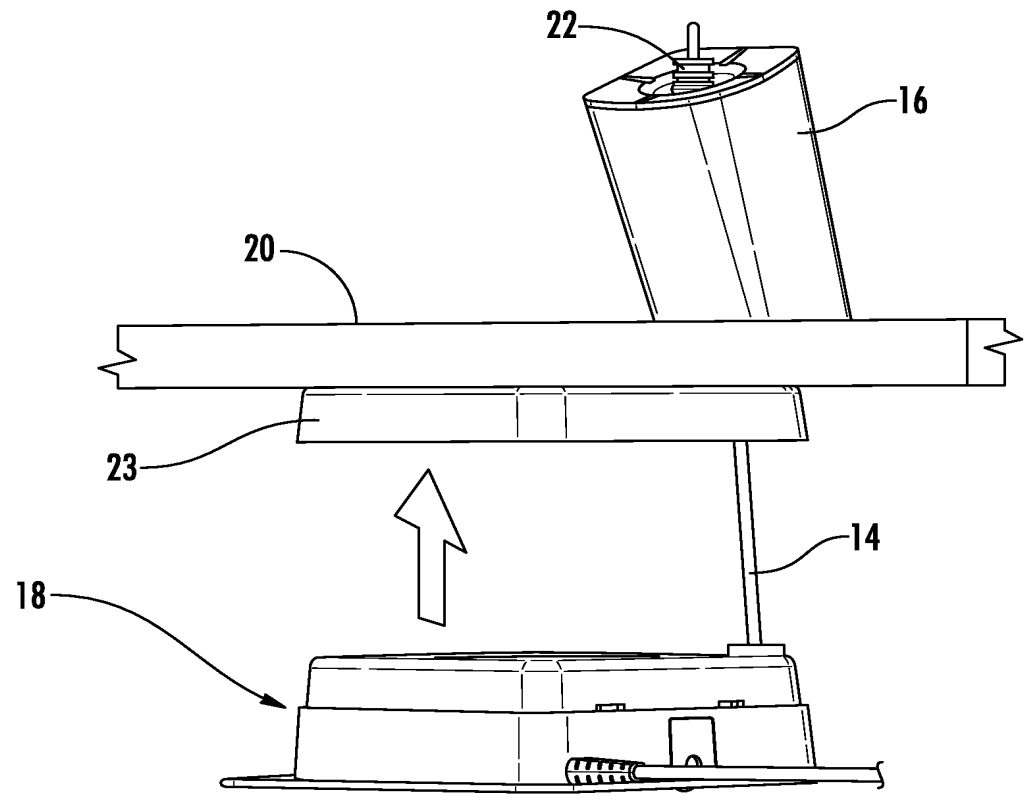


FIG. 4

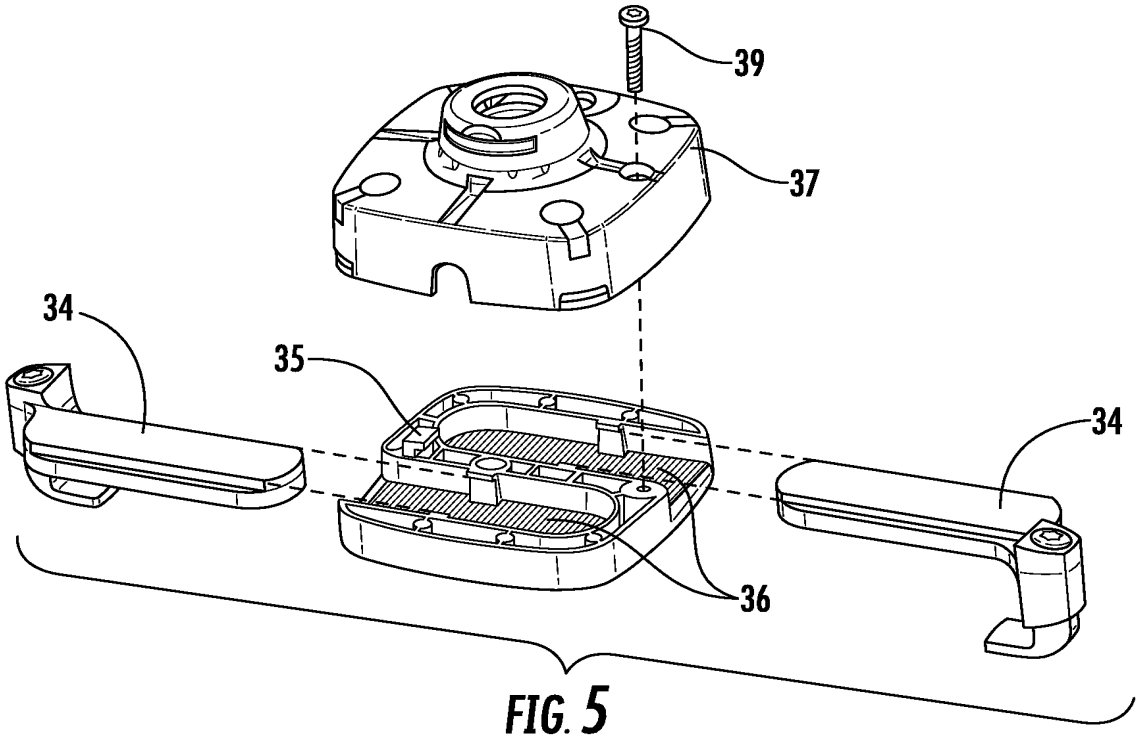


FIG. 5

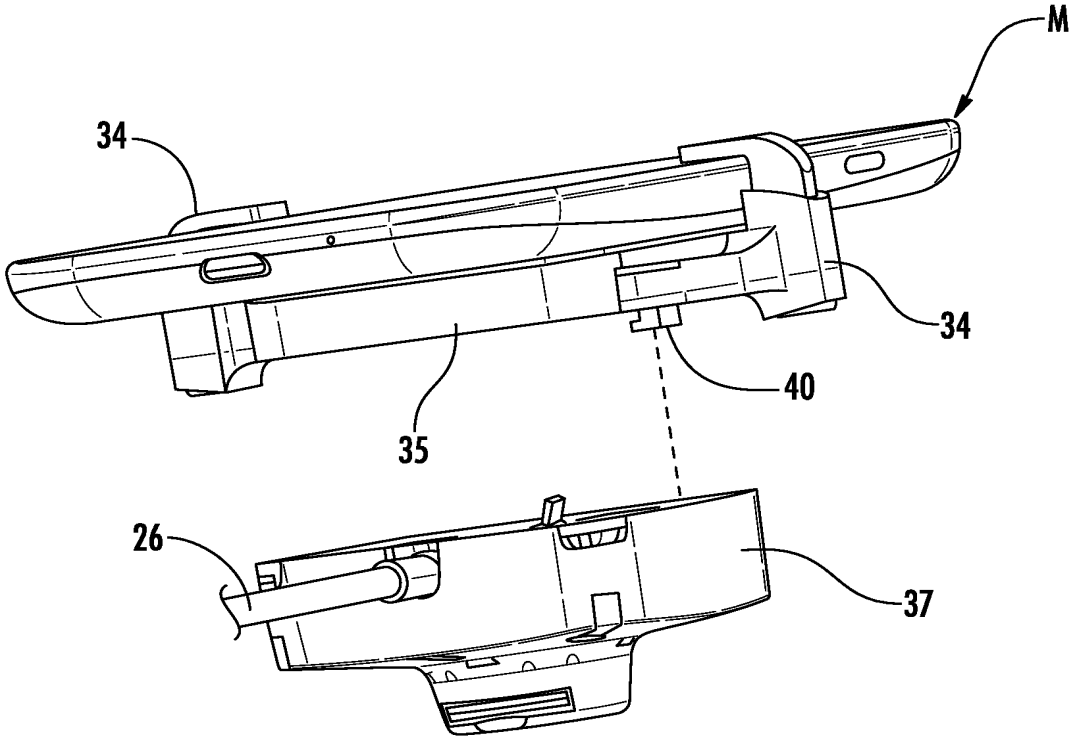


FIG. 6

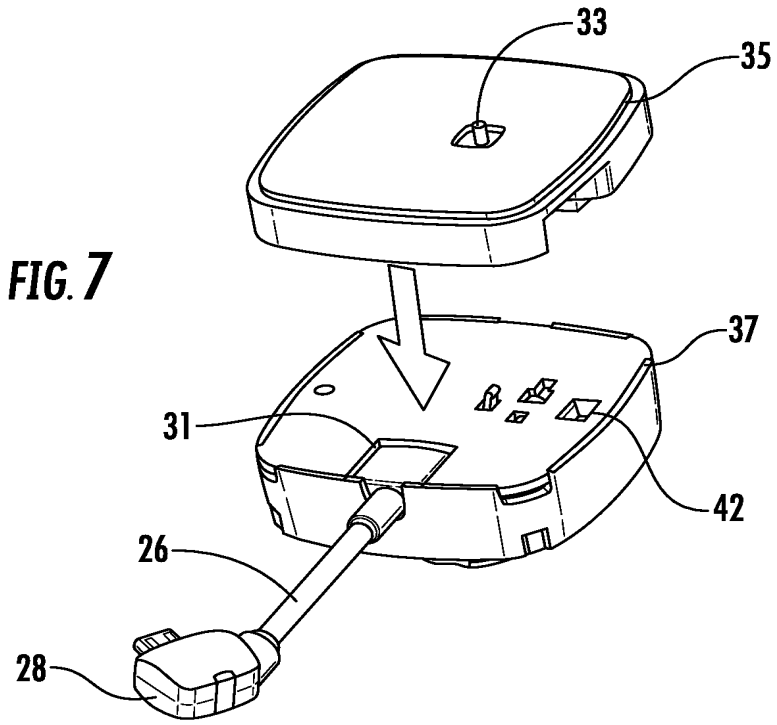


FIG. 7

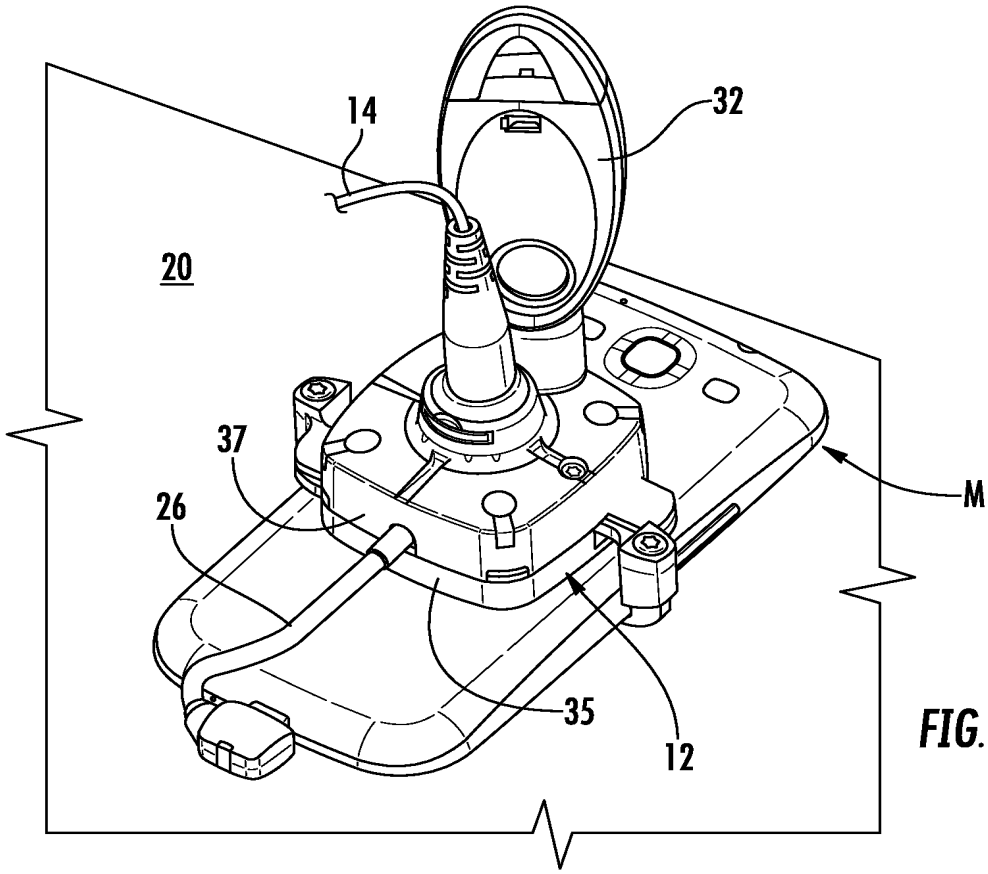


FIG. 8

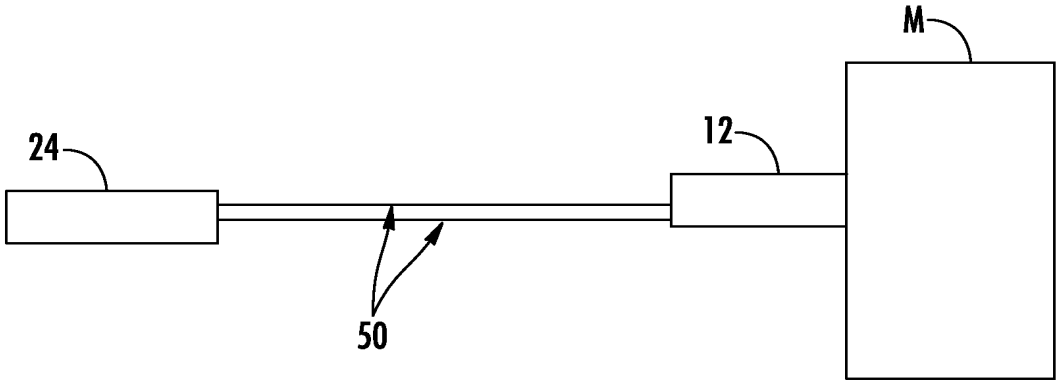


FIG. 9

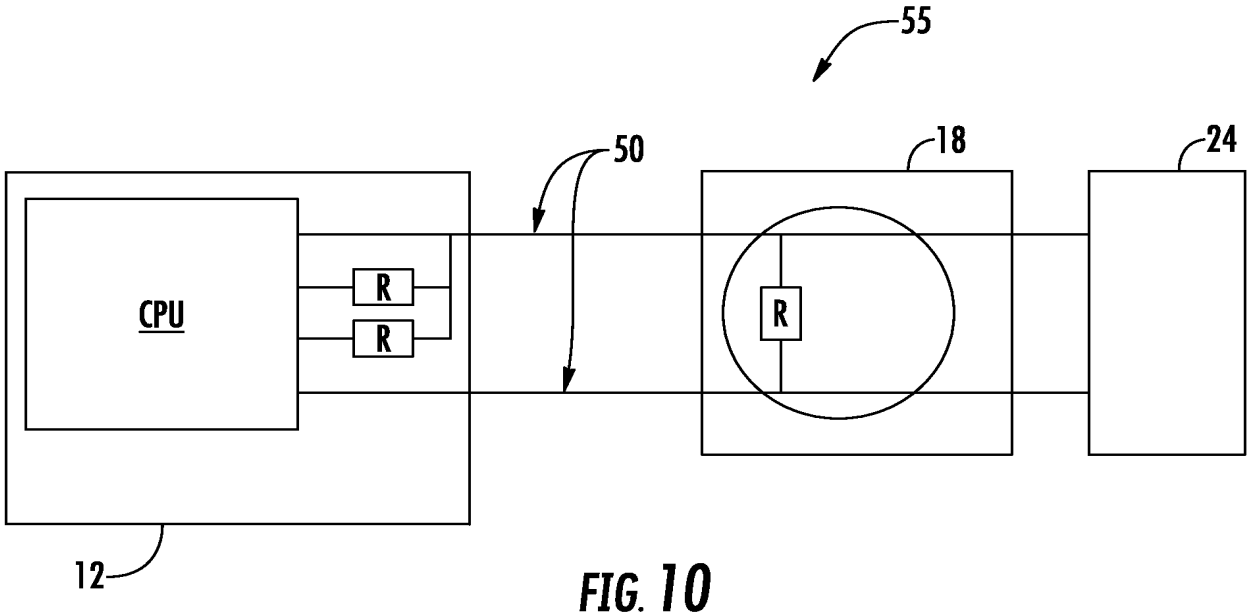


FIG. 10

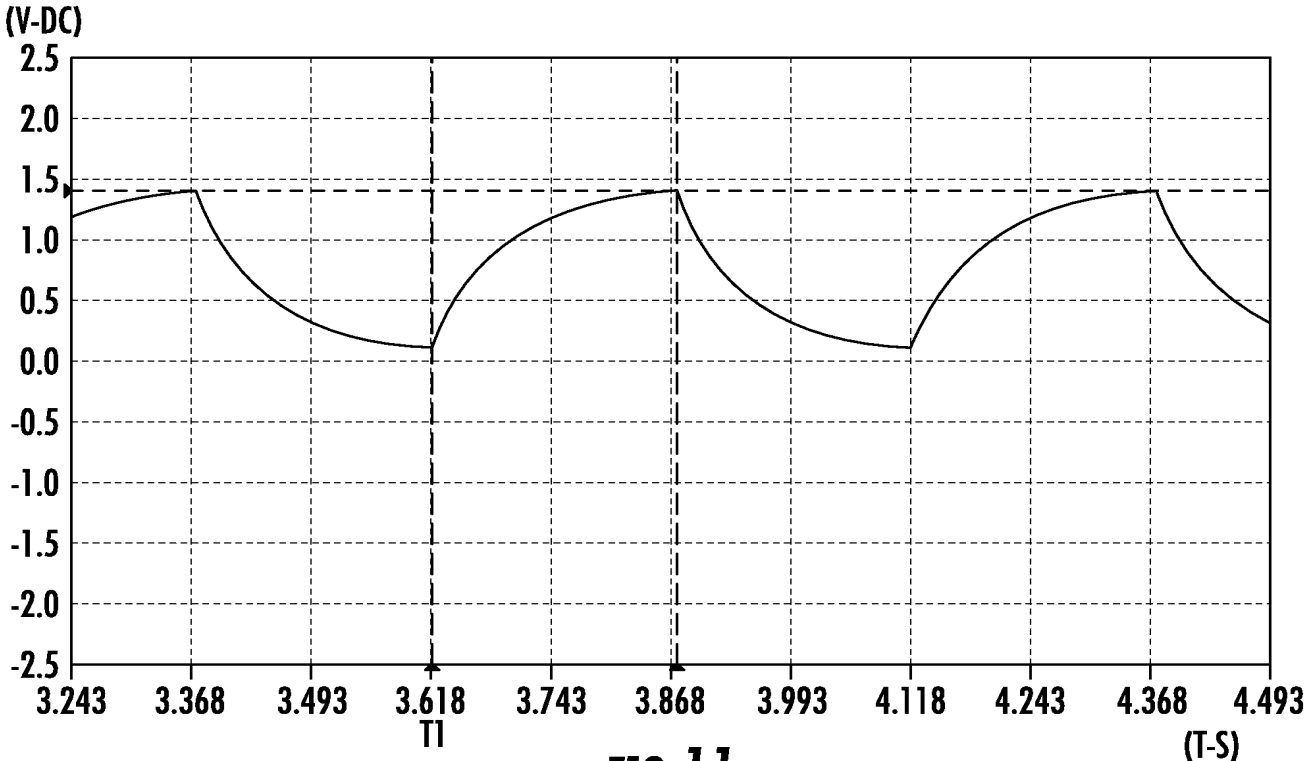
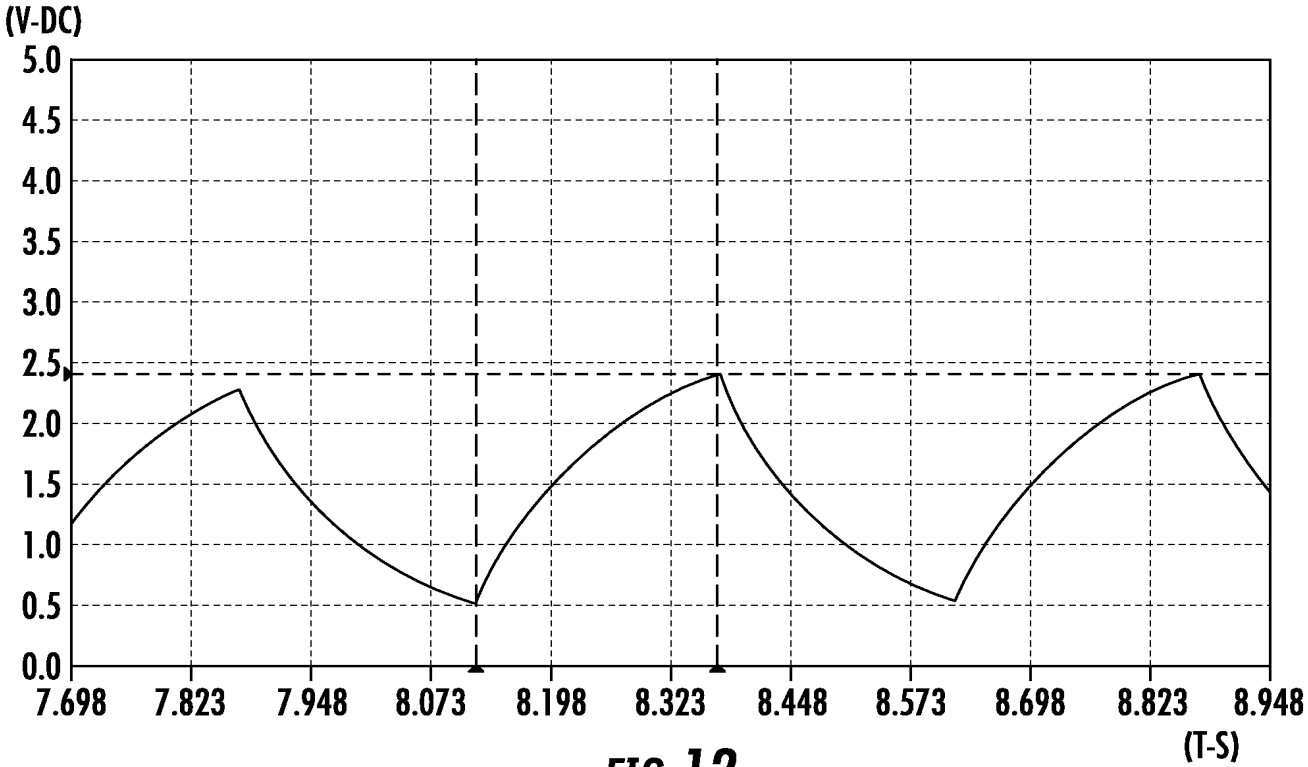

(V-DC)
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
3.243
3.368
3.493
3.618
3.743
3.868
3.993
4.118
4.243
4.368
4.493
T1
(T-S)

FIG. 11


(V-DC)
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4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7.698
7.823
7.948
8.073
8.198
8.323
8.448
8.573
8.698
8.823
8.948
(T-S)

FIG. 12

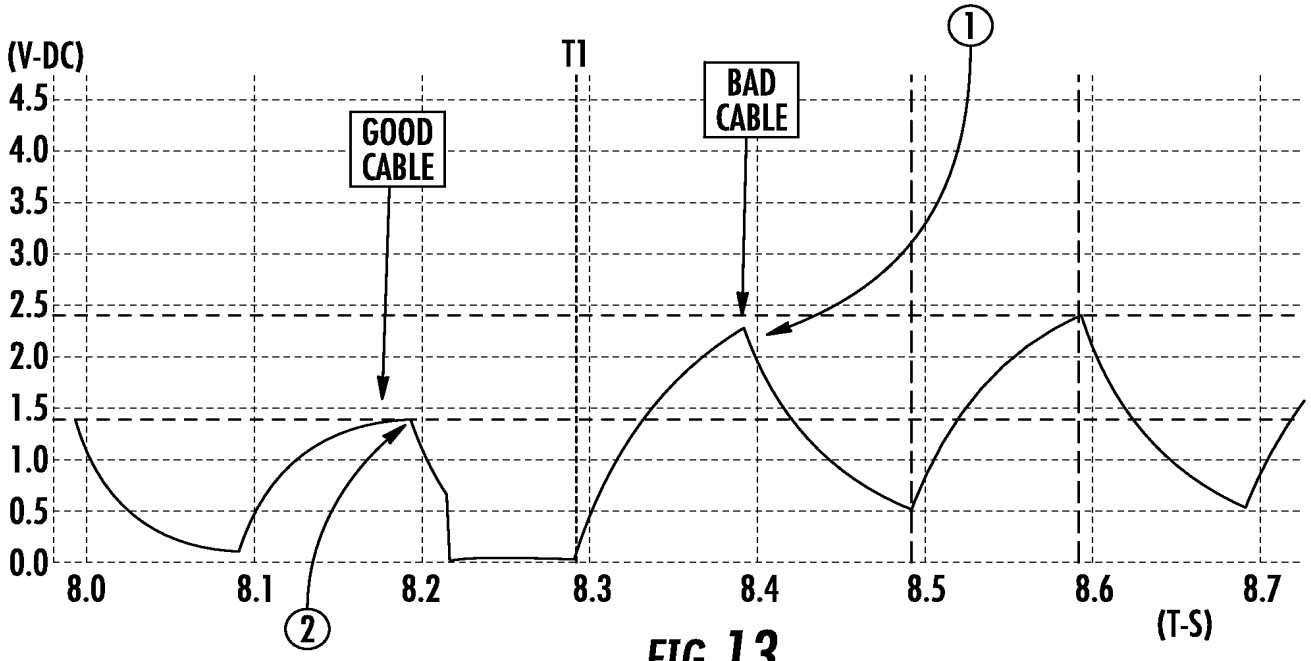
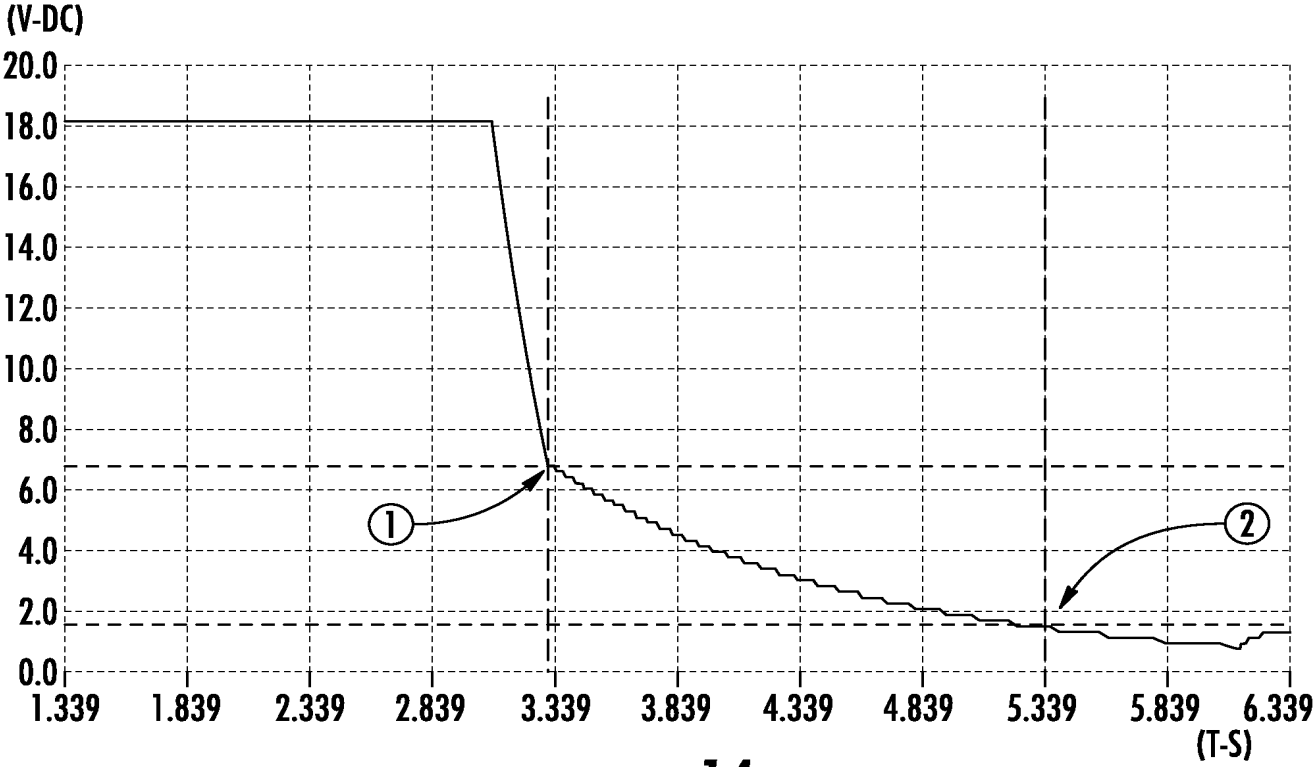

(V-DC)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
T1
GOOD CABLE
BAD CABLE
1
2
8.0
8.1
8.2
8.3
8.4
8.5
8.6
8.7
(T-S)

FIG. 13


(V-DC)
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14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1
2
1.339
1.839
2.339
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3.339
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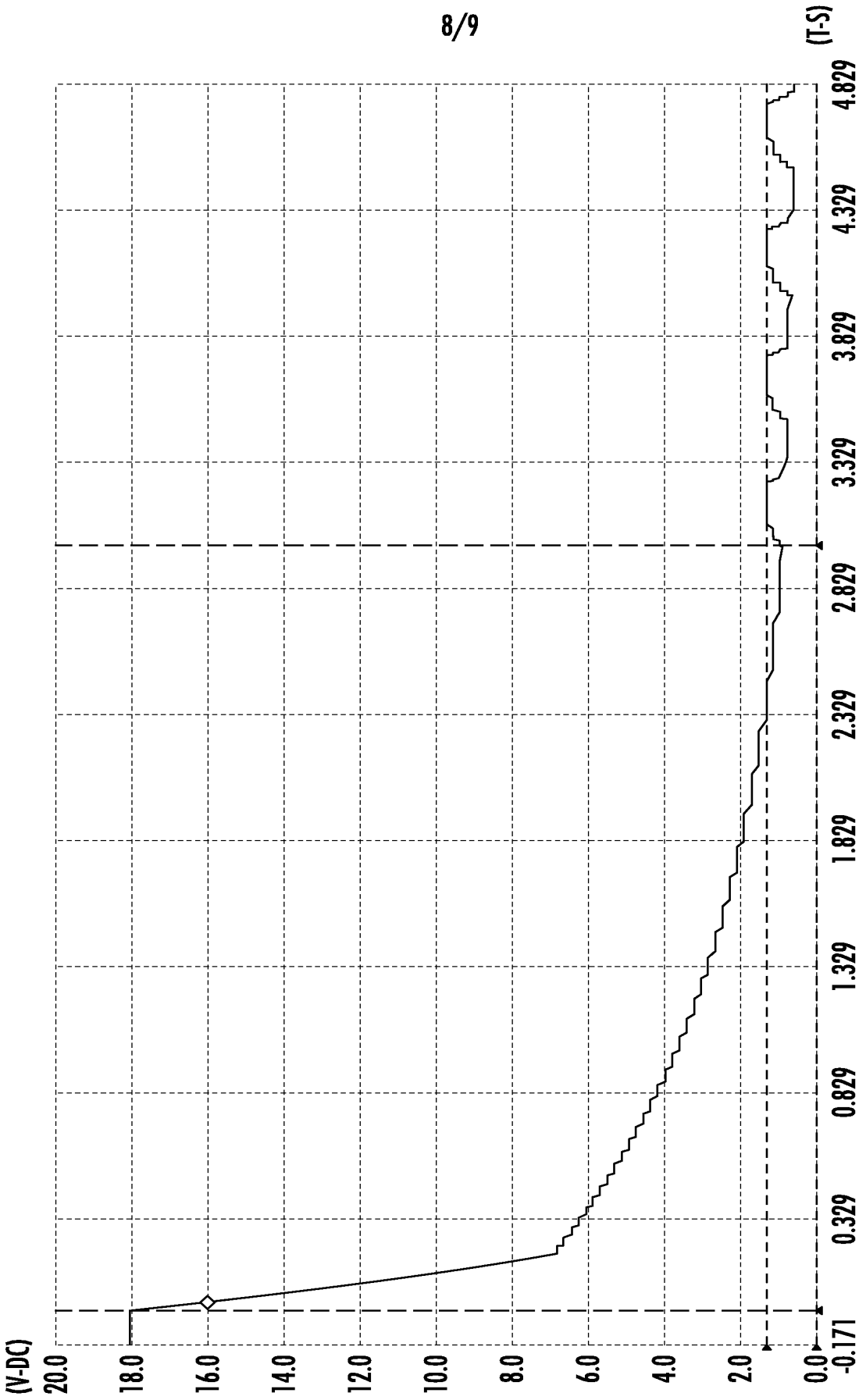
4.339
4.839
5.339
5.839
6.339
(T-S)

FIG. 14


(V-DC)
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18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
-0.171
0.329
0.829
1.329
1.829
2.329
2.829
3.329
3.829
4.329
4.829
(T-S)

FIG. 15

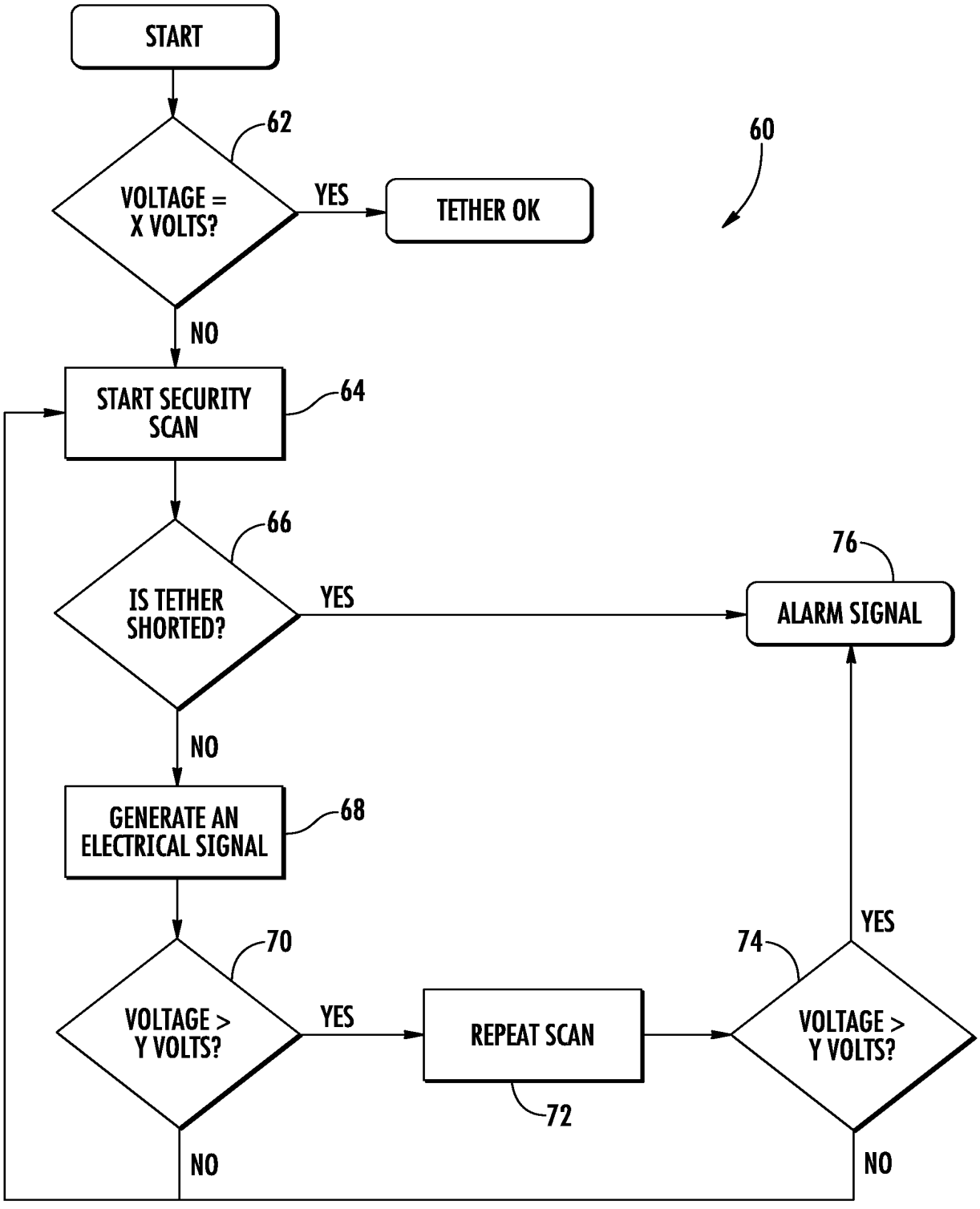
START
62
VOLTAGE = X VOLTS?
YES
TETHER OK
60
NO
START SECURITY SCAN
64
66
IS TETHER SHORTED?
YES
76
ALARM SIGNAL
NO
GENERATE AN ELECTRICAL SIGNAL
68
70
VOLTAGE > Y VOLTS?
YES
REPEAT SCAN
72
74
VOLTAGE > Y VOLTS?
YES
NO
NO

FIG. 16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 15/12378

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G08B 13/12; H01H 9/00 (2015.01)
CPC - G08B13/1445; E05B15/1607; E05B73/0082; E05B73/0005
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - G08B13/12; H01H9/00 (2015.01)
USPC - G08B13/1445; E05B15/1607; E05B73/0082; E05B73/0005

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 340/568.2; 200/61.13; CPC - G08B13/1445; E05B15/1607; E05B73/0082; E05B73/0005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Google Patents, Google Scholar, PatBase, ProQuest Dialog
search terms: merchandise security, tether, cable, pair of conductors, article, sensor, alarm, transfer power, signal, positive conductor, ground conductor, recoiler, sense loop, releasably engage, visual, audible, wireless, voltage level, time

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2013/0307692 A1 (Fawcett et al.) 21 November, 2013 (21.11.2013) entire document, especially; paragraphs [0011], [0015], [0017], [0019], [0022]	1-19
Y	US 6,386,906 B1 (Burke) 14 May, 2002 (14.05.2002) entire document, especially; (col 5, lns 51-60), (col 5, lns 23-34)	1-19
Y	US 7,209,038 B1 (Deconinck et al.) 24 April, 2007 (24.04.2007) entire document, especially; col 10, lns 29-44	3-6
Y	US 7,737,845 B2 (Fawcett et al.) 15 June 2010 (15.06.2010) entire document, especially; col 4, lns 54-56	8
Y	US 5,499,023 A (Goldschmidt) 12 March 1996 (12.03.1996) entire document, especially; col 1, lns 54-61	12-18
Y	US 4,760,382 A (Faulkner) 26 July 1988 (26.07.1988) entire document, especially; col 4, lns 52-64	4, 5

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 March 2015 (30.03.2015)	21 APR 2015
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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25 August 2015 (25.08.2015)

(25) Filing Language: English

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62/060,989	7 October 2014 (07.10.2014)	US
62/117,249	17 February 2015 (17.02.2015)	US

(71) Applicant: **INVUE SECURITY PRODUCTS INC.** [US/US]; 15015 Lancaster Highway, Charlotte, NC 28277 (US).

(72) Inventors: **BERGLUND, David, N.**; 4650 Bright Road, Lot 11, Charlotte, NC 28214 (US). **KERLEY, Matthew, Thomas**; 3057 Drummond Avenue, Fort Mill, SC 29707 (US).

(74) Agent: **KIRK, Trent, A.**; Invue Security Products Inc., 15015 Lancaster Highway, Charlotte, NC 28277 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR LOCKING A SENSOR TO A BASE

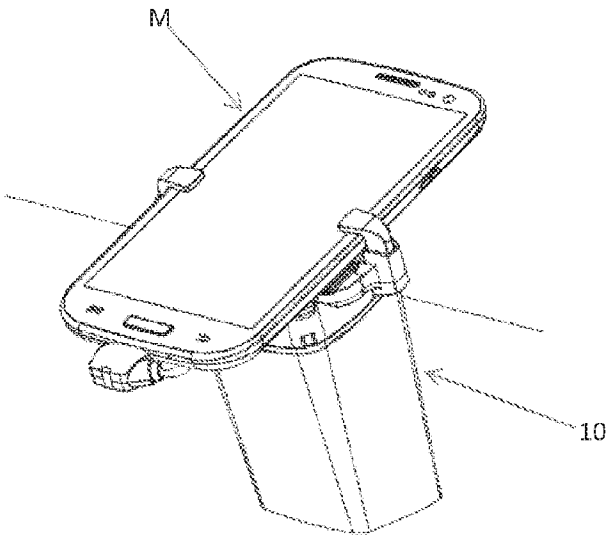

FIGURE 1

(57) Abstract: Embodiments of the present invention are directed to merchandise display systems and methods for displaying an article of merchandise. In one example, the system includes a sensor configured to be secured to the article of merchandise. The sensor includes a first engagement member. The system also includes a base configured to removably support the sensor thereon. The base includes a second engagement member configured to releasably engage the first engagement member such that the sensor is locked to the base. The sensor is configured to rotate with respect to the base while locked thereto.

WO 2016/033037 A1

Declarations under Rule 4.17:

---- *of inventorship (Rule 4.17(iv))*

Published:

---- *with international search report (Art. 21(3))*

SYSTEMS AND METHODS FOR LOCKING A SENSOR TO A BASE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit to priority of United States Provisional Patent Application No. 62/042,320 filed on August 27, 2014, United States Provisional Patent Application No. 62/060,989 filed on October 7, 2014, and United States Provisional Patent Application No. 62/117,249 filed on February 17, 2015, the entire disclosures of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] Embodiments of the present invention relate generally to security systems and methods for articles of merchandise in a retail environment.

BACKGROUND OF THE INVENTION

[0003] Retailers routinely display articles of merchandise, such as telephones, portable computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like for customers to evaluate before making a purchase. These articles of merchandise are continually being made smaller and lighter in weight due to advances in technology and materials. As a result, such merchandise is increasingly vulnerable and susceptible to theft. At the same time, the retail price and profit margin for such merchandise continues to decline. Accordingly, these articles of merchandise need to be secured by a security device that effectively and cost efficiently protects the merchandise from theft.

BRIEF SUMMARY

[0004] Aspects and advantages of embodiments of the present disclosure will be set forth in part in the following description, or may be learned from the description, or may be learned through practice of the embodiments.

[0005] Embodiments of the present invention are directed to methods and systems for displaying an article of merchandise. In one embodiment, a merchandise display system for displaying an article of merchandise includes a sensor configured to be secured to the article of merchandise. The sensor includes a first engagement member. A base is configured to removably support the sensor thereon, wherein the base includes at least one second engagement member configured to releasably engage the first engagement member such that the sensor is locked to the base. The sensor is configured to rotate with respect to the base while locked thereto.

[0006] In another embodiment, a method for displaying an article of merchandise is provided. The method includes securing a sensor to the article of merchandise, wherein the sensor comprises a first

engagement member. The method also includes positioning the sensor on a base configured to removably support the sensor thereon, wherein the base comprises at least one second engagement member configured to releasably engage the first engagement member. The method further includes locking the sensor to the base via engagement of the at least one second engagement member with the first engagement member such that the sensor is configured to rotate with respect to the base while locked thereto.

[0007] These and other features, aspects and advantages of various embodiments will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the present disclosure and, together with the description, serve to explain the related principles.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIGS. 1 and 2 each illustrate a perspective view of a merchandise display system according to certain aspects of the present disclosure;

[0009] FIG. 3 illustrates a perspective view of a merchandise display system, including a recoiler, according to certain aspects of the present disclosure;

[0010] FIG. 4 illustrates a perspective view of a merchandise display system, including a recoiler of FIG. 3, according to certain aspects of the present disclosure;

[0011] FIGS. 5 and 6 each illustrate an exploded perspective view of a sensor for use with a merchandise display system of FIG. 1, according to certain aspects of the present disclosure;

[0012] FIG. 7 illustrates an exploded perspective view of a sensor for use with the merchandise display system of FIG. 1, according to certain aspects of the present disclosure;

[0013] FIG. 8 illustrates a perspective view of a sensor for use with the merchandise display system of FIG. 1, according to certain aspects of the present disclosure;

[0014] FIG. 9 illustrates a perspective view of a merchandise display system according to certain aspects of the present disclosure;

[0015] FIGS. 10 and 11 each illustrate a perspective view of a merchandise display system, in which an exterior of the base has been removed for purposes of illustration, according to certain aspects of the present disclosure;

[0016] FIG. 12 illustrates a front view of a merchandise display system of FIGS. 10 and 11, in which an exterior of the base has been removed for purposes of illustration, according to certain aspects of the present disclosure;

[0017] FIG. 13 illustrates a side cross-sectional view of a merchandise display system, according to certain aspects of the present disclosure;

[0018] FIG. 14 illustrates a front view of a merchandise display system, in which an interior of the base is visible through the exterior of the base for purposes of illustration, according to certain aspects of the present disclosure;

[0019] FIG. 15 illustrates a top view of a merchandise display system of FIG. 14, according to certain aspects of the present disclosure;

[0020] FIG. 16 illustrates a front view of a merchandise display system, in which an interior of the base is visible through the exterior of the base for purposes of illustration, according to certain aspects of the present disclosure;

[0021] FIGS. 17 and 18 each illustrate a perspective view of a merchandise display system of FIG. 16, in which an interior of the base is visible through the exterior of the base for purposes of illustration, according to certain aspects of the present disclosure;

[0022] FIG. 19 illustrates a perspective view of a merchandise display system, according to certain aspects of the present disclosure;

[0023] FIG. 20 illustrates a side view of a merchandise display system of FIG. 19, in which an exterior of the base has been removed for purposes of illustration, according to certain aspects of the present disclosure;

[0024] FIG. 21 illustrates an enlarged perspective view of a merchandise display system of FIG. 19, in which an exterior of the base has been removed for purposes of illustration, according to certain aspects of the present disclosure;

[0025] FIG. 22 illustrates an enlarged bottom perspective view of a merchandise display system of FIG. 19, including second engagement members, in which portions of the base have been removed for purposes of illustration, according to certain aspects of the present disclosure; and

[0026] FIG. 23 illustrates an enlarged side perspective view of a merchandise display system of FIG. 19, including second engagement members, in which portions of the base have been removed for purposes of illustration, according to certain aspects of the present disclosure.

Detailed Description Of Embodiments Of The Invention

[0027] One or more embodiments of a system for securing an article of merchandise are described below and shown. The article of merchandise M is typically a display model or an operational sample of electronic merchandise, such as portable telephones, smart phones, computers (e.g. notebooks, laptops, tablets, etc.), e-readers, media players, and the like, for a customer to examine before making a decision to purchase the article. The article of merchandise is typically displayed in a manner that permits a prospective purchaser to evaluate the operation and features of the merchandise, while protecting the merchandise from a potential thief. In one embodiment, a sensor with alarming circuitry may be attached

to the article of merchandise for detecting various alarming conditions, such as the article being removed from the sensor. A tether may be operably engaged with the sensor at one end, while the opposite end may be secured to a base or other display surface. As explained in further detail below, the alarming circuitry of the sensor may also be configured to detect an alarming condition of the tether, such as cutting or detaching the tether.

[0028] FIGS. 1-4 illustrate embodiments of a merchandise security system 10 for securing an article of merchandise M from theft or unauthorized removal. The system generally includes a sensor 12, a tether 14, a base 16, and a recoiler 18 as shown in FIGS. 2-4. The sensor 12 is configured to be secured to the article of merchandise M, such as with a pressure-sensitive adhesive (not shown). One end of the tether 14 may be electrically connected to the recoiler 18, while the opposite end of the tether 14 includes a connector or jack 22. The sensor 12 may be electrically connected to the tether 14, such as with the connector 22 as shown in FIG. 2. Thus, the connector 22 may be releasably secured to the sensor 12 to establish electrical communication therebetween. The connector 22 may be further secured in position with a lock mechanism 21, such as a clip, as shown in FIG. 2. As such, when the lock mechanism 21 engages the connector 22, the connector 22 may not be removed from the sensor 12 without first disengaging the lock mechanism 21. The lock mechanism 21 may allow tension to be applied to the tether 14 without causing the connector 22 to become inadvertently disconnected from the sensor 12.

[0029] The base 16 is configured to removably support the sensor 12 thereon such that the sensor 12 and article of merchandise M may be removed from the base 16 for inspection and returned to the base 16. The base 16 may define an opening therethrough that allows the tether 14 to extend and retract relative to the base 16. FIGS. 3 and 4 show that the recoiler 18 may be secured below a support surface 20 (e.g., a counter, shelf, or the like). In this regard, the recoiler 18 may include a mounting plate 23 that is configured to be secured to the support surface 20, and the recoiler 18 is configured to engage the mounting plate 23 so as to be secured thereto. As shown in FIG. 3, the recoiler 18 may be electrically connected to a power source that is configured to provide power to the recoiler 18 and to the tether 14. A plug or other connector 24, for example, an AC power plug, may be disposed at the end of an input power cable 25 for electrically connecting the input power cable 25 to an external source of electrical power, for example, a conventional 110V AC power outlet and an input cable 27 of the recoiler 18. In some embodiments, the sensor 12 is electrically connected to a power cable 26 that is configured to provide power to the article of merchandise M. Thus, the power cable 26 may facilitate use of the article of merchandise M on display and charging of the article's battery. FIG. 2 shows that the power cable 26 may include a connector 28 that is configured to operably engage an input port on the article of merchandise M. The alarming circuitry may be configured to detect removal of the connector 28 in some embodiments for generating an audible and/or a visual alarm.

[0030] As discussed above, the sensor 12 may include alarming circuitry, processor, central processing unit, or the like that is configured to determine whether various security events have occurred for generating an audible and/or a visual alarm. The sensor 12 may also include an alarm (e.g., a piezoelectric device) that is configured to generate an audible alarm. Thus, the sensor 12 may be configured as "alarm-on-product" whereby the sensor is configured to alarm when attached to the article of merchandise M or detached from the article of merchandise. In some cases, the sensor 12 may include a visual indicator (e.g., an LED) for emitting a visual signal when the alarming circuitry is armed and/or alarming. Moreover, the sensor 12 may include a transfer port 30 that is configured to communicate with a key 32 for arming and/or disarming the alarming circuitry (see, e.g., FIGS. 2 and 8). In one embodiment, the transfer port 30 is configured to communicate wirelessly with a key 32 in order to determine whether the key is authorized to arm and/or disarm the alarming circuitry. According to some embodiments, the key is similar to that described in U.S. Patent No. 7,737,845, the contents of which are hereby incorporated by reference in their entirety. According to one embodiment, the sensor 12 may include a pressure switch 33 or the like that is configured to detect when the article of merchandise has been removed from the sensor (see, e.g., FIG. 7). The alarming circuitry may be configured to detect the removal of the article M and generate and an audible and/or a visual alarm in response thereto. In other embodiments, the alarming circuitry may be located in the base 16 or at another location whereby the sensor 12 and the alarming circuitry are electrically connected with one another, such as via one or more conductors extending through the tether 14.

[0031] In some embodiments, the sensor 12 is a one-piece design that is configured to be attached to the article of merchandise. In other embodiments, FIGS. 5-7 illustrate that the sensor 12 may include an upper portion 35 and a lower portion 37. The upper portion 35 may be configured to be secured to the lower portion 37, such as with a proprietary fastener 39. In addition, the upper portion 35 may be configured to be secured to the article of merchandise M, while the lower portion 37 may be configured to receive the connector 22. FIG. 7 shows that an end of the power cable 26 may be enlarged and configured to be inserted into a recess in the lower portion 37, which secures the power cable therein when the upper and lower portions are secured to one another. In addition, FIG. 6 shows that the upper portion 35 may include an engagement member 40, and FIG. 7 shows that the lower portion 37 may include an opening 42 configured to receive the engagement member 40 therein. Engagement between the engagement member 40 and the opening 42 may be used to align the upper and lower portions relative to one another prior to securing the upper and lower portions together.

[0032] Furthermore, FIGS. 1, 5-6, and 8 illustrate that the sensor 12 may include one or more arms 34 for securing the article of merchandise to the sensor. FIG. 5 shows that the upper portion 35 may include a pair of slots 36 that are configured to receive a respective arm 34 therein. Thus, each arm 34

may be configured to slide within the slots 36 to adjust the arms relative to the article of merchandise. The lower portion 37 may be secured to the upper portion 35 such that each arm 34 is secured therebetween and cannot be removed without first detaching the lower portion from the upper portion.

[0033] Embodiments of the present invention provide for the delivery of power to the article of merchandise M and/or the sensor 12 through a plurality of conductors in the tether 14. In some examples, the tether 14 includes only two conductors (e.g., a positive power line and a ground line). An input power source may be in electrical communication with the conductors for transmitting power through the tether 14 and to the sensor 12 and/or the article of merchandise M.

[0034] FIGS. 9-15 illustrate another embodiment of a display system 50. Similar to the embodiments discussed above, the display system 50 includes a sensor 51 removably supported on a base 54. As shown in FIGS. 11-12, the sensor 51 may include a base member 58 that is configured to be engaged by the base 54. In this embodiment, the sensor 51 includes at least one first engagement member 52, while the base 54 includes at least one second engagement member 56. In this example, the first engagement member 52 is a slot defined in base member 58 of the sensor 51 that extends at least partially about the circumference of the base 54. The slot may extend about the entire circumference. The second engagement member 56 may be a biased member that is configured to be biased into engagement with the first engagement member 52. For example, the second engagement member 56 may be a spring-biased member (e.g., spring steel). FIG. 15 is a top view of the display system 50 and shows that the second engagement member 56 may extend within an opening 57 defined through the base 54. The second engagement member 56 may be biased to automatically engage the first engagement member 52 when the sensor 51 is placed on the base 54. Thus, as the sensor 51 is moved to a seated position on the base 54, the second engagement member 56 may bias into engagement with the first engagement member 52. Therefore, a separate step to lock the second engagement member to the first engagement member is not required. However, it is understood that the first and second engagement members 52, 56 may be actuated into engagement with one another under operation of a key or the like.

[0035] In some cases, the second engagement member 56 may engage the first engagement member 52 at a plurality of locations. In one embodiment, the second engagement member 56 engages the first engagement member 52 on opposite sides of the base member 58 (see, e.g., FIG. 10-12, wherein the exterior of the base 54 has been removed for purposes of illustration). As shown, the second engagement member 56 may be an elongate U-shaped member, although other shapes may be employed. The second engagement member 56 may also be configured to facilitate attachment to a support surface 20. For example, the second engagement member 56 may define an opening 59 configured to receive a fastener 60 (see, e.g., FIG. 9). The fastener 60 may be configured to engage the base 54 and thereby secure the base to the support surface 20 such as via a threaded engagement with a nut. The cross-sectional view of

FIG. 13 shows that the base 54 may also include a guide tube 66 that is configured to receive a tether, cord, cable, or the like. The guide tube 66 may be operably engaged with or integrated with the fastener 60 for guiding the tether through the base and below the support surface 20. It is understood that the tether may alternatively be external to the base 54, such as where an elastic cable is employed.

[0036] When the second engagement member 56 is in engagement with the first engagement member 52, the sensor 51 is locked to the base 54. Thus, the sensor 51 may not be removed from the base 54 without disassembly or otherwise damaging the sensor and/or base. In the locked position, however, the sensor 51 is rotatable about the base 54. Thus, the sensor 51 and associated article of merchandise M may rotate at least partially about the base 54 (e.g., at least about 90 degrees), and may even rotate freely about the base. As such, even when in a locked position, a consumer is able to interact with the article of merchandise M including moving the article of merchandise between different display orientations.

[0037] The base 54 may include a release mechanism 62 that is configured to release the second engagement member 56 from the first engagement member 52 to unlock the sensor 51 from the base 54 (see, e.g., FIGS. 13-14). Thus, the release mechanism 62 may be configured to unlock the sensor 51 from the base 54 while the sensor is seated and locked to the base. In one embodiment, the release mechanism 62 is a cam mechanism 64 that is configured to bias the second engagement member 56 out of engagement with the first engagement member 52, which is a slot in this instance. For example, the second engagement member 56 may be attached to or integrated with a bracket member 68 that is configured to cooperate with the release mechanism 62. In one embodiment, rotation of the cam mechanism 64 engages the bracket member 68 to thereby bias the engagement member 56 outwardly and out of engagement with the first engagement member 52. The release mechanism 62 may be configured to cooperate with a key to rotate or otherwise actuate the cam mechanism 64. The key could be any suitable type, such as a proprietary tool configured to mate with a proprietary shape on the release mechanism 62. For instance, FIG. 14 shows that the base 54 may define an access opening 70 that is configured to receive an appropriate key. Thus, the release mechanism 62 allows for a quick-release of the sensor 51 from the base 54.

[0038] FIGS. 16-18 illustrate another embodiment of a merchandise security system 100. In this embodiment, at least one second engagement member 156 is biased towards an engaged position. For instance, the second engagement members may be spring biased towards an engaged position. Shown are a pair of second engagement members 156, wherein each engagement member is configured to pivot about a respective axis. As before, the second engagement members 156 are configured to engage a first engagement member 52 of the sensor 51 (not shown) and thereby lock the sensor to the base 154. Similar to that described above, the system 100 may include a release mechanism 162. The release mechanism

162 may be configured to lock and/or unlock the sensor to or from the base 154. For example, rotation of a cam mechanism 164 may cause the second engagement members 156 to rotate either towards an engaged position with the sensor or a disengaged position out of engagement with the sensor. The release mechanism 162 may include a fastener 166 coupled to the cam mechanism 164, and rotation of the cam mechanism may occur as a result of rotation of the fastener. Thus, rotation of the fastener 166 and associated cam mechanism 164 may bias the second engagement members 156 out of engagement with the sensor. In some cases, the cam mechanism 164 may be configured to engage the second engagement members and hold the second engagement members in an unlocked position. As also discussed above, the release mechanism may be configured to be actuated with a key, such as a proprietary tool.

[0039] FIGS. 19-23 illustrate another embodiment of a merchandise security system 200 (wherein the exterior of the base 254 has been removed from FIGS. 20-23 for purposes of illustration). In this embodiment, at least one second engagement member 256 is biased towards a disengaged position. For instance, the second engagement members may be spring biased towards a disengaged position with a respective spring 220. Shown are a pair of second engagement members 256, wherein each engagement member is configured to pivot about a respective axis. As before, the second engagement members 256 are configured to engage a first engagement member 52 of the sensor 51 (not shown) and thereby lock the sensor to the base 254. Similar to that described above, the system 200 may include a release mechanism 262. The release mechanism 262 may be configured to lock and/or unlock the sensor to or from the base 254. For example, rotation of a cam mechanism 264 may cause the second engagement members 256 to rotate either towards an engaged position with the sensor 51 or a disengaged position out of engagement with the sensor. Thus, rotation of the cam mechanism 264 may overcome the spring bias and move the second engagement members 256 into engagement with the sensor. As shown in FIGS. 22-23, the cam mechanism 264 may include one or more slots 224 configured to receive a respective second engagement member 256 therein and guide the second engagement members between engaged and disengaged positions. The cam mechanism 264 may be configured to guide the second engagement members 256 between predetermined engaged and disengaged positions. For instance, rotation of a fastener 266 engaged with or otherwise coupled to the cam mechanism 264 in one direction may move the second engagement members 256 to an engaged position, while rotation of the fastener in an opposite direction may move the second engagement members to a disengaged position. In some cases, the cam mechanism 264 is configured to rotate about an axis of the fastener 266, while the second engagement members 256 are configured to move within a plane between the engaged and disengaged positions. As also discussed above, the release mechanism 262 may be configured to be actuated with a key, such as a proprietary tool. In some embodiments, the fastener 266 may be configured to be rotated less than a complete revolution or turn in order to move the second engagement members 256 between disengaged and engaged positions.

For instance, the fastener may be configured to be rotated a ¼ turn, ½ turn, or ¾ turn to move the second engagement members 256 between the disengaged and engaged positions.

[0040] FIGS. 19 and 20 also demonstrate that a base assembly 260 may be provided for facilitating attachment to a support surface 20 (not shown). For example, the base 254 may be configured to be coupled to the base assembly 260. The base assembly 260 may be configured to engage the base 254 and thereby secure the base to the support surface 20 such as via a threaded engagement with a nut. Similar to that described above, the base assembly 260 may also be configured to receive a tether, cord, cable, or the like for guiding the tether through the base 245 and below the support surface 20.

[0041] The foregoing has described one or more embodiments of merchandise security systems and methods for displaying and protecting an article of merchandise. Those of ordinary skill in the art will understand and appreciate that numerous variations and modifications of the invention may be made without departing from the spirit and scope of the invention. Accordingly, all such variations and modifications are intended to be encompassed by the appended claims.

That which is claimed is:

1. A merchandise display system for displaying an article of merchandise comprising:

a sensor configured to be secured to the article of merchandise, the sensor comprising a first engagement member; and

a base configured to removably support the sensor thereon, the base comprising at least one second engagement member configured to releasably engage the first engagement member such that the sensor is locked to the base,

wherein the sensor is configured to rotate with respect to the base while locked thereto.

2. The merchandise display system of Claim 1, wherein the first engagement member comprises a slot.

3. The merchandise display system of Claim 1, wherein the slot extends circumferentially.

4. The merchandise display system of Claim 1, wherein the at least one second engagement member is configured to bias into engagement with the first engagement member.

5. The merchandise display system of Claim 1, wherein the at least one second engagement member comprises a spring-biased member.

6. The merchandise display system of Claim 1, further comprising a release mechanism configured to move the at least one second engagement member into and out of engagement with the first engagement member.

7. The merchandise display system of Claim 6, wherein the release mechanism comprises a cam mechanism.

8. The merchandise display system of Claim 7, wherein the cam mechanism comprises one or more slots configured to receive a portion of the at least one second engagement member therein.

9. The merchandise display system of Claim 7, wherein the cam mechanism is configured to rotate, and wherein rotation of the cam mechanism is configured to cause the at least one second engagement member to rotate either towards an engaged position with the first engagement member or a disengaged position out of engagement with the first engagement member.

10. The merchandise display system of Claim 7, wherein the cam mechanism is configured to guide the at least one second engagement member between predetermined engaged and disengaged positions.

11. The merchandise display system of Claim 7, wherein the release mechanism comprises a

fastener engaged with the cam mechanism such that rotation of the fastener in one direction is configured to move the at least one second engagement member to an engaged position, while rotation of the fastener in an opposite direction is configured to move the at least one second engagement member to a disengaged position.

12. The merchandise display system of Claim 11, wherein the cam mechanism is configured to rotate about an axis of the fastener, and wherein the at least one second engagement member is configured to move within a plane between the engaged and disengaged positions.

13. The merchandise display system of Claim 11, wherein the fastener is configured to be rotated less than a complete revolution in order to move the at least one second engagement member between the disengaged and engaged positions.

14. The merchandise display system of Claim 1, wherein the release mechanism is configured to be actuated with a key.

15. The merchandise display system of Claim 1, further comprising a tether attached to the sensor at one end and an opposite end configured to be received by the base.

16. The merchandise display system of Claim 15, wherein an end of the tether comprises a connector configured to releasably engage the sensor.

17. The merchandise display system of Claim 1, further comprising a tether attached to the sensor at one end and a recoiler at an opposite end.

18. The merchandise display system of Claim 1, wherein the sensor is configured to rotate at least about 90 degrees with respect to the base while locked thereto.

19. The merchandise display system of Claim 1, wherein the sensor is configured to freely rotate with respect to the base while locked thereto.

20. The merchandise display system of Claim 1, further comprising a pair of second engagement members each second engagement member is configured to engage the first engagement member.

21. The merchandise display system of Claim 1, wherein the at least one second engagement member is configured to automatically engage the first engagement member when the sensor is placed on the base.

22. The merchandise display system of Claim 1, wherein the at least one second engagement member is biased towards a disengaged position.

23. A method for displaying an article of merchandise comprising:

securing a sensor to the article of merchandise, the sensor comprising a first engagement member;

positioning the sensor on a base configured to removably support the sensor thereon, the base comprising at least one second engagement member configured to releasably engage the first engagement member; and

locking the sensor to the base via engagement of the at least one second engagement member with the first engagement member such that the sensor is configured to rotate with respect to the base while locked thereto.

24. The method of Claim 23, wherein locking comprising locking the sensor to the base via actuation of a key.

25. The method of Claim 23, further comprising unlocking the sensor from the base such that the sensor is removable from the base.

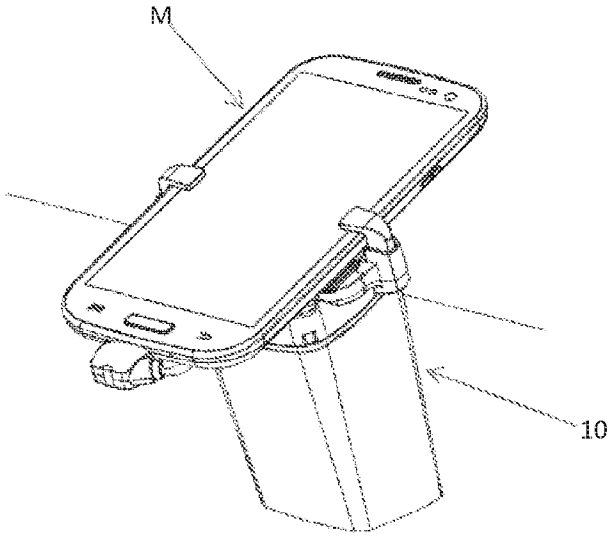

FIGURE 1

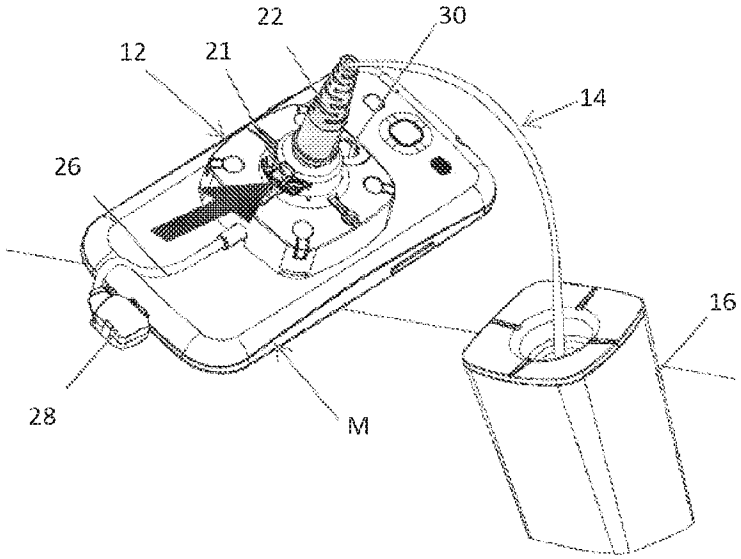

FIGURE 2

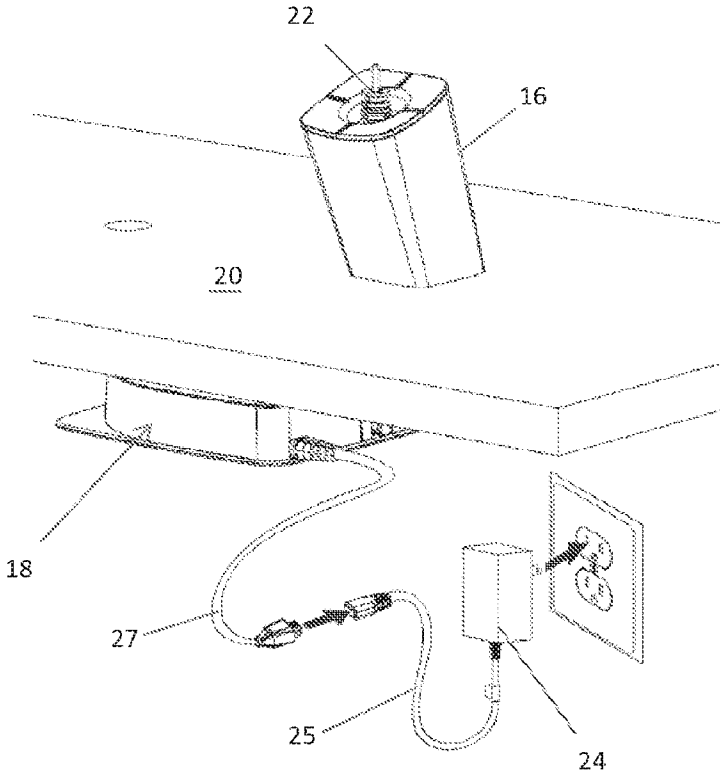

FIGURE 3

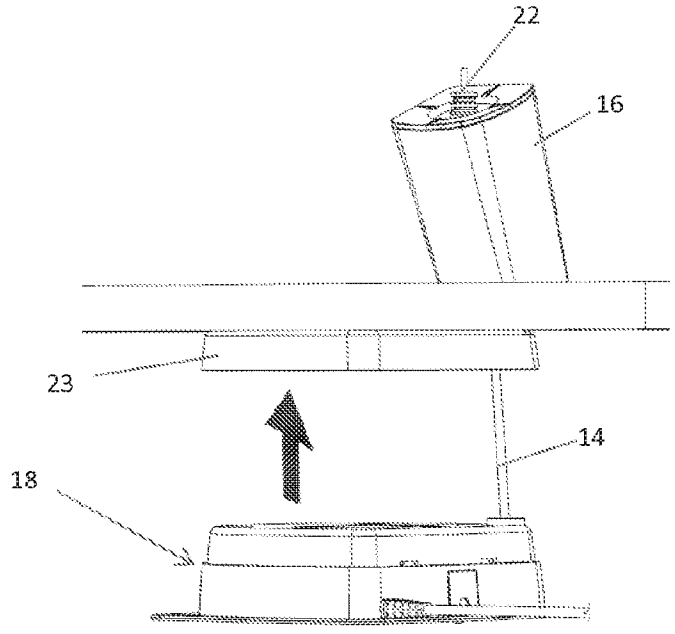

FIGURE 4

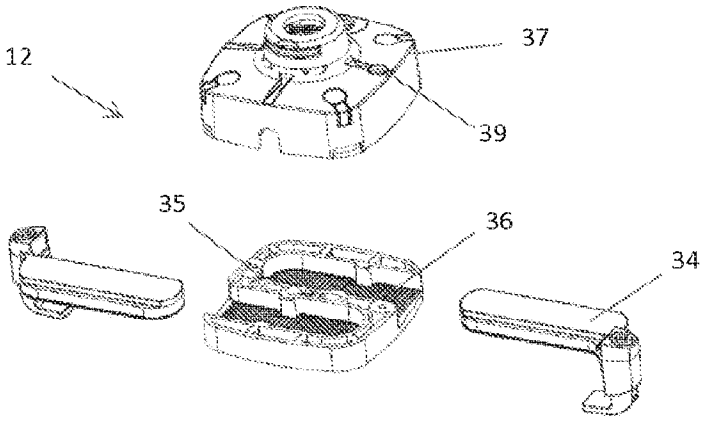

FIGURE 5

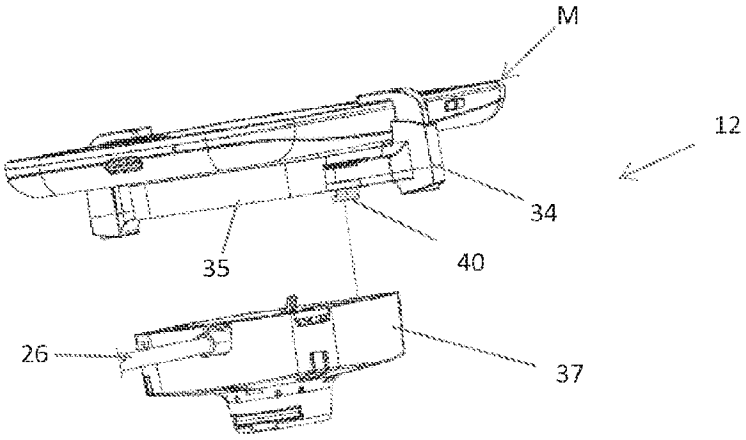

FIGURE 6

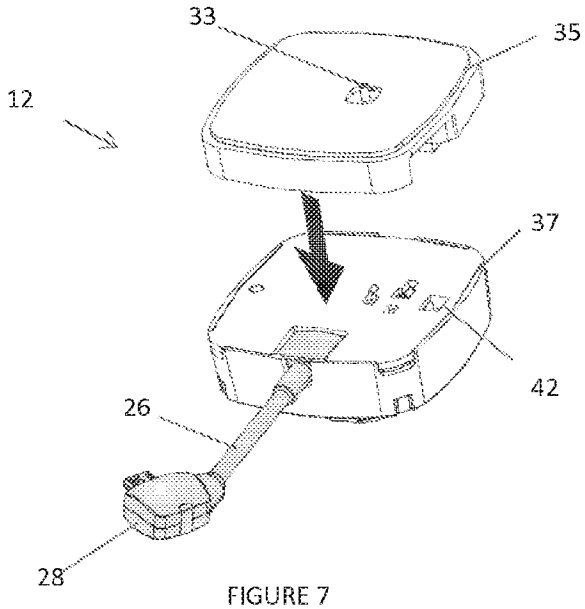

FIGURE 7

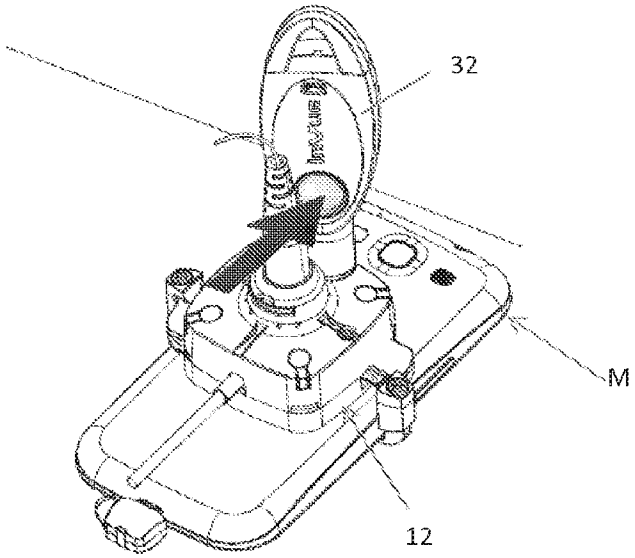

FIGURE 8

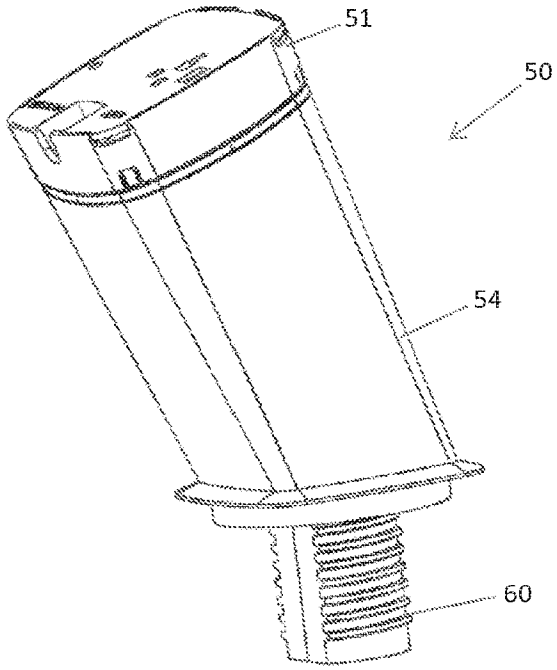

FIGURE 9

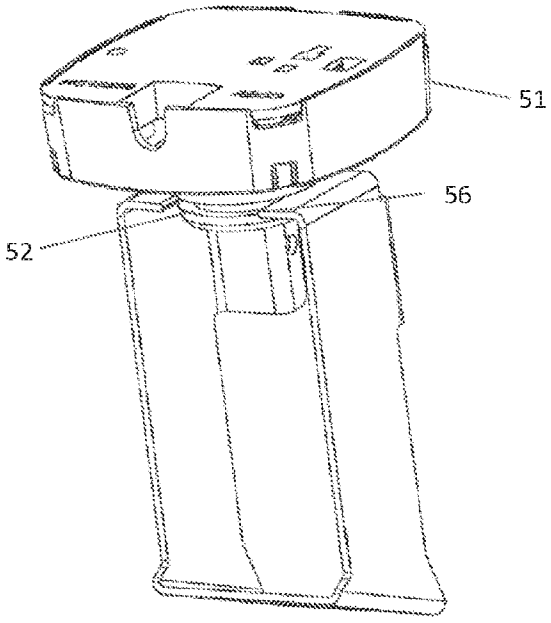

FIGURE 10

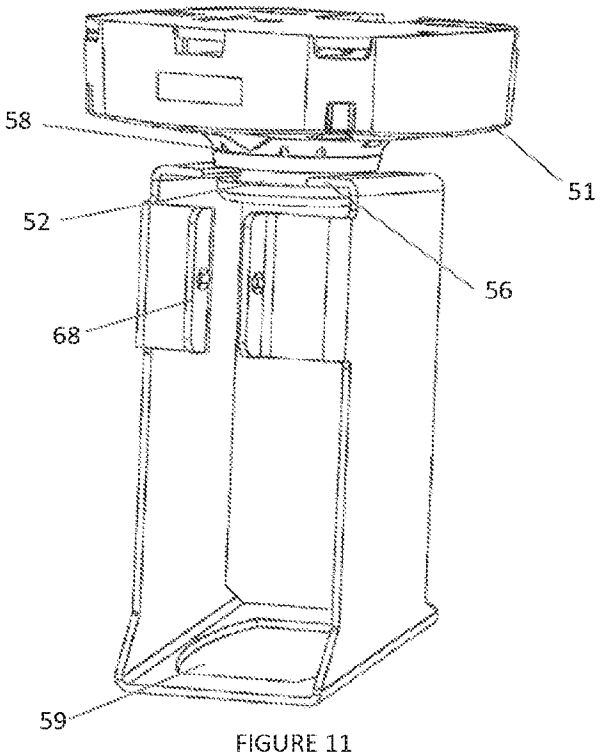

FIGURE 11

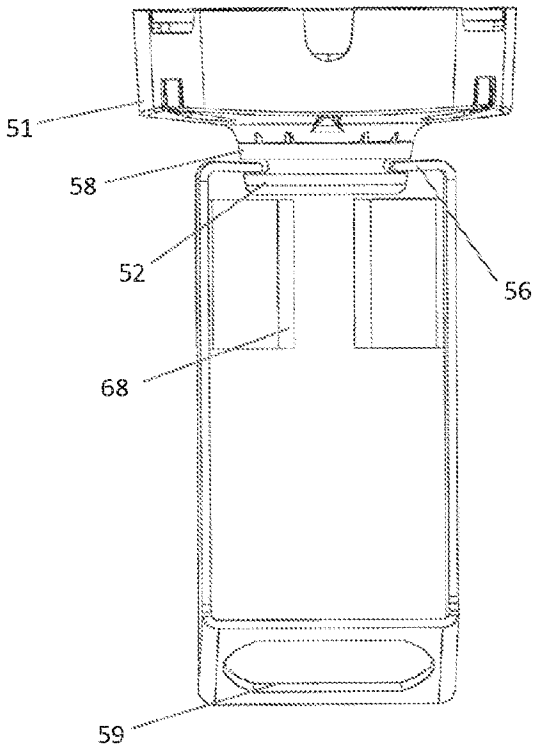

FIGURE 12

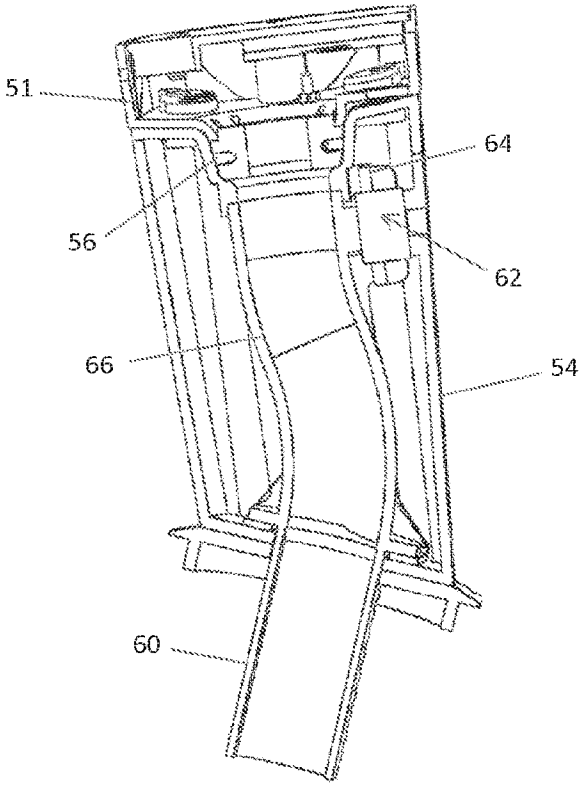

FIGURE 13

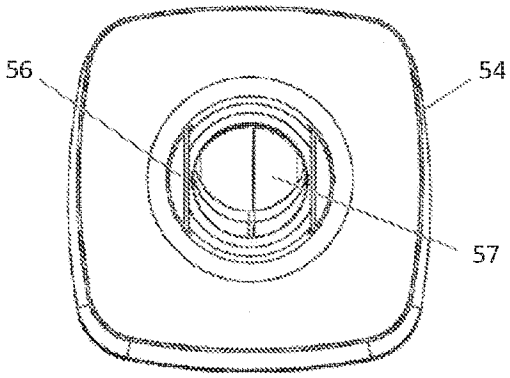

FIGURE 15

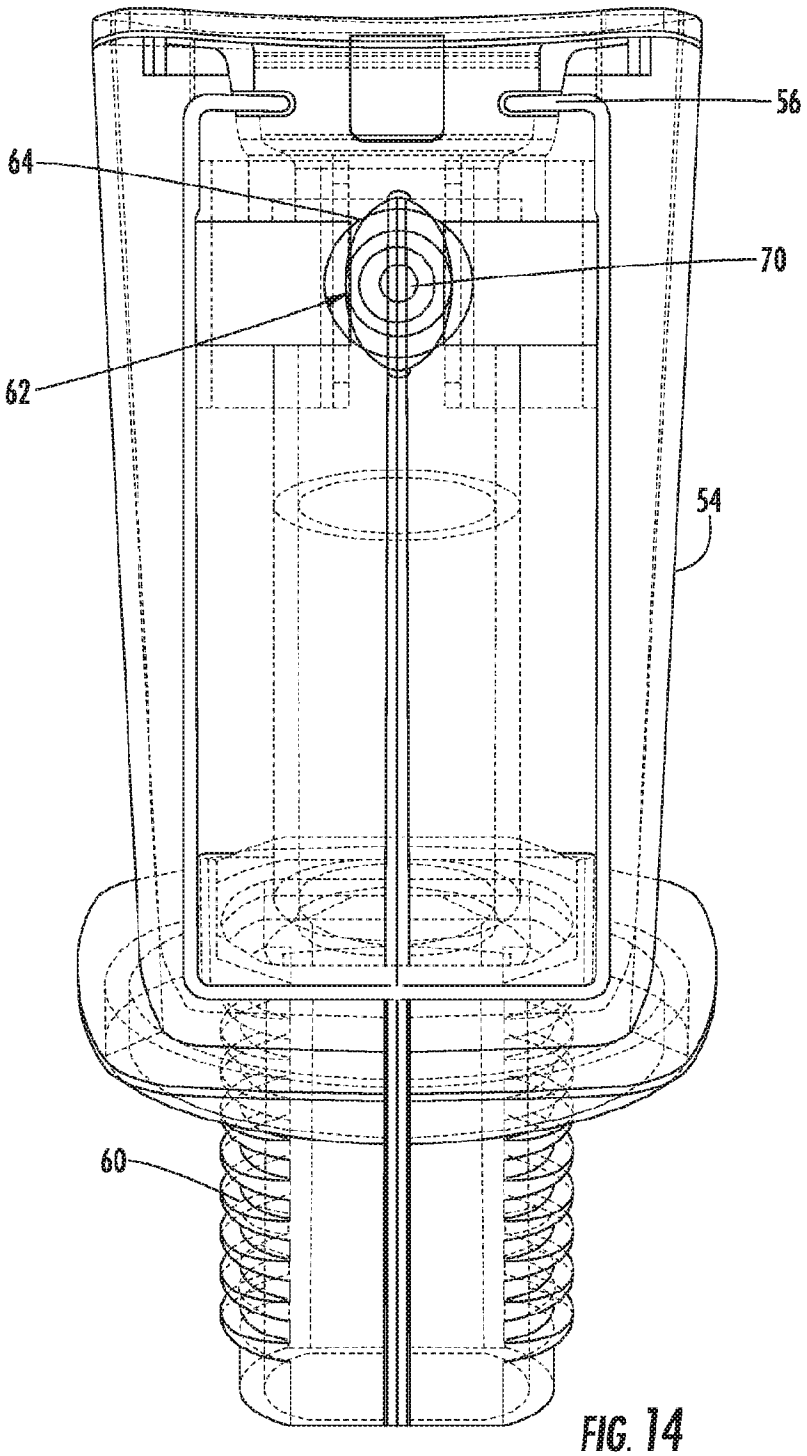

FIG. 14

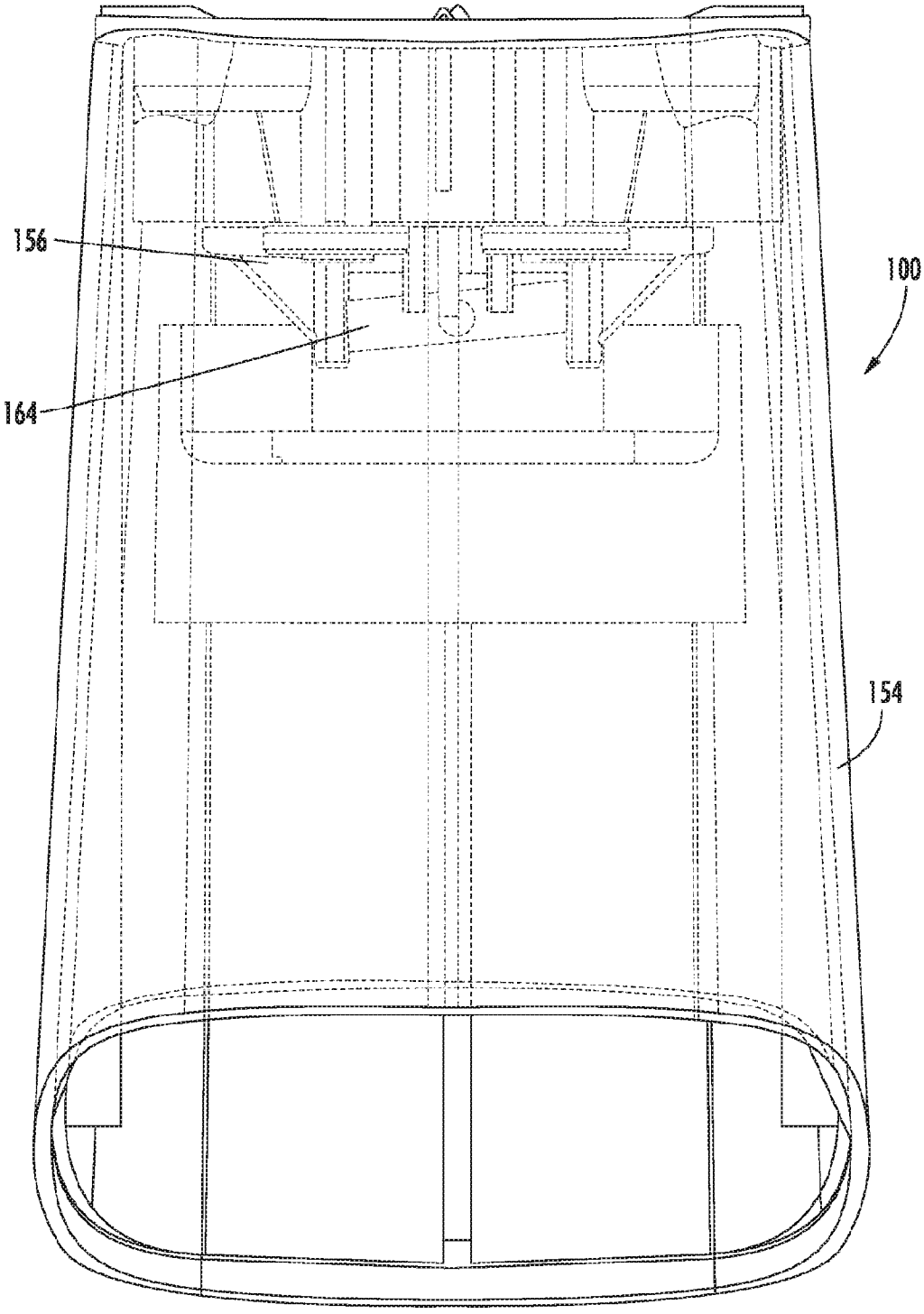

FIG. 16

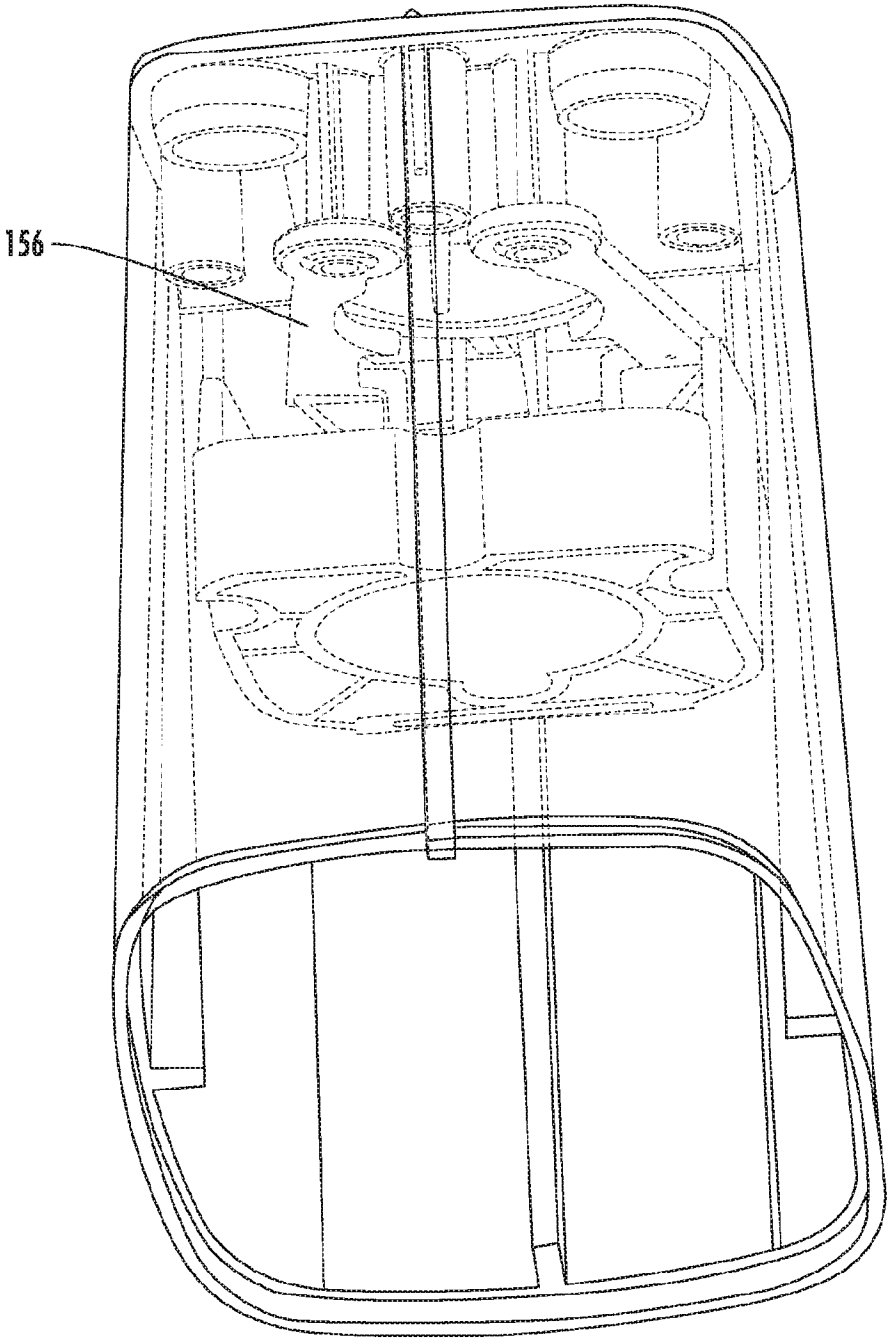

FIG. 17

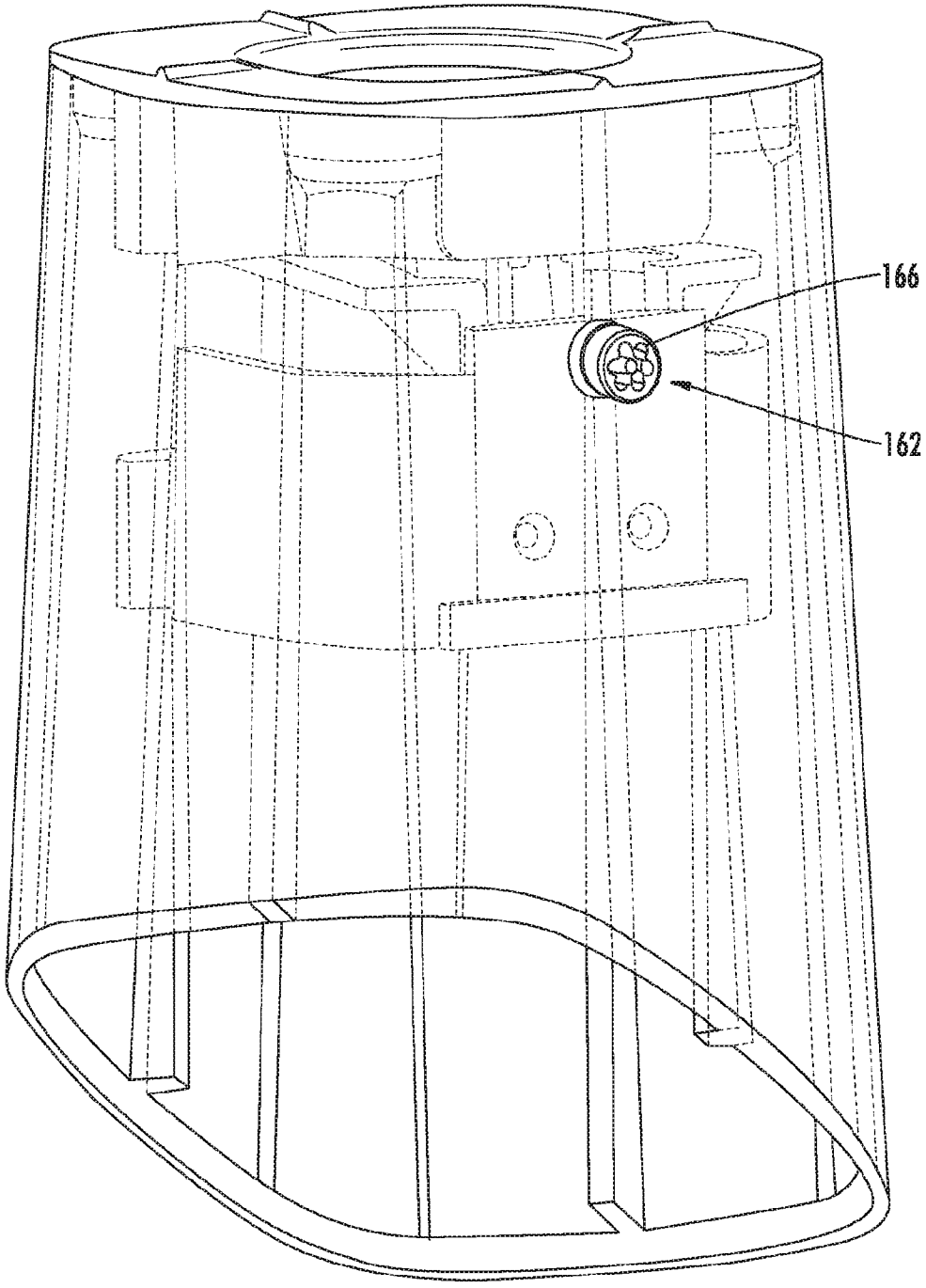

FIG. 18

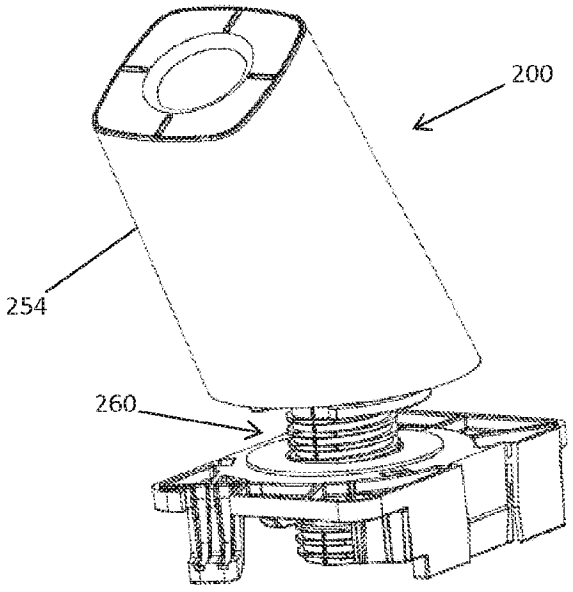

FIGURE 19

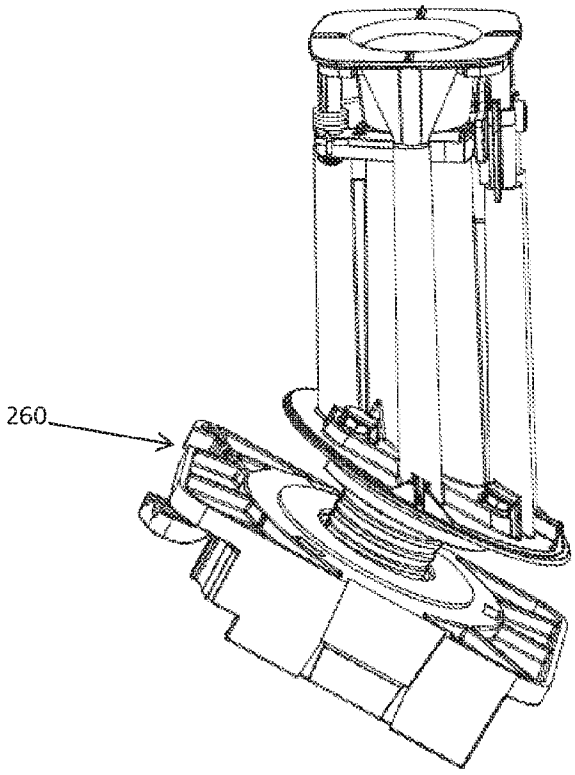

FIGURE 20

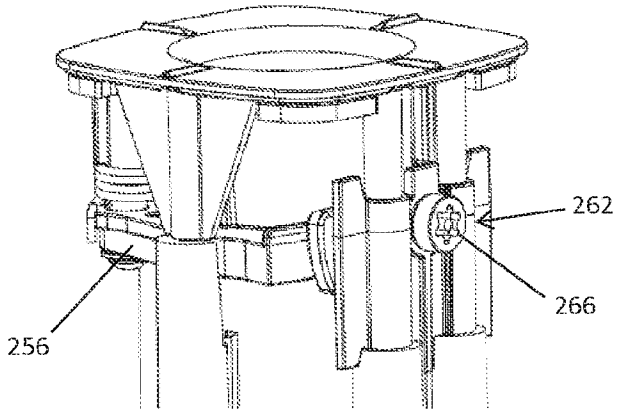

FIGURE 21

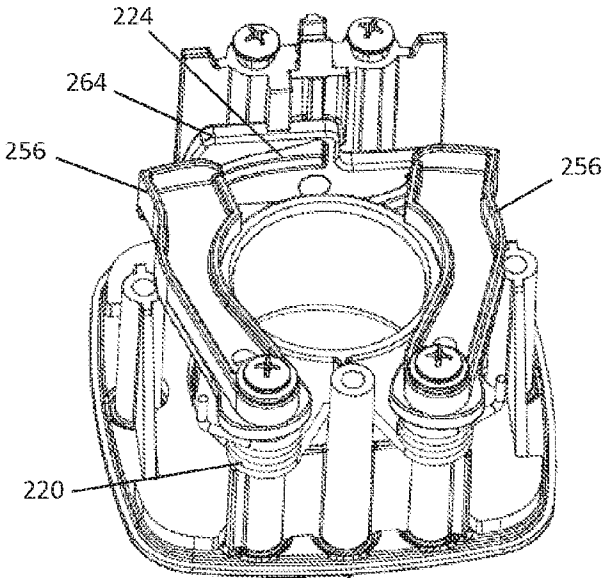

FIGURE 22

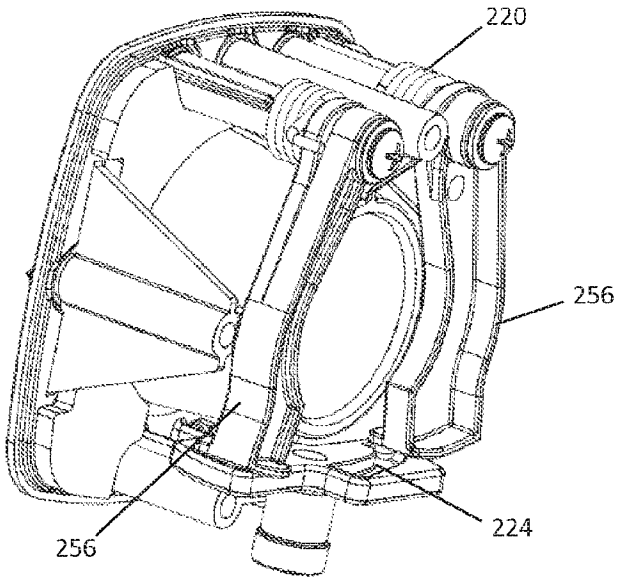

FIGURE 23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US15/46684

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A47F 7/024 (2015.01)
CPC - A47F 7/024
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) Classification(s): A47F 7/024; G08B 13/14; E05B 73/00 (2015.01)
CPC Classification(s): E05B 73/00, 73/0082; G06F 21/88; G08B 13/14, 13/1418; A47F 7/024

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); Google; Google Scholar; ProQuest; IP.com; keywords: cam, key, rotate, groove, slot, rotate, secure, sensor, circumferential, key, lock, spring, bias, tablet, cellphone, phone, ipad, bolt, screw, fastener

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 363 422 A (WHITTLE MH) 19.12.2001; figure 1; page 4, paragraphs 2, 3; page 6; paragraph 1	1-3, 6-8, 10, 14-20, 23-25
Y	US 2011/0309934 A1 (HENSON D et al.) December 22, 2011; figure 1; paragraphs [0097], [100], [0115]	1--8, 10, 14-25
Y	US 2014/0116930 A1 (INVUE SECURITY PRODUCTS INC.) May 1, 2014; figures 1-3; paragraphs [0022], [0023]	1, 4, 5, 21, 22
Y	US 2,873,822 A (SLOAN HE) February 17, 1959; figures 1, 6; column 2, lines 35-45; column 3, lines 60-70; column 4, lines 20-30; column 5, lines 30-40	7, 8, 10
Y	US 4,305,266 A (LOCKWOOD RG) December 15, 1981; figure 6; column 4, lines 30-50	22
A	US 2013/0026322 A1 (WHEELER W et al.) January 31, 2013; entire document	1-25
A	US 2011/0062294 A1 (JOHNSON BM et al.) March 17, 2011; entire document	1-25
A	US 2011/0187531 A1 (OEHL W et al.) August 4, 2011; entire document	1-25

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 October 2015 (23.10.2015)	07 DEC 2015
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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(71) Anmelder *(für alle Bestimmungsstaaten mit Ausnahme von US)*: **LOGOKETT GMBH** [DE/DE]; Karl-Arnold-Str.1, 47877 Willich-Münchheide (DE).

(72) Erfinder; und

(75) Erfinder/Anmelder *(nur für US)*: **BRENNER, Rainer** [DE/DE]; Am Geigenberg 2, 79331 Teningen-Köndringen (DE).

(74) Anwälte: **MAUCHER, Wolfgang** et al.; Urachstrasse 23, 79102 Freiburg i.Br. (DE).

(81) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Erklärungen gemäß Regel 4.17:

— *hinsichtlich der Berechtigung des Anmelders, die Priorität einer früheren Anmeldung zu beanspruchen (Regel 4.17 Ziffer iii)*

[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR SECURING OBJECTS

(54) Bezeichnung : VORRICHTUNG ZUR SICHERUNG VON GEGENSTÄNDEN

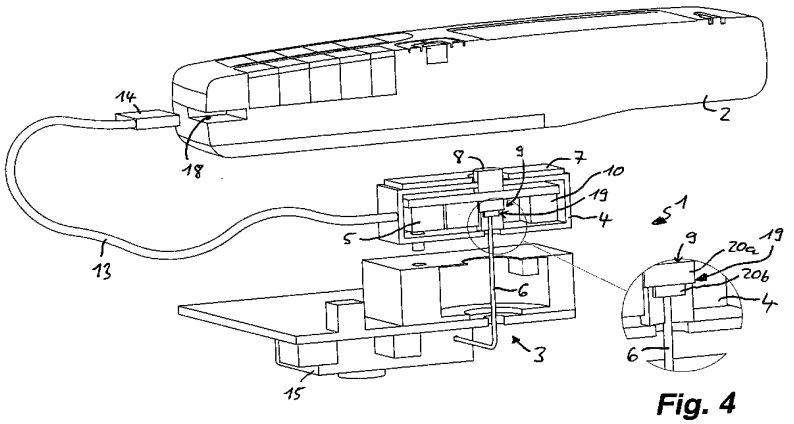

Fig. 4

(57) Abstract: The invention relates to a device (1) for securing objects (2), in particular displayed goods, against unauthorized taking, comprising a base unit (3) and a sensor unit (4), which are connected to each other via a security line (6). The sensor unit (4) comprises an electronics unit (5) which has a push button (8) actuated by the object (2) in a connection position acted on by the object (2), and a signal generator is provided which can be triggered when the pushbutton (8) is released. The security line (6) comprises an optical fiber, the sensor unit (4) comprises an optical transmitter (9) and the base unit (3) comprises an optical receiver for forming an optical signal transmission assembly with the optical fiber of the security line (6). An anti-rotation safeguard (19) is provided in the region of the security line.

(57) Zusammenfassung:

[Fortsetzung auf der nächsten Seite]

WO 2011/045058 A2

Veröffentlicht:

— *ohne internationalen Recherchenbericht und erneut zu veröffentlichen nach Erhalt des Berichts (Regel 48 Absatz 2 Buchstabe g)*

Eine Vorrichtung (1) zur Sicherung von Gegenständen (2), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, weist eine Basiseinheit (3) und eine Sensoreinheit (4) auf, die über eine Sicherungsleine (6) miteinander verbunden sind, wobei die Sensoreinheit (4) eine Elektronikeinheit (5) aufweist, die einen durch den Gegenstand (2) in einer den Gegenstand (2) beaufschlagenden Verbindungsposition betätigten Taster (8) aufweist und wobei ein bei Lösen des Tasters (8) auslösbarer Signalgeber vorgesehen ist. Die Sicherungsleine (6) weist einen Lichtwellenleiter auf, die Sensoreinheit (4) weist einen optischen Sender (9) und die Basiseinheit (3) einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine (6) auf. Im Bereich der Sicherungsleine ist eine Verdrehsicherung (19) vorgesehen.

Vorrichtung zur Sicherung von Gegenständen

Die Erfindung bezieht sich auf eine Vorrichtung zur Sicherung von Gegenständen, insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, die eine Basiseinheit und eine Sensoreinheit hat, die über eine Sicherungsleine miteinander verbunden sind, wobei die Sensoreinheit eine Elektronikeinheit aufweist, die einen durch den Gegenstand in einer den Gegenstand beaufschlagenden Verbindungsposition betätigten Taster aufweist und wobei ein bei Lösen des Tasters auslösbarer Signalgeber vorgesehen ist.

Im Einzelhandel entsteht durch Diebstahl ein hoher Schaden, weswegen insbesondere hochwertige beziehungsweise hochpreisige und gleichzeitlich handliche Gegenstände, beispielsweise Mobiltelefone, MP3-Player oder dergleichen Elektro-Kleingeräte, aber auch Gegenstände wie Parfümflaschen, üblicherweise gegen Diebstahl gesichert sind. Insbesondere betrifft dies Gegenstände in freier Präsentation, also Vorführgeräte, die der Kunde in die Hand nehmen soll oder als Tester ausgestellte Parfümflaschen.

Zur Sicherung derartiger Gegenstände werden häufig Leinensicherungen verwendet, bei denen der zu sichernde Gegenstand mit einer, gegebenenfalls aus einer Aufwickelbox ausgezogenen Leine verbunden wird. Dies bietet jedoch nur ein geringes Sicherheitsniveau, da die Leine mit vergleichsweise geringem Aufwand durchtrennt und der Gegenstand entfernt werden kann. Zudem ist nachteilig, dass sich die Sicherungsleine beim Hantieren durch einen Kaufinteressenten verdrehen kann und dann nicht mehr ordentlich aufgewickelt wird oder der Gegenstand nicht mehr ordentlich zurückgestellt werden kann.

Es besteht daher insbesondere die Aufgabe, eine Vorrichtung der eingangs genannten Art zu schaffen, die ein erhöhtes Sicherheitsniveau ermöglicht und bei der eine optisch ansprechende Warenpräsentation möglich ist.

Die erfindungsgemäße Lösung dieser Aufgabe besteht darin, dass die Sicherungsleine einen Lichtwellenleiter aufweist, dass die Sensoreinheit einen optischen Sender und die Basiseinheit einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine aufweist und dass im Bereich der Sicherungsleine eine Verdrehsicherung vorgesehen ist.

Die Sensoreinheit zur Sicherung des Gegenstandes wird mit dem Gegenstand verbunden, derart, dass der Taster in dieser Verbindungsposition betätigt ist. Mit Hilfe des Tasters kann so ein Diebstahlversuch durch Trennen des Gegenstandes von der Sensoreinheit erkannt und ein Alarm über den Signalgeber ausgelöst werden.
Die an der Sensoreinheit anfallende Information über das Auslösen des Tasters wird mit Hilfe der optischen Signalübertragungseinrichtung an die Basiseinheit weitergeleitet, die ihrerseits mit dem Signalgeber zur Alarmsignalisierung in Wirkverbindung steht.
Die Sicherungsleine erfüllt zwei Funktionen. Einerseits die mechanische Verbindung zwischen Basiseinheit und Sensoreinheit und damit dem zu sichernden Gegenstand, andererseits die Signalübertragung zwischen Sensoreinheit und Basiseinheit mittels des Lichtwellenleiters.

Die erfindungsgemäße Vorrichtung besitzt gegenüber vorbekannten Sicherungseinrichtungen auch den Vorteil einer reduzierten

Störanfälligkeit, da die opto-elektronische Signalübertragungseinrichtung praktisch verschleißfrei arbeitet.

Durch die Verdrehsicherung, eine sogenannte „Anti-Twist"-Vorrichtung, ist die Sicherungsleine stets in einem Zustand, der ein ordentliches Aufwickeln oder Ablegen der Sicherungsleine und damit ein Zurückstellen des Gegenstandes ermöglicht, selbst wenn dieser von einem Kunden mehrfach gedreht und umpositioniert wird. Somit ist stets eine ordentliche und optisch ansprechende Warenpräsentation möglich.

Die Elektronikeinheit der Sensoreinheit kann eine Knopfzelle oder dergleichen kleine Batterie zur Spannungsversorgung aufweisen. Eine bevorzugte Ausführungsform sieht jedoch vor, dass die Elektronikeinheit einen Kondensator oder dergleichen Spannungspuffer als Ladungsspeicher aufweist, dass die Sensoreinheit und die Basiseinheit jeweils elektrische Kontaktierungen aufweisen, die in einer Ruheposition miteinander elektrisch leitend verbunden sind, und dass die Basiseinheit eine Stromversorgungseinrichtung zum Laden des Ladungsspeichers der Elektronikeinheit in Ruheposition der Sensoreinheit aufweist. Somit ist die Elektronikeinheit stets betriebsbereit und es müssen keine Batterien überprüft und ausgewechselt werden. Zudem kann bei Sicherung von elektronischen Geräten über die elektrischen Kontaktierungen und die vorbeschriebene elektrische Verbindungsleitung zum Gegenstand dessen Akku permanent geladen werden, wenn die Sensoreinheit in der Basiseinheit eingesetzt ist, so dass der Gegenstand, beispielsweise ein Mobiltelefon, stets betriebsbereit zu Vorführzwecken präsentiert werden kann.

Eine Ausführungsform der erfindungsgemäßen Vorrichtung zur Sicherung von Gegenständen, für die eigenständiger Schutz bean-

sprucht wird sieht vor, dass die Sicherungsleine einen Lichtwellenleiter aufweist, dass ein Ende des Lichtwellenleiters an der in einer den Gegenstand beaufschlagenden Verbindungsposition an dem zu sichernden Gegenstand anliegenden Seite der Sensoreinheit mündet und das andere Ende des Lichtwellenleiters mit einem optischen Empfänger in der Basiseinheit verbunden ist, dass ein mit dem optischen Empfänger in Wirkverbindung stehender Signalgeber vorgesehen ist und dass im Bereich der Sicherungsleine eine Verdrehsicherung vorgesehen ist.
Die Sensoreinheit wird so mit dem Gegenstand verbunden, dass das freie Ende des Lichtwellenleiters durch den Gegenstand abgedeckt ist. Somit kann kein Licht in den Lichtwellenleiter dringen. Wenn die Sensoreinheit jedoch von dem Gegenstand entfernt wird oder die Sicherungsleine mit dem Lichtwellenleiter durchtrennt wird, so liegt ein Ende des Lichtwellenleiters offen und es kann Licht auf diesen Fallen, was an dem optischen Empfänger in der Basiseinheit registriert wird. Der Lichteinfall kann als Sabotage- oder Diebstahlversuch interpretiert und der Signalgeber ausgelöst werden. Somit ist eine einfache und kostengünstige, aber dennoch effektive Diebstahlsicherung gebildet. Die Sensoreinheit erfüllt die Aufgabe der Befestigung an dem zu sichernden Gegenstand und die Aufnahme des Endes des Lichtwellenleiters, so dass diese klein und unauffällig ausgebildet sein kann und eine optisch ansprechende Warenpräsentation mit der Sicherungs-Vorrichtung möglich ist.
Auch bei dieser Ausführungsform ist eine Verdrehsicherung für die Sicherungsleine vorgesehen, so dass diese wie vorbeschrieben stets in einer ordentlichen Lage angeordnet ist.

Um Fehlalarme durch Streulicht oder sonstige geringfügige Lichteinflüsse zu verhindern ist es zweckmäßig, wenn dem optischen Empfänger eine Auswerteeinrichtung mit einem Speicher für einen Referenzwert und einem Komparator zum Vergleichen eines

mit dem optischen Empfänger gemessenen Messwertes und dem Referenzwert zugeordnet ist. Die Auswerteeinrichtung kann so konfiguriert sein, dass der Signalgeber erst ausgelöst wird, wenn der Messwert, also die am Lichtwellenleiter und dem optischen Empfänger einfallende Lichtmenge einen Referenzwert übersteigt, während bei nur schwachen und/oder sehr kurzzeitigen Lichteinfällen noch keine Signalgebung erfolgt.

Die Sicherungsleine kann ein den Lichtwellenleiter umgebendes Metallgeflecht aufweisen. Dieses dient einerseits zur erhöhten mechanischen Stabilität bei hohen Zugbelastungen oder Bewegungen und andererseits als Sabotage- und Diebstahlschutz gegen ein Abreißen oder Durchschneiden der Sicherungsleine.

Die Sicherungsleine kann als glatte Leine oder in der Art eines Spiralkabels ausgebildet sein. Es ist auch möglich, dass die Sicherungsleine in einer Aufwickeleinrichtung unter Zugspannung aufwickelbar ist. Dabei ist die Sicherungsleine in Ruhelage innerhalb der Aufwickeleinrichtung untergebracht und die optische Präsentation des zu sichernden Gegenstandes ist nicht durch die Sicherungsleine beeinträchtigt. Dies ist insbesondere vorteilhaft bei einer Vielzahl von Gegenständen, die beispielsweise nebeneinander auf einem Regal angeordnet sind.

Die Verdrehsicherung kann insbesondere im Bereich der Sensoreinheit angeordnet sein. Die Verdrehsicherung kann dabei unauffällig und gegebenenfalls vollständig innerhalb der Sensoreinheit und somit nach außen unsichtbar angeordnet sein.

Der Signalgeber kann insbesondere ein akustischer und/oder optischer Signalgeber sein, um eine auffällige Signalisierung eines Diebstahl- oder Sabotageversuchs anzuzeigen.

Um verschiedenartige Gegenstände mit unterschiedlichen Formgebungen sichern zu können, ist es zweckmäßig, wenn die Sensoreinheit ein formbares Adapterteil zur Anpassung an unterschiedliche zu sichernde Gegenstände aufweist.

Um den zu sichernden Gegenstand schnell und einfach mit der Sensoreinheit zu verbinden ist es vorteilhaft, wenn die Sensoreinheit eine Klebefläche zur Verbindung mit dem Gegenstand aufweist. Alternativ kann beispielsweise eine Klemm- oder Schraubverbindung vorgesehen sein. Denkbar sind auch Verbindungen mittels Kabelbindern oder dergleichen Befestigungsmaterial.

Die erfindungsgemäße Vorrichtung kann für verschiedene Präsentationsformen vorgesehen und ausgebildet sein, beispielsweise für eine Frontmontage an der Vorderkante eines Regalbodens mittels einer Schraubfixierung der Basiseinheit, als frei aufstellbare Vorrichtung auf Tischen, Regalböden oder Produktkartons, oder auch zur Frontmontage auf Schräg-/Senkrecht-Displays mittels Klebe- oder Schraubbefestigung.

Die erfindungsgemäße Vorrichtung kann gegebenenfalls auch für eine bidirektionale Datenübertragung über den Lichtwellenleiter der Sicherungsleine ausgebildet sein, um beispielsweise Steuersignale von der Basisstation an die Sensoreinheit zu übertragen. Hierzu können in der Basiseinheit ein zusätzlicher optischer Sender und in der Sensoreinheit ein optischer Empfänger vorgesehen sein.

Nachstehend sind Ausführungsbeispiele der erfindungsgemäßen Vorrichtung anhand der Zeichnungen näher erläutert. Es zeigt zum Teil schematisiert:

Fig. 1 eine perspektivische Ansicht einer Sicherungs-Vor-

richtung mit einem Taster und einer elektrischen Verbindungsleitung zur Sicherung eines Mobiltelefons,

Fig. 2 eine Schnittdarstellung der Anordnung aus Figur 1,

Fig. 3 eine Sicherungs-Vorrichtung mit einem durch den zu sichernden Gegenstand endseitig verdeckbaren Lichtwellenleiter und

Fig. 4 eine Schnittdarstellung ähnlich Figur 2 mit einer Detaildarstellung einer Verdrehsicherung.

Eine im Ganzen mit 1 bezeichnete Vorrichtung zur Sicherung von Gegenständen 2 gegen unbefugtes Mitnehmen weist gemäß Figur 1 eine Basiseinheit 3 und eine an dem zu sichernden Gegenstand 2 anbringbare Sensoreinheit 4 auf. Basiseinheit 3 und Sensoreinheit 4 sind über eine einen Lichtwellenleiter aufweisende Sicherungsleine 6 miteinander verbunden. Die Basiseinheit 3 kann beispielsweise an einem Verkaufsregal fest installiert sein.
Die Sensoreinheit 4 weist zum Verbinden mit dem Gegenstand 2 eine Klebefläche 7 auf. Der Besseren Übersicht halber ist der Gegenstand 2 (Mobiltelefon) in den Figuren beabstandet zur Sensoreinheit 4 dargestellt. In Gebrauchslage liegt die Klebefläche 7 der Sensoreinheit 4 flächig am Gegenstand 2 an und stellt so eine feste Verbindung her.

Um bei der Vorrichtung 1 gemäß Figuren 1 und 2 ein Lösen des Gegenstandes 2 von der Sensoreinheit 4 zu erkennen und Alarm auslösen zu können, ist eine Elektronikeinheit 5 in der Sensoreinheit 4 vorgesehen (Figur 2), der ein Taster 8 zugeordnet ist, der bei Beaufschlagung der Sensoreinheit 4 durch den Gegenstand 2 betätigt wird. Beim Lösen des Gegenstandes 2 von der Sensoreinheit 4 wird der Kontakt des Tasters 8 geöffnet und ein

nicht dargestellter Signalgeber ausgelöst. Zur Übermittlung des Schaltzustandes des Tasters 8 an die Basiseinheit 3 und den Signalgeber ist in der Sensoreinheit 4 ein mit der Elektronikeinheit 5 und dem Taster 8 zusammenwirkender optischer Sender 9 und an der Basiseinheit 3 ein nicht dargestellter optischer Empfänger am Ende des Lichtwellenleiters der Sicherungsleine 6 vorgesehen, die mit dem Lichtwellenleiter der Sicherungsleine 6 eine optische Signalübertragungseinrichtung bilden.

Zur Spannungsversorgung der Elektronikeinheit 5 weist diese einen Ladungsspeicher 10 auf, der vorzugsweise ein Kondensator, aber auch ein Akku sein kann. Dieser Ladungsspeicher 10 wird über elektrische Kontaktierungen 11 an der Basiseinheit 3 und der Sensoreinheit 4 und eine Stromversorgungseinrichtung 12 (Figur 1) in einer Ruheposition, in der die Sensoreinheit 4 auf der Basiseinheit 3 aufliegt, geladen.

Innerhalb der Sensoreinheit 4 ist im Bereich des optischen Senders 9 eine Verdrehsicherung 19 vorgesehen (Figur 4). Die Verdrehsicherung 19 („Anti-Twist"-Vorrichtung) besteht aus zwei gegeneinander frei verdrehbaren Teilen 20a, 20b. Das obere Teil 20b ist optisch leitend mit der Sicherungsleine verbunden und das untere Teil 20a fest in der Sensoreinheit 4 eingebaut. Das obere Teil 20b ist optisch leitend mit dem optischen Sender 9.

Gemäß Figuren 1 und 2 ist eine elektrische Verbindungsleitung 13 zum Verbinden der Elektronikeinheit 5 mit dem Gegenstand 2, hier ein Mobiltelefon, vorgesehen. Über diese Verbindungsleitung 13 kann einerseits ein Akku des zu sichernden Gegenstandes 2 geladen werden. Hierzu wird die Stromversorgungseinrichtung 12 über die Kontaktierungen 11 an die Verbindungsleitung 13 durchverbunden. In Ruheposition der Sensoreinheit 4 und bei miteinander verbundenen Kontaktierungen 11 wird der Akku des

Gegenstandes 2 geladen, so dass der Gegenstand 2 stets betriebs- und vorführbereit ist.

Andererseits kann die Elektronikeinheit 5 zur Überwachung der Strom- und oder Spannungswerte an der Verbindungsleitung 13 ausgebildet sein. Wenn der Stecker 14 der Verbindungsleitung 13 von dem Gegenstand 2 getrennt wird, also aus der Anschlußbuchse 18 abgezogen wird, so ändern sich die Signale an der Verbindungsleitung 13 und die Elektronikeinheit 5 kann dies als unerlaubte Manipulation oder Diebstahlversuch interpretieren und über die Signalübertragungseinrichtung den Signalgeber auslösen.

Bei der Vorrichtung 1b gemäß Figur 3 mündet ein Ende 17 der den Lichtwellenleiter aufweisenden Sicherungsleine 6 an der Seite der Sensoreinheit 4, die in einer Verbindungsposition den zu sichernden Gegenstand 2 beaufschlägt. Das freie Ende 17 des Lichtwellenleiters wird so in der Verbindungsposition von dem Gegenstand 2 abgedeckt, so dass kein Licht in den Lichtwellenleiter eindringen kann. Wenn der Gegenstand 2 jedoch beim Versuch, den Gegenstand 2 zu stehlen, von der Sensoreinheit 4 getrennt wird, wie in Figur 3 gezeigt, so fällt Umgebungslicht auf das Ende 17 der Sicherungsleine 6 und dessen Lichtwellenleiter, was an einem nicht dargestellten optischen Empfänger der Basiseinheit 3 erkannt wird, woraufhin der Signalgeber ausgelöst werden kann.
Zusätzlich ist in der Anordnung gemäß Figur 3 eine elektrische Verbindungsleitung 13 vorgesehen, mit der ein Akku des Gegenstands 2 geladen werden kann, wenn die Sensoreinheit 4 in einer Ruheposition mit der Basiseinheit 3 verbunden ist und mit den Kontaktierungen 11 eine leitende Verbindung zu einer in Figur 3 nicht dargestellten Stromversorgungseinrichtung hergestellt ist.

Auch bei der Anordnung gemäß Figur 3 ist in der Sensoreinheit 4 eine Verdrehsicherung für die Sicherungsleine 6 vorgesehen, die jedoch aufgrund der Perspektive nicht sichtbar ist.

In den Figuren ist jeweils noch eine Aufwickeleinrichtung 15 erkennbar, mit der die Sicherungsleine unter Zugspannung aufwickelbar ist, so dass diese in Ruhelage der Sensoreinheit 4 und des Gegenstandes 2 stets geordnet und nicht sichtbar untergebracht ist, wodurch sich eine optisch ansprechende Warenpräsentation ohne störende Sicherungsleinen ergibt. Zum Vorführen oder Ausprobieren des gesicherten Gegenstandes 2 kann dieser jedoch einfach ergriffen und die Sicherungsleine 6 dabei gegen die Zugkraft aus der Aufwickeleinrichtung 15 herausgezogen werden.

Ansprüche

1. Vorrichtung (1) zur Sicherung von Gegenständen(2), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, die eine Basiseinheit (3) und eine Sensoreinheit (4) hat, die über eine Sicherungsleine (6) miteinander verbunden sind, wobei die Sensoreinheit (4) eine Elektronikeinheit (5) aufweist, die einen durch den Gegenstand (2) in einer den Gegenstand (2) beaufschlagenden Verbindungsposition betätigten Taster (8) aufweist und wobei ein bei Lösen des Tasters (8) auslösbarer Signalgeber vorgesehen ist, **dadurch gekennzeichnet,** dass die Sicherungsleine (6) einen Lichtwellenleiter aufweist, dass die Sensoreinheit (4) einen optischen Sender (9) und die Basiseinheit (3) einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine (6) aufweist und dass im Bereich der Sicherungsleine eine Verdrehsicherung (19) vorgesehen ist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Elektronikeinheit (5) einen Kondensator oder dergleichen Spannungspuffer als Ladungsspeicher aufweist, dass die Sensoreinheit (4) und die Basiseinheit (3) jeweils elektrische Kontaktierungen (11) aufweisen, die in einer Ruheposition miteinander elektrisch leitend verbunden sind, und dass die Basiseinheit (3) eine Stromversorgungseinrichtung (12) zum Laden des Ladungsspeichers der Elektronikeinheit (5) in Ruheposition der Sensoreinheit (4) aufweist.

3. Vorrichtung (1b) zur Sicherung von Gegenständen(2), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, die eine Basiseinheit (3) und eine Sensoreinheit (4) hat,

die über eine Sicherungsleine (6) miteinander verbunden sind, **dadurch gekennzeichnet**, dass die Sicherungsleine (6) einen Lichtwellenleiter aufweist, dass ein Ende (17) des Lichtwellenleiters an der in einer den Gegenstand (2) beaufschlagenden Verbindungsposition an dem zu sichernden Gegenstand (2a) anliegenden Seite der Sensoreinheit (4) mündet und das andere Ende des Lichtwellenleiters mit einem optischen Empfänger in der Basiseinheit (3) verbunden ist, dass ein mit dem optischen Empfänger in Wirkverbindung stehender Signalgeber vorgesehen ist und dass im Bereich der Sicherungsleine eine Verdrehsicherung (19) vorgesehen ist.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, dass dem optischen Empfänger eine Auswerteeinrichtung mit einem Speicher für einen Referenzwert und einem Komparator zum Vergleichen eines mit dem optischen Empfänger gemessenen Messwertes und dem Referenzwert zugeordnet ist.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, dass die Sicherungsleine (6) ein den Lichtwellenleiter umgebendes Metallgeflecht aufweist.

6. Vorrichtung nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, dass die Sicherungsleine (6) in einer Aufwickeleinrichtung (15) unter Zugspannung aufwickelbar ist.

7. Vorrichtung nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, dass die Verdrehsicherung (19) im Bereich der Sensoreinheit (4) angeordnet ist.

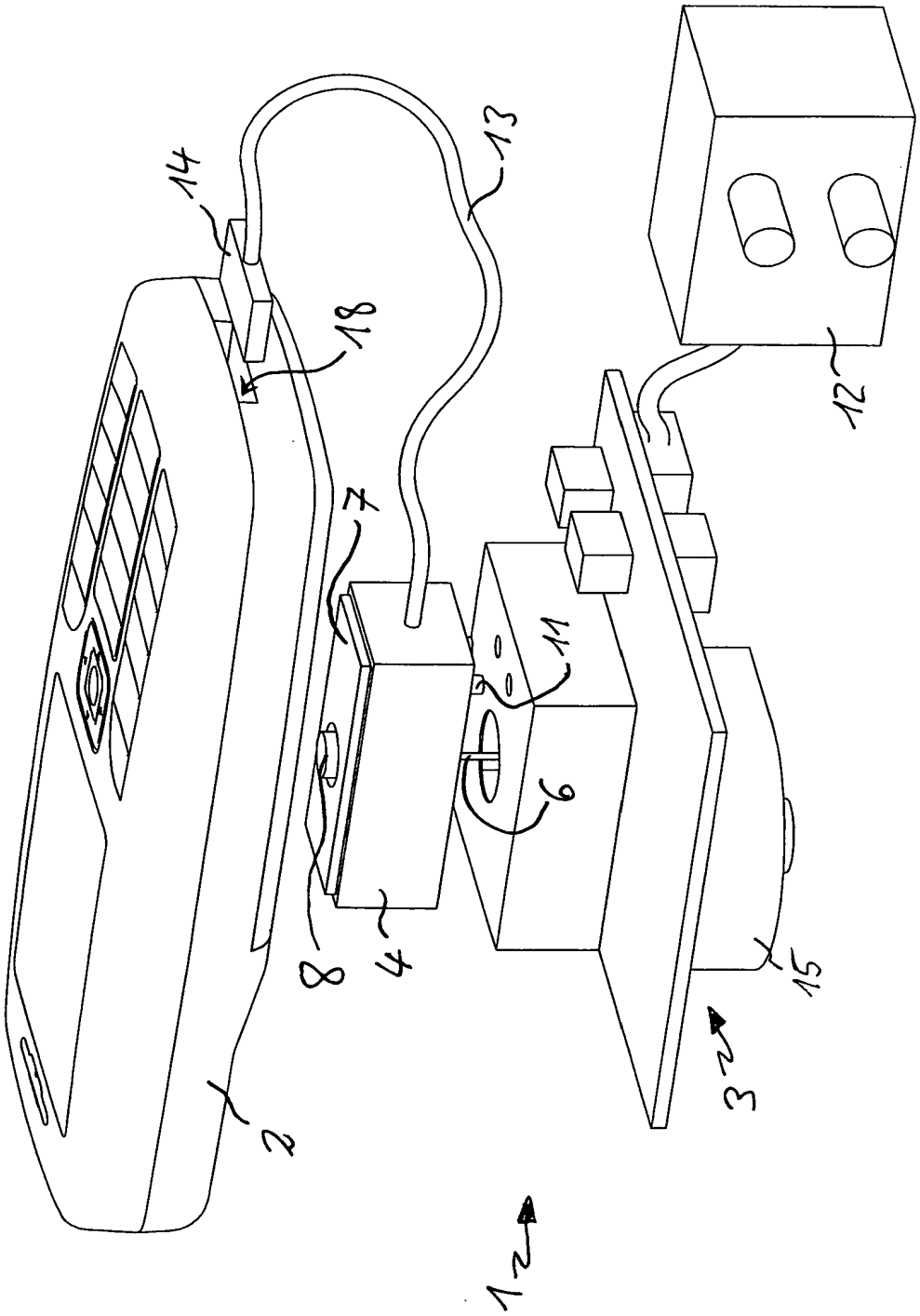

Fig. 1

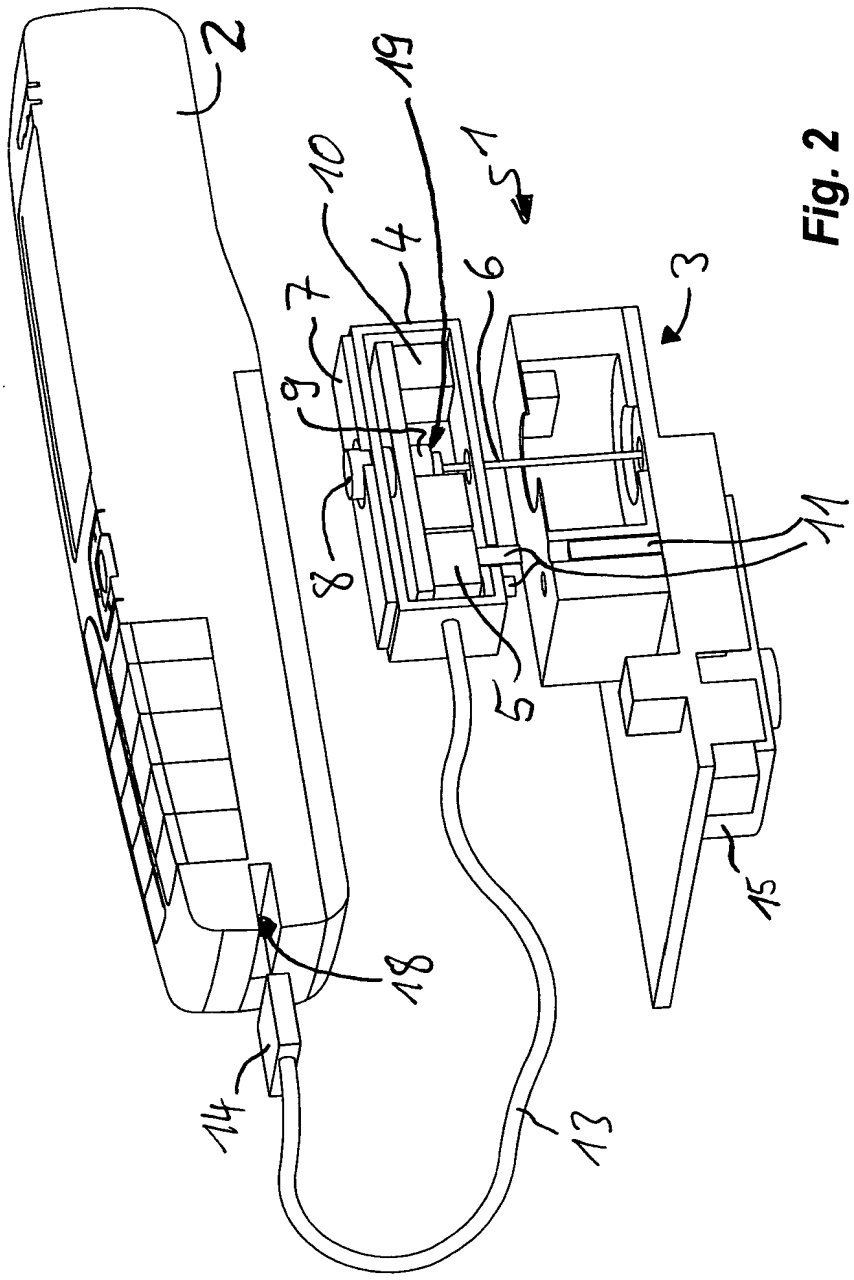

Fig. 2

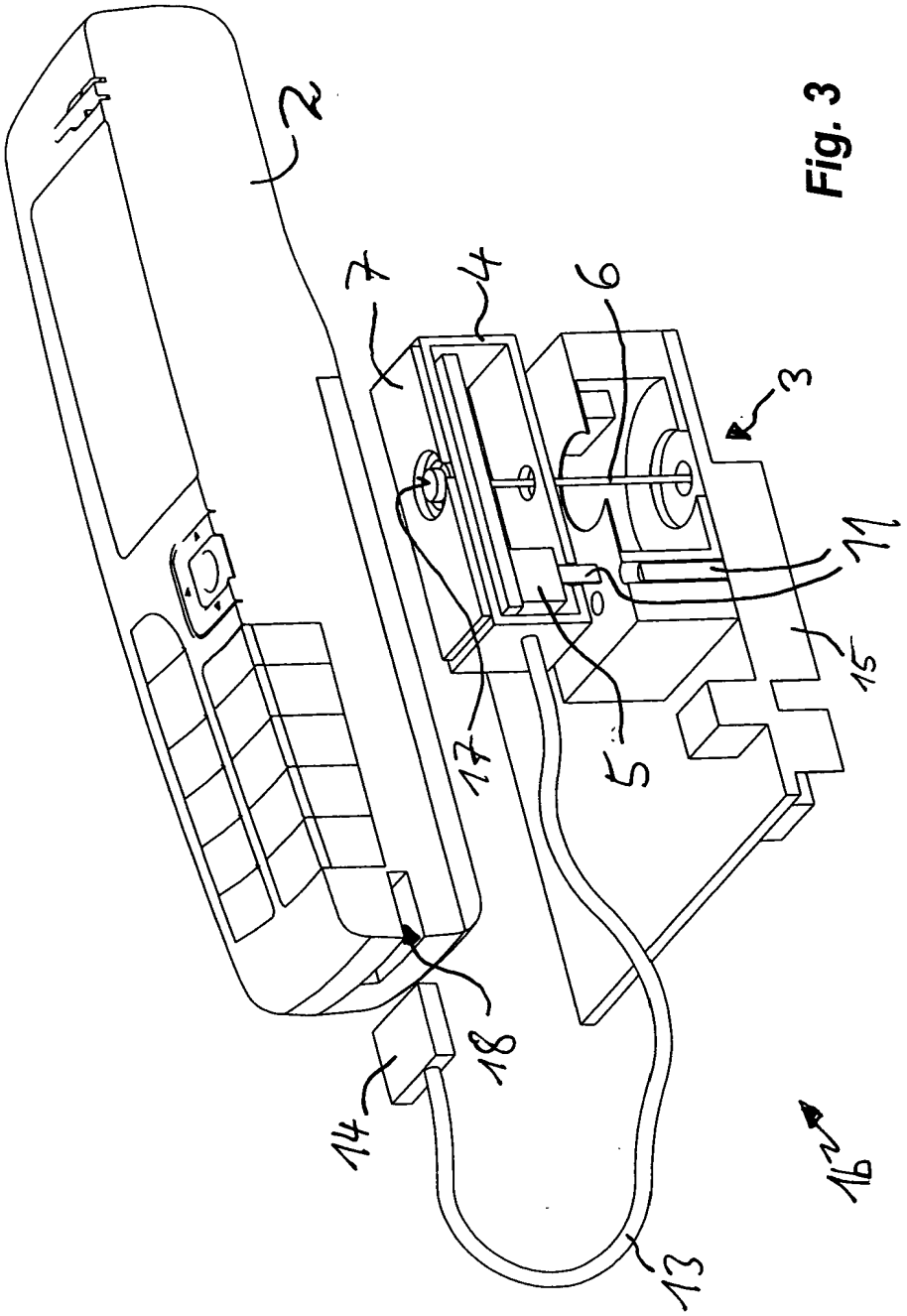

Fig. 3

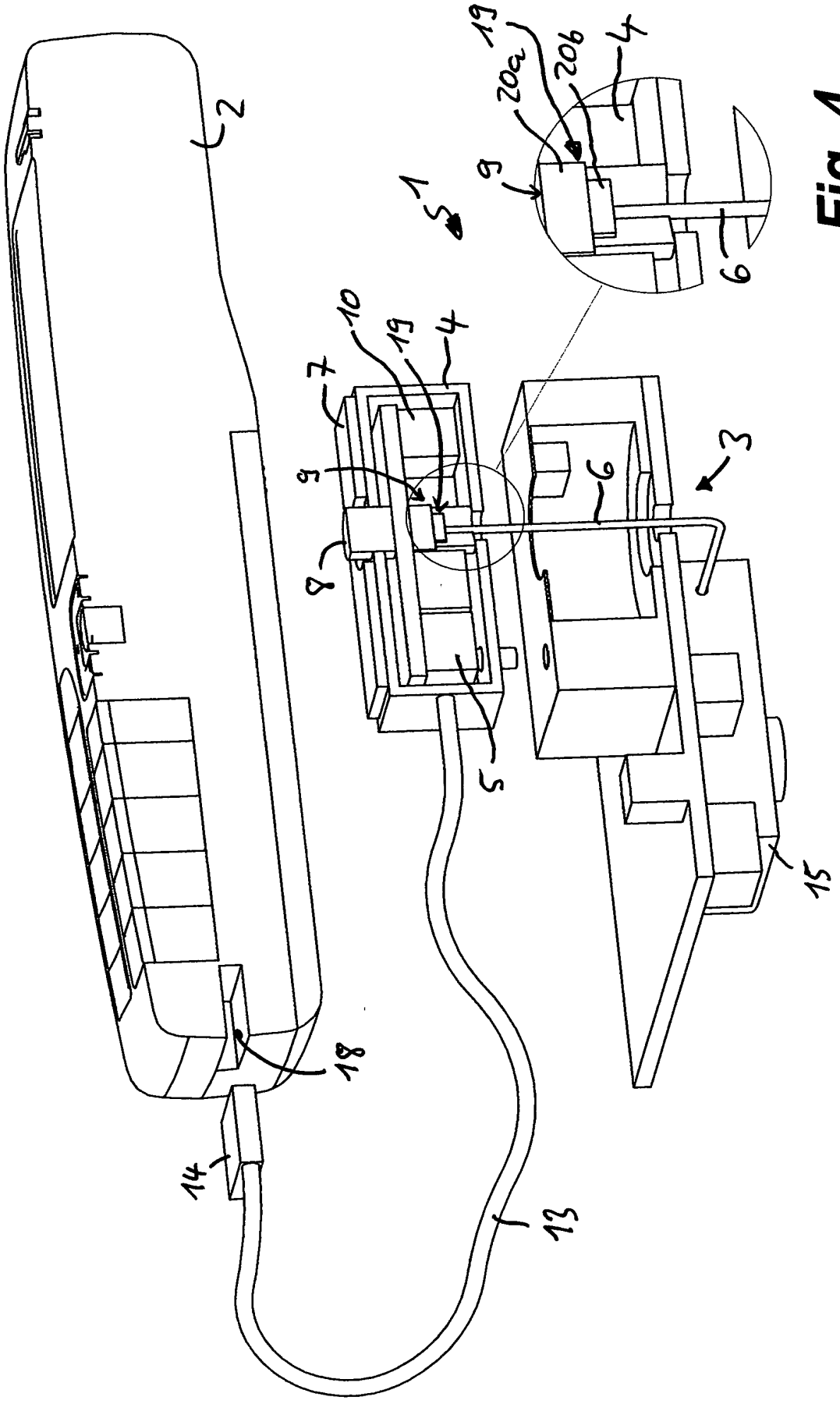

Fig. 4

Apparatus for securing objects

The invention relates to an apparatus for securing objects, more particularly exhibited goods, against unauthorized taking, which apparatus has a base unit and a sensor unit, which are connected to each other by means of a securing tether, wherein the sensor unit has an electronic unit, which has a push-button switch that is actuated by the object in a connection position in which the object is acted upon and wherein a signaling device is provided, which can be triggered when the push-button switch is released.

In retail, theft causes great losses, and therefore in particular high-value or high-priced objects which are also easy to handle, such as cellular telephones, MP3 players, or similar small electronic devices, but also objects such as perfume bottles, are typically secured against theft. In particular, this applies to objects that are freely presented, i.e., demonstration devices that the customer should hold or perfume bottles exhibited as samples.

In order to secure such objects, tether security systems are often used, in the case of which the object to be secured is connected to a tether, which is optionally pulled out from a winding box. However, this offers only a low level of security, because the tether can be severed relatively easily and the object can be removed. In addition, it is disadvantageous that the securing tether can twist during handling by a potential

buyer and then can no longer be orderly wound or the object can no longer be orderly put back.

Therefore, there exists, in particular, the problem of creating an apparatus of the type mentioned above that enables an increased level of security and in the case of which a visually appealing presentation of goods is possible.

According to the invention, said problem is solved in that the securing tether has an optical waveguide, that the sensor unit has an optical transmitter and the base unit has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether, and that an anti-twist element is provided in the region of the securing tether.

The sensor unit for securing the object is connected to the object in such a way that the push-button switch is actuated in this connection position. By means of the push-button switch, a theft attempt by separating the object from the sensor unit can be detected, and an alarm can be triggered by means of the signaling device.
The information about the triggering of the push-button switch, which information arises at the sensor unit, is forwarded to the base unit by means of the optical signal transfer device, and the base unit in turn is operatively connected to the signaling device for alarm signaling.
The securing tether performs two functions: first, the mechanical connection between the base unit and the sensor unit and therefore the object to be secured; second, the signal transfer

between the senor unit and the base unit by means of the optical waveguide.

In comparison with previously known securing devices, the apparatus according to the invention also has the advantage of reduced susceptibility to faults, because the optoelectronic signal transfer device operates practically without wear.

Because of the anti-twist element, a so-called anti-twist apparatus, the securing tether is always in a state that allows the securing tether to be orderly wound or deposited and therefore allows the object to be put back, even if the object is rotated and repositioned several times by a customer. Therefore, an orderly and visually appealing presentation of goods is always possible.

The electronic unit of the sensor unit can have a button cell or similar small battery for supplying voltage. However, in a preferred embodiment, the electronic unit has a capacitor or similar voltage buffer as a charge store, the sensor unit and the base unit each have electrical contact elements, which are connected to each other in an electrically conductive manner in a resting position, and the base unit has a power supply device for charging the charge store of the electronic unit in the resting position of the sensor unit.
Thus, the electronic unit is always ready for operation and no batteries have to be checked and replaced. In addition, when electronic devices are secured, the battery of the object can be continuously charged via the electrical contact elements and

the aforementioned electrical connecting line to the object if the sensor unit is inserted in the base unit, so that the object, such as a cellular telephone, can be presented in such a way that the object is always ready for operation for demonstration purposes.

One embodiment of the apparatus for securing objects according to the invention, for which embodiment independent protection is claimed, provides that the securing tether has an optical waveguide, that one end of the optical waveguide leads to the side of the sensor unit that lies against the object to be secured in a connection position in which the object is acted upon and the other end of the optical waveguide is connected to an optical receiver in the base unit, that a signaling device operatively connected to the optical receiver is provided, and that an anti-twist element is provided in the region of the securing tether.

The sensor unit is connected to the object in such a way that the free end of the optical waveguide is covered by the object. Thus, no light can enter the optical waveguide. However, if the sensor unit is removed from the object or the securing tether having the optical waveguide is severed, one end of the optical waveguide is open and light can hit said end, and this is registered at the optical receiver in the base unit. The incidence of light can be interpreted as a sabotage attempt or theft attempt and the signaling device can be triggered. Thus, a simple and economical yet effective theft protection system is formed. The sensor unit fulfils the task of fastening to the object to be secured and of accommodating the end of the optical wave-

guide, and therefore the sensor unit can be designed small and inconspicuous and goods can be presented in a visually appealing manner with the securing apparatus.
In this embodiment too, an anti-twist element is provided for the securing tether so that the securing tether is always orderly positioned as described above.

In order to prevent false alarms caused by scattered light or other minor light influences, it is advantageous if an evaluating device having a store for a reference value and having a comparator for comparing a measurement value measured by means of the optical receiver and the reference value is associated with the optical receiver. The evaluating device can be configured in such a way that the signaling device is not triggered until the measurement value, i.e., the amount of light incident on the optical waveguide and on the optical receiver, exceeds a reference value, while signaling does not occur in the case of only weak and/or very brief incidence of light.

The securing tether can have a metal braid surrounding the optical waveguide. The metal braid provides increased mechanical stability in the case of high tensile loads or movements and provides sabotage protection and theft protection against the tearing off or cutting of the securing tether.

The securing tether can be designed as a smooth tether or in the manner of a spiral cable. It is also possible that the securing tether can be wound in a winding device under tensile stress. In this case, the securing tether is accommodated in

the winding device in the resting position and the visual presentation of the object to be secured is not impaired by the securing tether. This is advantageous particularly in the case of a large number of objects, which, for example, are arranged adjacent to each other on a rack.

In particular, the anti-twist element can be arranged in the region of the sensor unit. The anti-twist element can be arranged so as to be inconspicuous and optionally completely within the sensor unit and thus in such a way that the anti-twist element is not externally visible.

In particular, the signaling device can be an acoustic and/or optical signaling device in order to provide conspicuous signaling of a theft attempt or sabotage attempt.

In order that objects of various kinds, having different shapes, can be secured, it is advantageous if the sensor unit has a shapeable adapter part for adapting to different objects to be secured.

In order to connect the object to be secured to the sensor unit quickly and easily, it is advantageous if the sensor unit has an adhesive surface for connecting to the object. Alternatively, a clamping connection or threaded connection, for example, can be provided. Connections by means of cable ties or similar fastening material are also conceivable.

The apparatus according to the invention can be provided and designed for various presentation forms, for example for front mounting on the front edge of a shelf by means of threaded fastening of the base unit, as a freely positionable apparatus on tables, shelves, or product boxes, or for front mounting on angled/vertical displays by means of adhesive fastening or threaded fastening.

The apparatus according to the invention can optionally also be designed for bidirectional data transfer via the optical waveguide of the securing tether, in order, for example, to transfer control signals from the base station to the sensor unit. For this purpose, an additional optical transmitter can be provided in the base unit and an optical receiver can be provided in the sensor unit.

Below, exemplary embodiments of the apparatus according to the invention are explained in greater detail on the basis of the drawings. The drawings show the following, with partial schematization:

Figure 1: a perspective view of a securing apparatus, having a push-button switch and an electrical connecting line, for securing a cellular telephone,

Figure 2: a sectional illustration of the assembly from figure 1,

Figure 3: a securing apparatus, having an optical waveguide, which can be covered up at an end of the optical waveguide by the object to be secured, and

Figure 4: a sectional illustration similar to figure 2, with a detail illustration of an anti-twist element.

According to figure 1, an apparatus for securing objects 2 against unauthorized taking, which apparatus as a whole is labeled as 1, has a base unit 3 and a sensor unit 4 that can be attached to the object 2 to be secured. The base unit 3 and the sensor unit 4 are connected to each other by means of a securing tether 6 having an optical waveguide. The base unit 3 can, for example, be fixedly installed on a sales rack.
The sensor unit 4 has an adhesive surface 7 for connecting to the object 2. For the sake of clarity, the object 2 (cellular telephone) is shown spaced apart from the sensor unit 4 in the figures. In the usage position, the adhesive surface 7 of the sensor unit 4 lies against the object 2 over an area and thus establishes a fixed connection.

In order to be able to detect a detachment of the object 2 from the sensor unit 4 and to trigger an alarm in the case of the apparatus 1 according to figure 1 and figure 2, an electronic unit 5 is provided in the sensor unit 4 (figure 2), with which electronic unit 5 a push-button switch 8 is associated, which is actuated when the object 2 acts upon the sensor unit 4. When the object 2 is detached from the sensor unit 4, the contact of the push-button switch 8 is opened and a signaling device,

which is not shown, is triggered. In order to transfer the switching state of the push-button switch 8 to the base unit 3 and the signaling device, an optical transmitter 9, which interacts with the electronic unit 5 and the push-button switch 8, is provided in the sensor unit 4 and, at the base unit 3, an optical receiver, which is not shown, is provided at the end of the optical waveguide of the securing tether 6, and said optical transmitter 9 and said optical receiver form an optical signal transfer device with the optical waveguide of the securing tether 6.

In order to supply voltage to the electronic unit 5, the electronic unit 5 has a charge store 10, which can be preferably a capacitor, or also an accumulator. Said charge store 10 is charged by means of electrical contact elements 11 on the base unit 3 and on the sensor unit 4 and by means of a power supply device 12 (figure 1) in a resting position, in which the sensor unit 4 lies on the base unit 3.

Within the sensor unit 4, an anti-twist element 19 is provided in the region of the optical transmitter 9 (figure 4). The anti-twist element 19 (anti-twist apparatus) consists of two parts 20a, 20b that can be freely rotated in relation to each other. The upper part 20b is connected to the securing tether in an optically conductive manner and the lower part 20a is fixedly installed in the sensor unit 4. The upper part 20b is connected to the optical transmitter 9 in an optically conductive manner.

According to figure 1 and figure 2, an electrical connecting line 13 is provided for connecting the electronic unit 5 to the object 2, here a cellular telephone. Firstly, an accumulator of the object 2 to be secured can be charged via said connecting line 13. For this purpose, the power supply device 12 is connected to the connecting line 13 by means of the contact elements 11. In the resting position of the sensor unit 4 and with the contact elements 11 connected to each other, the accumulator of the object 2 is charged so that the object 2 is always ready for operation and demonstration.

Secondly, the electronic unit 5 can be designed to monitor the current and/or voltage values at the connecting line 13. If the connector 14 of the connecting line 13 is disconnected from the object 2, i.e., is pulled out of the connection socket 18, the signals at the connecting line 13 change and the electronic unit 5 can interpret this as unpermitted manipulation or a theft attempt and can trigger the signaling device by means of the signal transfer device.

In the case of the apparatus 1b according to figure 3, one end 17 of the securing tether 6 having the optical waveguide leads to the side of the sensor unit 4 that acts upon the object 2 to be secured in a connection position. The free end 17 of the optical waveguide is thus covered by the object 2 in the connection position so that no light can enter the optical waveguide. However, if the object 2 is disconnected from the sensor unit 4 in an attempt to steal the object 2, as shown in figure 3, ambient light hits the end 17 of the securing tether 6 and the

optical waveguide of the securing tether 6, and this is detected at an optical receiver (not shown) of the base unit 3, and the signaling device can be triggered as a result.
In addition, in the assembly according to figure 3, an electrical connecting line 13 is provided, by means of which an accumulator of the object 2 can be charged when the sensor unit 4 is connected to the base unit 3 in a resting position and a conductive connection to a power supply device, which is not shown in figure 3, is established by means of the contact elements 11.

In the assembly according to figure 3 too, an anti-twist element is provided for the securing tether 6 in the sensor unit 4, but the anti-twist element is not visible because of the perspective.

A winding device 15 can also be seen in the figures, by means of which the securing tether can be wound under tensile stress so that the securing tether is always accommodated in an orderly and concealed manner in the resting position of the sensor unit 4 and of the object 2, resulting in a visually appealing presentation of goods without disturbing securing tethers. However, in order to demonstrate or try out the secured object 2, the secured object 2 can be simply grabbed and the securing tether 6 can be pulled out of the winding device 15 against the tensile force.

Claims

1. An apparatus (1) for securing objects (2), more particularly exhibited goods, against unauthorized taking, which has a base unit (3) and a sensor unit (4), which are connected to each other by means of a securing tether (6), wherein the sensor unit (4) has an electronic unit (5), which has a push-button switch (8) that is actuated by the object (2) in a connection position in which the object (2) is acted upon, and wherein a signaling device is provided, which can be triggered when the push-button switch (8) is released, **characterized in that** the securing tether (6) has an optical waveguide, that the sensor unit (4) has an optical transmitter (9) and the base unit (3) has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether (6), and that an anti-twist element (19) is provided in the region of the securing tether.

2. The apparatus according to claim 1, characterized in that the electronic unit (5) has a capacitor or similar voltage buffer as a charge store, that the sensor unit (4) and the base unit (3) each have electrical contact elements (11), which are connected to each other in an electrically conductive manner in a resting position, and that the base unit (3) has a power supply device (12) for charging the charge store of the electronic unit (5) in the resting position of the sensor unit (4).

3. An apparatus (1b) for securing objects (2), more particularly exhibited goods, against unauthorized taking, which has a base unit (3) and a sensor unit (4), which are connected to each other by means of a securing tether (6), **characterized in that** the securing tether (6) has an optical waveguide, that one end (17) of the optical waveguide leads to the side of the sensor unit (4) that lies against the object (2a) to be secured in a connection position in which the object (2) is acted upon and the other end of the optical waveguide is connected to an optical receiver in the base unit (3), that a signaling device operatively connected to the optical receiver is provided, and that an anti-twist element (19) is provided in the region of the securing tether.

4. The apparatus according to claim 3, characterized in that an evaluating device having a store for a reference value and having a comparator for comparing a measurement value measured by means of the optical receiver and the reference value is associated with the optical receiver.

5. The apparatus according to one of claims 1 to 4, characterized in that the securing tether (6) has a metal braid that surrounds the optical waveguide.

6. The apparatus according to one of claims 1 to 5, characterized in that the securing tether (6) can be wound in a winding device (15) under tensile stress.

7. The apparatus according to one of claims 1 to 6, characterized in that the anti-twist element (19) is arranged in the region of the sensor unit (4).

Abstract

An apparatus (1) for securing objects (2), more particularly exhibited goods, against unauthorized taking, has a base unit (3) and a sensor unit (4), which are connected to each other by means of a securing tether (6), wherein the sensor unit (4) has an electronic unit (5), which has a push-button switch (8) that is actuated by the object (2) in a connection position in which the object (2) is acted upon, and wherein a signaling device is provided, which can be triggered when the push-button switch (8) is released. The securing tether (6) has an optical waveguide. The sensor unit (4) has an optical transmitter (9) and the base unit (3) has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether (6). An anti-twist element (19) is provided in the region of the securing tether.

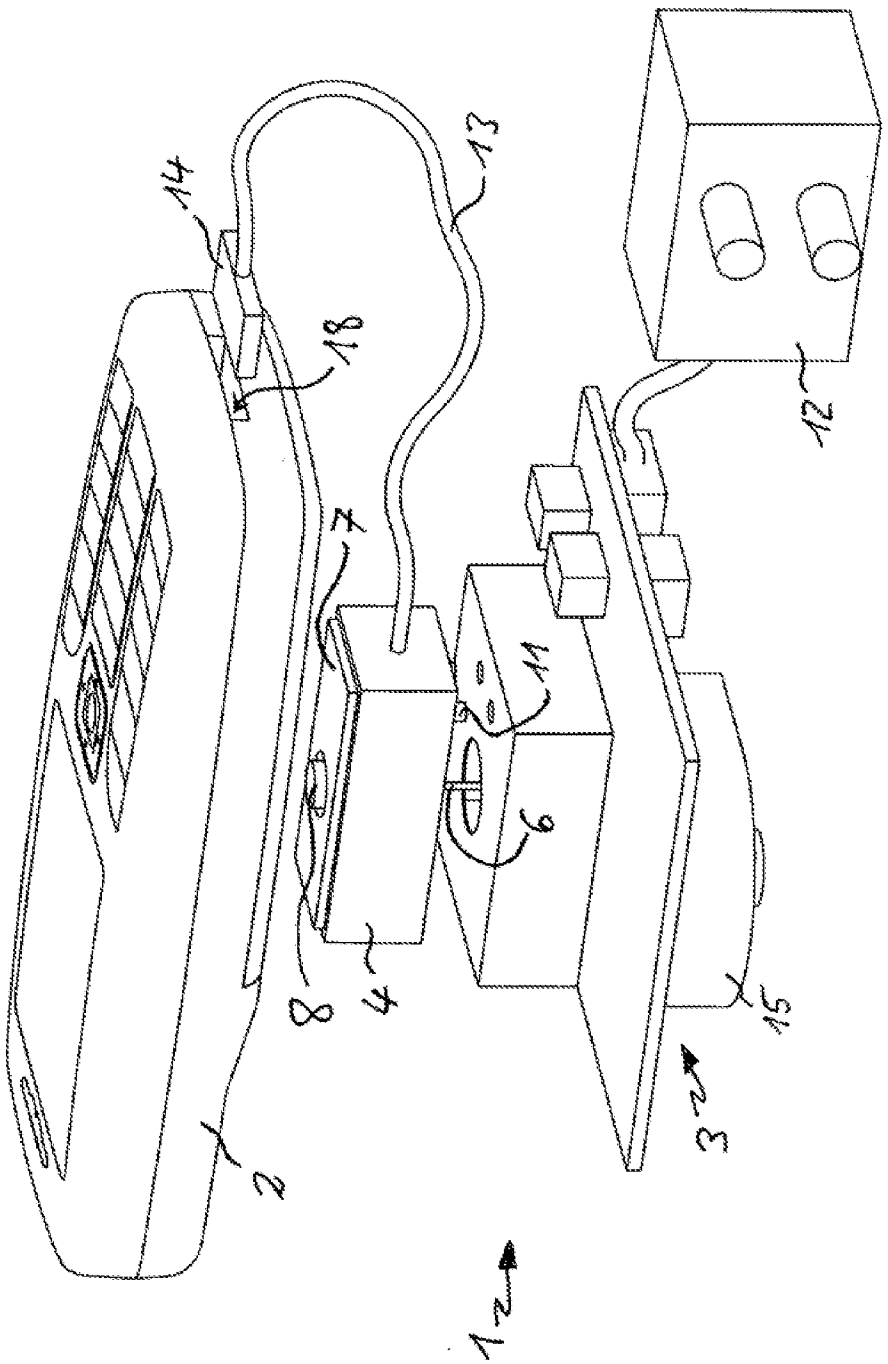

Fig. 1

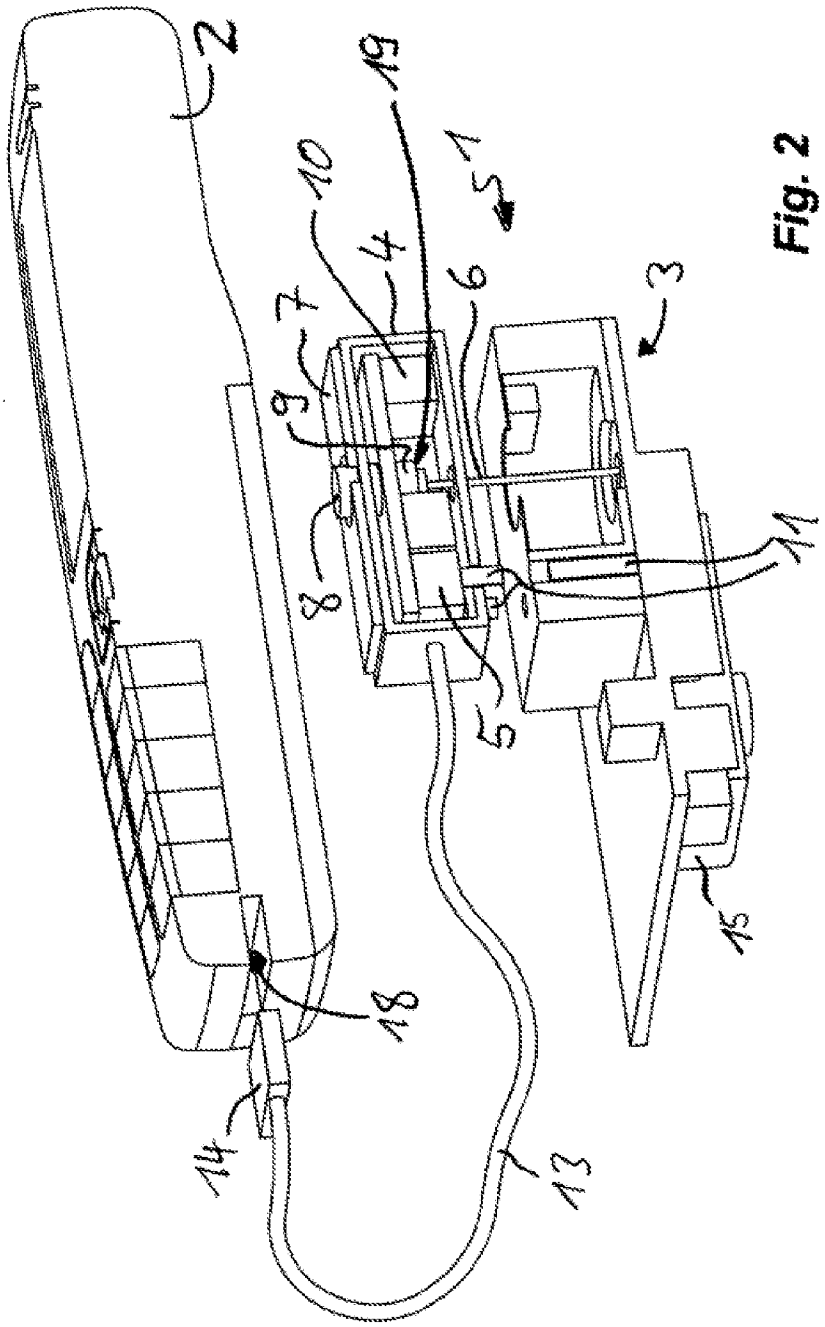

Fig. 2

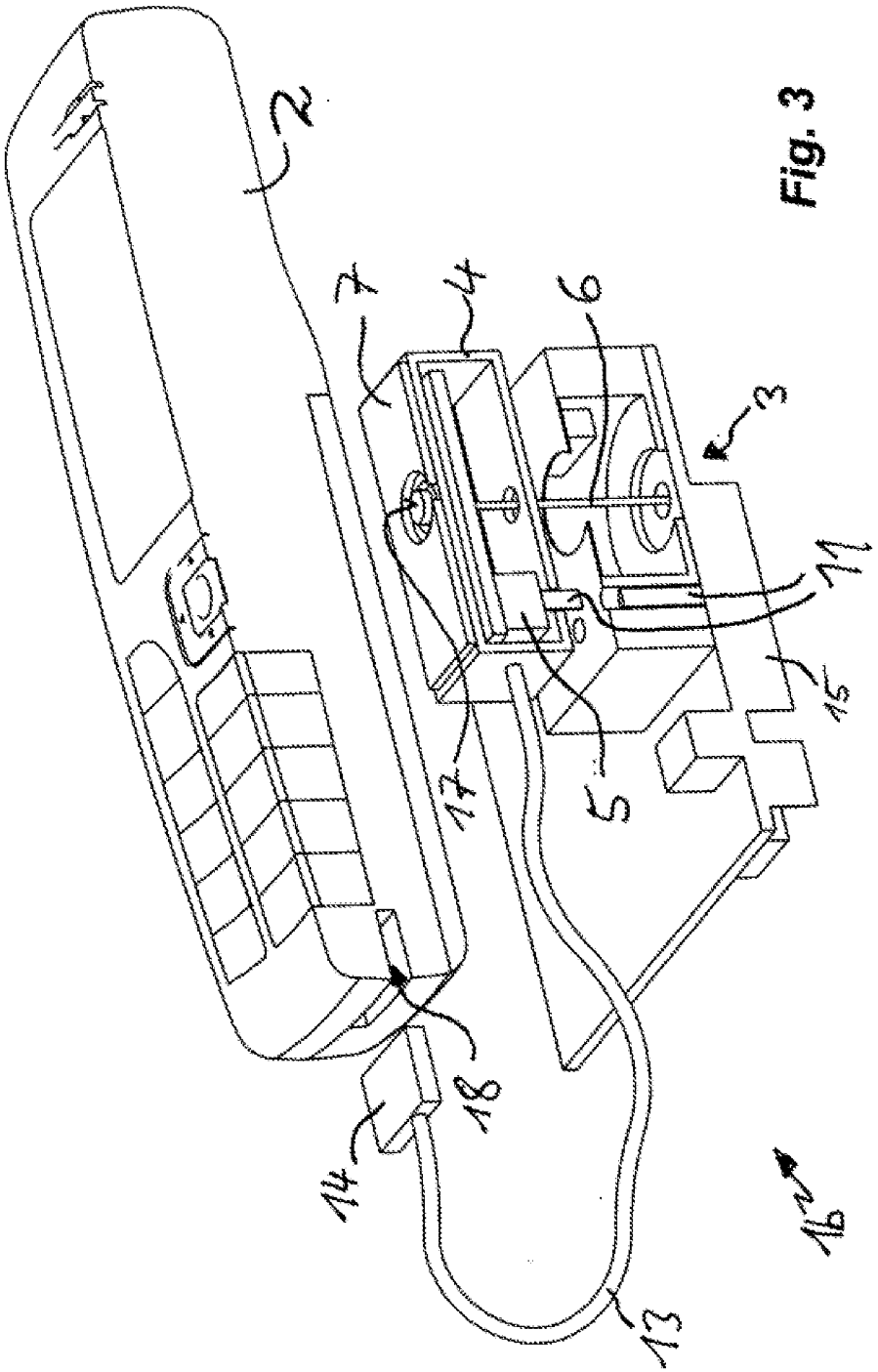

Fig. 3

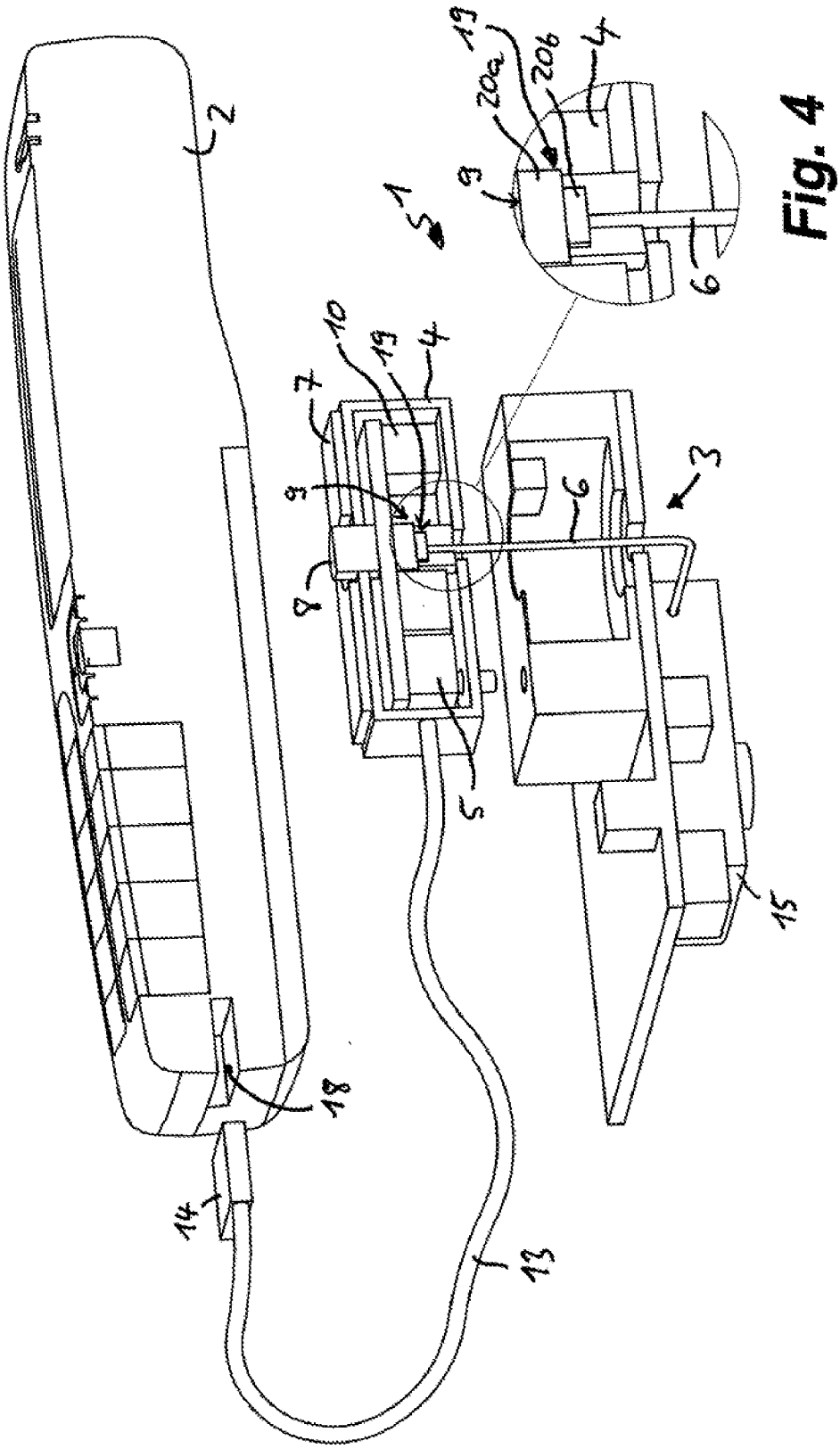

Fig. 4

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(71) Applicant: **ENTREPRISES LOKKIT INC.** [CA/CA]; 250, 7ième Avenue B, Saint-Ambroise-de-Kildare, Québec J0K 1C0 (CA).

(72) Inventor: **HOUDE, Claude**; 250, 7ième Avenue B, Saint-Ambroise-de-Kildar, Québec J0K 1C0 (CA).

(74) Agent: **ROBIC**; 55, St-Jacques, Montréal, Quebec H2Y 3X2 (CA).

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(54) Title: FIBER OPTIC BASED SECURITY SYSTEM

(57) Abstract: A fibre optic based security system is disclosed, including a light emitter, a light detector, an optical fibre and a threshold detector. Light is injected at one end of the optical fibre and received at the other end. The optical fibre is looped or secured about an object to be protected. If someone attempts to steal the object by tampering with the optical fibre or cutting it altogether, the light received at the light detector will fall below a predetermined threshold. When this happens, the threshold detector is adapted to trigger an alarm, alerting the proper persons of the theft. Preferably, the system is contained in a portable housing, and the system is preferably useful for protecting objects located outside a building, such as a trailer, bicycle, motorcycle, snowmobile, etc., where conventional security systems would be prohibitive to install.

FIBER OPTIC BASED SECURITY SYSTEM

FIELD OF THE INVENTION

The present invention relates to a compact and practical security system using fiber optics.

BACKGROUND OF THE INVENTION

Security systems are well known in the art, and come in a variety of configurations. In a basic configuration, a security system includes a sensor and a warning system so that when the sensor is triggered, the warning system is activated.

One of the drawbacks with conventional security systems is that they are well adapted to protect for instance the inside of a building, such as a house, factory, warehouse, etc. Such systems include infra-red detectors, motion sensors, contact switches, etc., connected to a central location. When one or more of the sensors is triggered, an alarm, either visual or audible or both, is activated in order to give the proper authorities the time to respond appropriately.

At times, objects to be protected are located outside a building. This is the case of trailers, snowmobiles, bicycles, for example, and other items which can be located outside of a building. In order to protect those items, either a sometimes prohibitively expensive perimeter security system must be installed, or motion sensors can be used. The disadvantage of motion sensors is that they are triggered not only by potential thieves, but also by animals, thereby giving off false alarms.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an optical fibre based security system which provides an inexpensive alternative to existing security systems. In accordance with the invention, this object is achieved with a fibre optic based security system, comprising:

a length of optical fibre having two opposite ends;

a light emitter optically coupled to one of the opposite ends of said fibre for injecting light therein;

a light detector optically coupled to the other of said opposite ends of the fibre for detecting a level of light transmitted by said fibre;

threshold means connected to said light detector for determining if the level of light transmitted by the fibre is below a predetermined threshold level;

a power source for powering said system; and

an alarm operatively associated with said threshold means, said alarm being triggered when said level of light transmitted by said fibre falls below the threshold level.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention and its advantages will be more easily understood after reading the following non-restrictive description of preferred embodiments thereof, made with reference to the following drawing in which:

FIG. 1 is a schematic representation of the security system according to a preferred embodiment of the invention;

FIG. 2 is a schematic representation of the security system of Fig. 1 used to protect a snowmobile;

FIG. 3 is a schematic representation of the security system of Fig. 1 incorporated into a link of a padlock;

FIG. 4 is an inside view of a casing for the security system according to a preferred embodiment of the invention; and

FIG. 5 is a schematic representation of the system of the present invention looped around an object to be protected.

DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Stated generally, the present invention uses light propagating in a loop of optical fibre as a means to protect an article from theft. The fibre is looped around the article in a manner that the article cannot be removed without breaking the fibre, such as shown in Figure 5. At one end of the loop, a light source emits light into the fibre, and at the other end a photoreceptor receives the light after its travel in the fibre. The photoreceptor is also linked to an alarm system, or threshold means, which is activated if the light received is lower than a pre-defined threshold. Consequently, should somebody attempt to steal the object that is to be protected by cutting the optical fibre, or by tampering with it resulting in a decrease in the intensity of light transmitted, the alarm system is immediately activated. Advantageously, all the components of the invention with the exception of the fibre loop, are conveniently included in a single casing.

Referring to FIG. 1, there is shown a schematic representation of the system 10 according to a preferred embodiment of the present invention. The system 10 first includes a fiber loop 24, defining an input branch and an output branch. The input branch is connected to a light emitter 25, for example a LED, which is operatively con ed to appropriate electronics. The output branch is connected to a light detector 27. In this manner, if the integrity of the fiber loop is

compromised, the light level received at the light detector 27 will be lowered. A logic detector system 18 to detect tampering of the fiber loop 24 is provided, and is connected both to the detector 27 and either an audible alarm 22 or a visual alarm 20 or both. The alarm 20, 22 is activated if the light level at the detector is lower than a predetermined threshold. Preferably, the logic system 18 is connected to green LED 21, which indicate if the system is activated or not. The system 10 is preferably powered by an ordinary power outlet 26 to which is connected an AC/DC converter. A battery or set of batteries may be provided as a backup power source. An ON/OFF switch 12 is also provided.

Alternatively, the light can be emitted according to a predetermined or random pattern. If the light received at the detector is different in pattern or amplitude, then the alarm will be different.

In a preferred embodiment of the invention, the optical fibre is made of plastic or glass. Furthermore, a LED 21 may further be provided for indicating proper functioning of the system and power of the system.

Referring to FIGs. 2 and 5, there is shown a preferred embodiment of the fiber optic loop 24. The loop 24 is wrapped around a portion 101, 111 of an article to be protected. The article in question may advantageously be stored outdoors, such as for example a bicycle, a motorcycle, camping equipment, a lawnmower, etc. In a preferred embodiment of the invention, the two branches of the fibre 24 are preferably connected to a connector 38, from which they emerge bundled together and protected by a sleeve 40. The length of the branches is preferably long enough to span the distance from the object to be protected and a neighbouring residence or other power source. The branches are again separated so that they may be connected to the emitter 25 and detector 27.

Referring to FIG. :here is shown how the components of the alarm system according to the present invention may advantageously be installed in a

casing 31. Such an embodiment makes the system 10 very convenient to install, carry or sell. Preferably, the casing 42 is round shaped, and is provided with an inner cavity 30 in which the fiber loop 24 may be stored when the system is not in use.

Referring to FIG. 3, there is shown another embodiment of the invention where the fiber loop 24 is hidden into the link 43 of a padlock 44. In this manner, cutting the padlock would also cut the fiber optic loop, therefore activating the alarm. In such an embodiment, the padlock 44 is also provided with a connector 38 for connecting the balance of the optical fibre thereto.

It should also be understood that the electronics and optical components of the present invention can be advantageously embodied in integrated circuits, and other electronic components, but that the invention is not limited thereto.

Although the present invention has been described by way of a preferred embodiment thereof, it should be understood that modifications within the scope of the invention are contemplated by the present application.

CLAIMS

1. A fibre optic based security system, comprising:
a length of optical fibre having two opposite ends;
a light emitter optically coupled to one of the opposite ends of said fibre for injecting light therein;
a light detector optically coupled to the other of said opposite ends of the fibre for detecting a level of light transmitted by said fibre;
threshold means connected to said light detector for determining if the level of light transmitted by the fibre is below a predetermined threshold level;
a power source for powering said system; and
an alarm operatively associated with said threshold means, said alarm being triggered when said level of light transmitted by said fibre falls below the threshold level.

2. A fibre optic based security system according to claim 1, wherein said light emitter, said light detector, said threshold means, and said alarm are housed in a portable casing, said casing being further adapted to store said optical fibre when not in use.

3. A fibre optic based security system according to claim 1, wherein said alarm is a visual alarm.

4. A fibre optic based security system according to claim 3, wherein said visual alarm includes a LED.

5. A fibre optic based security system according to claim 1, wherein said alarm is an audible alarm.

6. A fibre optic based security system according to claim 1, wherein said alarm is a visual and audible alarm.

7. A fibre optic based security system according to claim 1, wherein said power source includes a conventional electrical outlet.

8. A fibre optic based security system according to claim 7, wherein said power source further includes a backup battery.

9. A fibre optic based security system according to claim 2, wherein said system includes an output for an external loudspeaker.

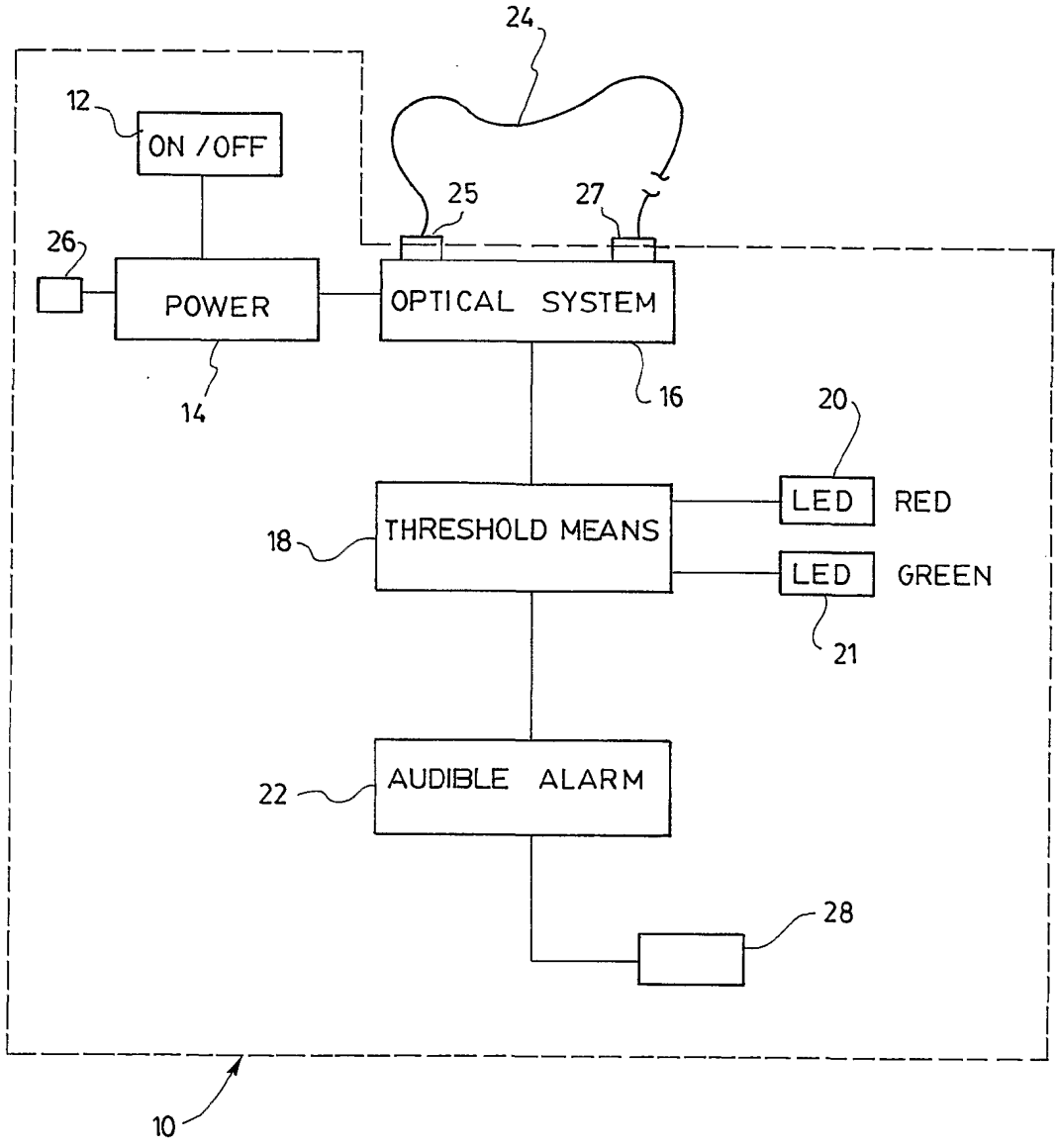
10. A fibre optic based security system according to claim 1, wherein at least a portion of said optical fibre is integrated in a link of a padlock and is connectable to a balance of said fibre through a connector integrated with said padlock.

11. A fibre optic based security system according to claim 1, wherein said light emitter, said light detector, said threshold means and said alarm are integrated into an electronic circuit.

12. A fibre optic based security system according to claim 1, wherein said light emitter is a LED.

13. A fibre optic based security system according to claim 1, wherein said optical fibre is made of glass or plastic.

14. A fibre optic based security system according to claim 1, wherein said system further includes a LED for indicating proper functioning of said system.


24
12
ON /OFF
25
27
26
POWER
OPTICAL SYSTEM
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LED
RED
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THRESHOLD MEANS
LED
GREEN
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AUDIBLE ALARM
28
10

FIG. 1

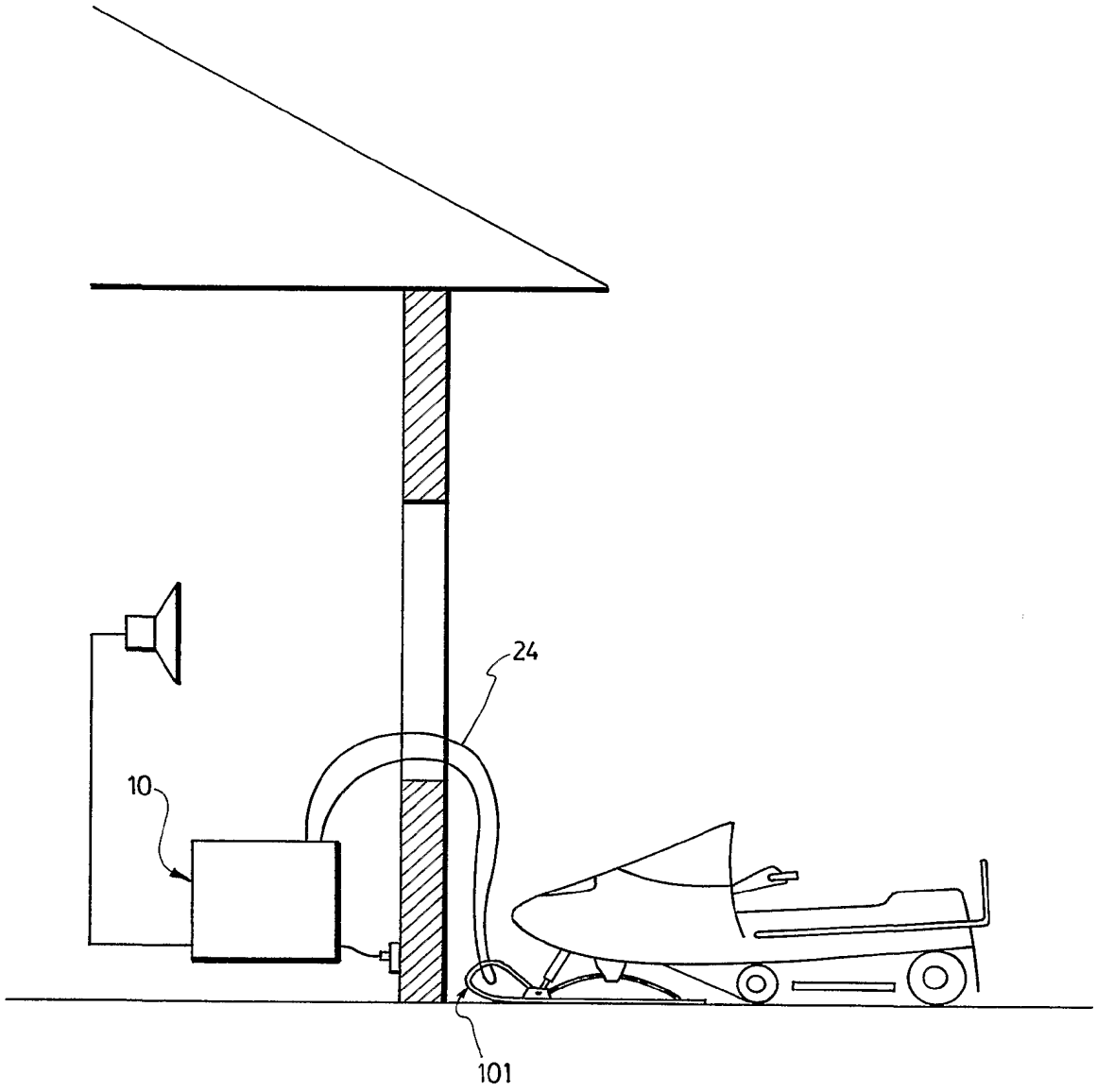

FIG. 2

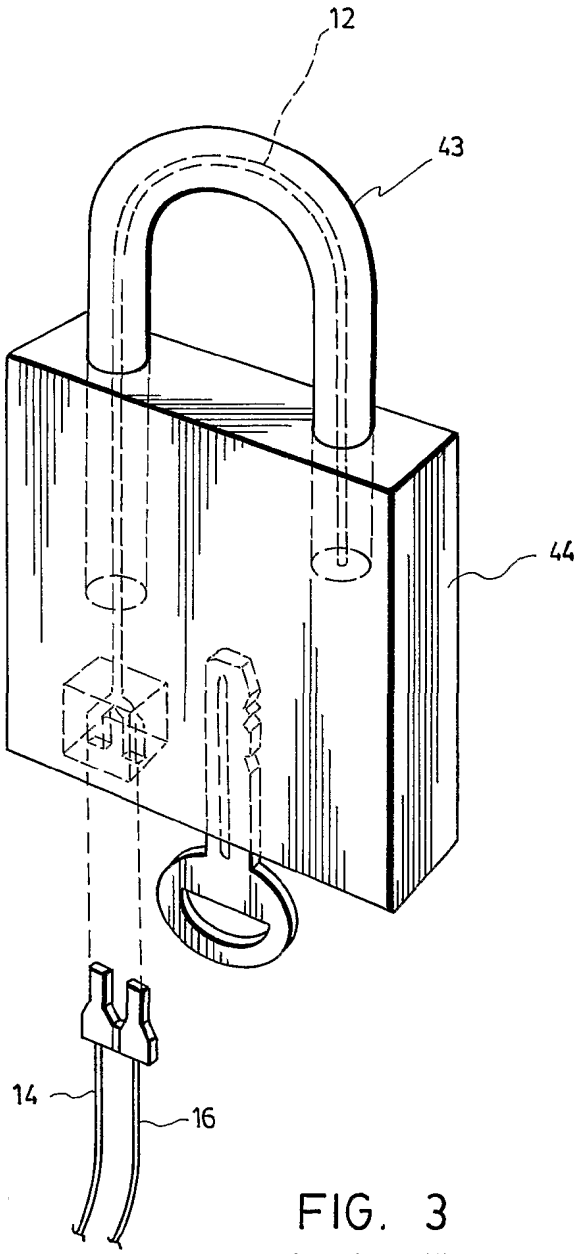

FIG. 3

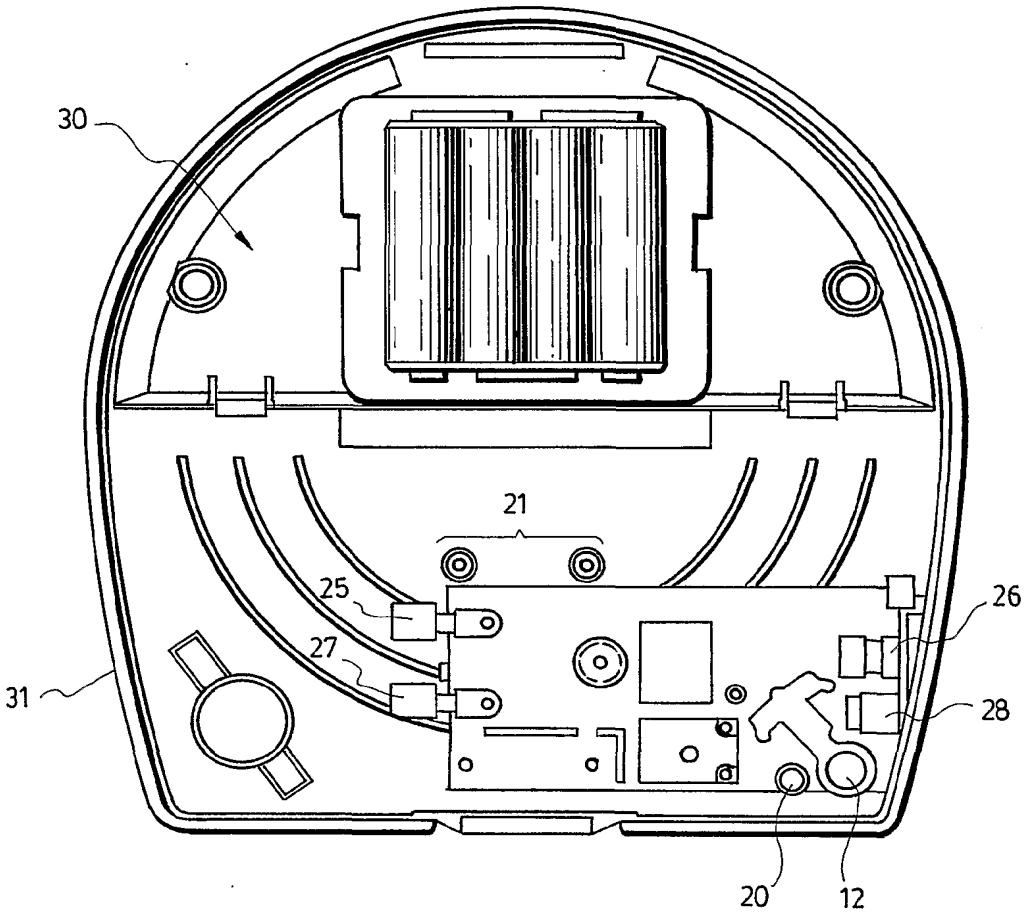

FIG. 4

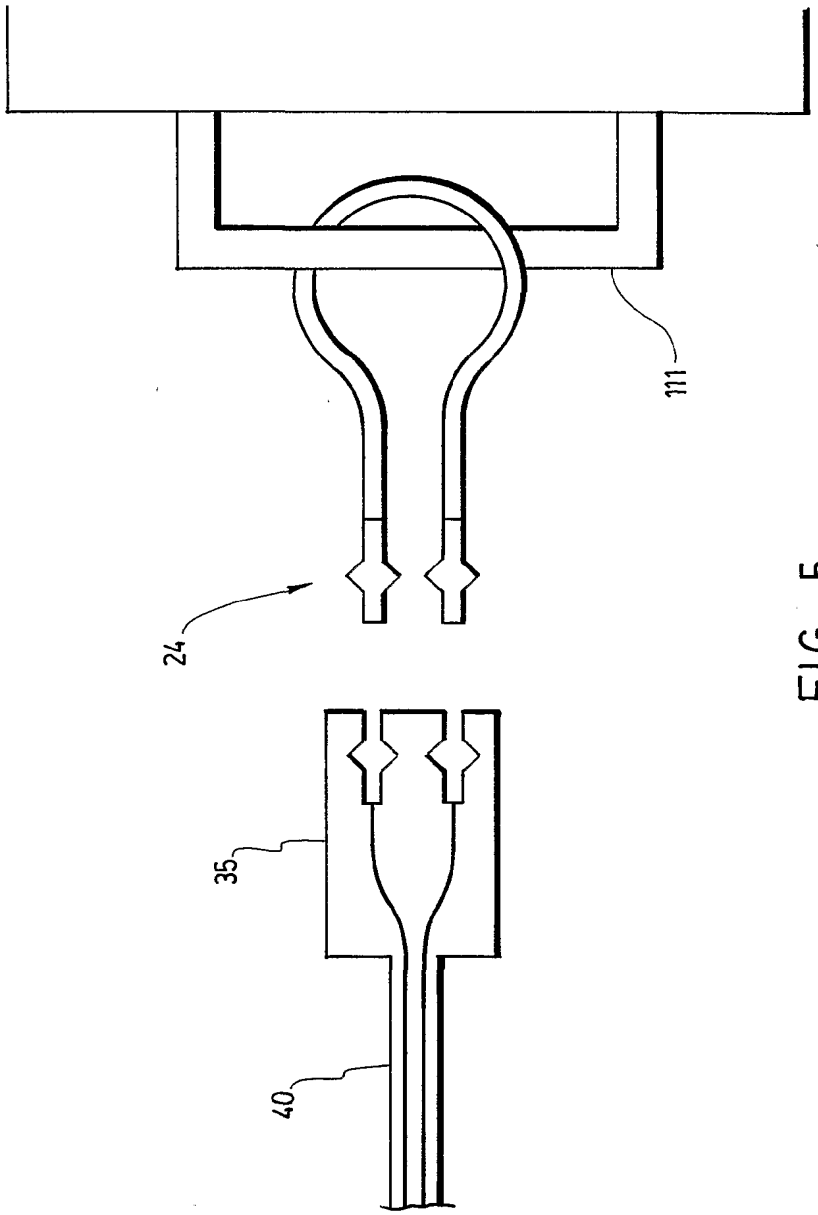

FIG. 5

INTERNATIONAL SEARCH REPORT

National Application No
PCT/CA 02/00342

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G08B13/14 E05B45/00 G09F3/03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G08B E05B G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 639 713 A (KITAGAWA TADAO ET AL) 27 January 1987 (1987-01-27) abstract; figures 5-7	1-14
X	EP 1 063 627 A (LECK MICHAEL JOHN ;MASON JOHN EDWARD (GB)) 27 December 2000 (2000-12-27) abstract	1-14
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
24 May 2002	03/06/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Sgura, S

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ational Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 656 996 A (HOUSER PETER BENNETT) 12 August 1997 (1997-08-12) abstract	1-14
X	US 4 920 334 A (DEVOLPI DEAN R) 24 April 1990 (1990-04-24) abstract; figures 1-4	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

national Application No
PCT/CA 02/00342

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(71) Applicant *(for all designated States except US)*: **SECTOR DESIGN & MARKETING LIMITED** [GB/GB]; 1 Oak Spinney, Ratby Lane, Leicester, Leicestershire LE3 3AW (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SEABROOK, Jonathan** [GB/GB]; 14 Hinckley Road, Ibstock, Leicestershire LE67 6PB (GB). **CHAMBERLAIN, Ian** [GB/GB]; 11 Norfolk Road, Desford, Leicestershire LE9 9HR (GB).

(74) Agent: **SECERNA LLP**; The Catalyst, Baird Lane, Heslington East, York, Yorkshire YO10 5GA (GB).

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Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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(54) Title: ELECTRONIC DEVICE DISPLAY UNIT

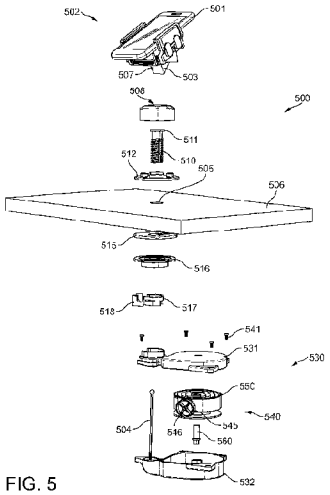

FIG. 5

(57) Abstract: A mobile electronic device display and security unit (500) is disclosed, together with a method of securely displaying a live electronic device using such a unit. The display and security unit includes a security module (530) comprising a retraction unit (540) and a display module (502) capable of holding a mobile electronic device (501). The retraction unit is operably connected to the display module and the display module is electrically connected to the security module at least in a rest position in contact with or adjacent to the security module before and after the use of a mobile device received in the display module and is capable of being electrically connected to the mobile electronic device. In use, the display module which holds a mobile electronic device is withdrawn away from the security module against the action of the retraction unit. Following the use of the mobile device the retraction unit retracts the display module towards the security module.

WO 2012/069816 A1

Electronic Device Display Unit

The present invention relates to an electronic device display and security unit. In particular, but not exclusively, the present invention relates to a display and security unit for live mobile electronic devices, such as live mobile phones, i-pods, i-pads and hand-held computers.

Pressure to combat theft has led many mobile electronic device retail outlets to secure such live mobile and even non-mobile devices to a display unit. Take, for example, different types of such live mobile devices displayed for retail. Such mobile devices may be sub-divided into different types, such as mobile phones, tablet computers, portable media players, such as the iPod designed and marketed by Apple, tablet computers, such as the iPad, also designed and developed by Apple, and/or hand-held computers in general. All of them, however, share one characteristic: they have a small volume and weight, and it is relatively easy to steal them without detection. To combat such theft generally requires display units which can prevent unauthorised separation of such mobile devices from such display units and/or sound an alarm when theft or unauthorised separation of such devices from such display units occurs. As a result, in order to secure such devices effectively, it is known to attach, preferably to tether, the devices to a display unit.

There is a need for live mobile electronic devices that are attached to a display unit to be left on charge, so that they can be trialled by a customer. In the type of set up used hitherto, a conventional electrical feeder cable between the live mobile electronic device and the unit is used both to charge the device and to tether it to prevent unauthorised permanent separation of display unit.

Such a cable tether is easily severed or otherwise detached from the display unit, although it fulfils the need for live mobile electronic devices that are attached to a display unit to be left on charge, so that they can be trialled by a customer. Such a set up hence does not effectively prevent unauthorised permanent separation of a mobile electronic device from the unit, and requires an alarm that sounds when theft or unauthorised separation of such devices from such display units occurs. This represents a large cost.

Cable tethers may desirably have means in the display unit to retract them into the unit for storage of the tether in the display unit when the mobile electronic device is replaced after trial use.

It is an aim of the present invention to at least partly mitigate the above-mentioned problems.

It is an aim of certain embodiments of the present invention to provide a display and security unit for mobile electronic devices which overcomes these disadvantages.

Certain embodiments of the present invention overcome these disadvantages by avoiding the need for a separate discrete electrical feeder cable between the display unit and the mobile electronic device and/or providing a robust tether, thus avoiding the need for an alarm that sounds when theft or unauthorised separation of such devices from such display units occurs.

In a first aspect, the present invention provides a mobile electronic device display and security unit comprising
a security module comprising a retraction means, and
a display module capable of holding a mobile electronic device,
wherein the retraction means is operably connected to the display module and the display module is electrically connected to the security module and is capable of being electrically connected to the mobile electronic device,
whereby, in use of a mobile device received in the display module, the display module, holding a mobile electronic device, is withdrawn away from the security module against the action of the retraction means, and following the use of the mobile device, the retraction means retracts the display module towards the security module.

Aptly, the retraction means is operably connected to the display module by a robust tether or other link that is resistant to being severed or otherwise detached from the unit.

Aptly, the display module is electrically connected to the security module by means other than a discrete electrical feeder cable. For example the display module may be electrically connected to the security module, at least in a rest

position in contact with or adjacent to the security module, by electrical contacts in or on the security module and co-operating contacts in or on the display module.

Such electrical contacts are conveniently in positions on or in co-operating surfaces of a docking means of the display module and security module respectively that are register in the rest position of the display module.

Aptly, the display module may be electrically connected to the security module, even when not in a rest position in contact with or adjacent to the security module, by a twin-core electrical feeder cable between the display unit and the security module, which is mounted in or on, or is integral with a tether or other link which operably connects the retraction means to the display means.

A mobile electronic device display and security unit without a separate discrete electrical feeder cable to charge the device that is separate from a tether or other link between a security module and a display module holding a mobile electronic device has not been known hitherto. Because of the display holding a mobile electronic device and the retraction means being operably connected to the display module, for example being connected by a tether or other link between the display and security unit, the need for an alarm is avoided. This represents a large cost saving.

Aptly, the display module may hold a mobile electronic device, for example by attachment means for attaching a mobile electronic device type to the display module, such as pressure-sensitive adhesive or co-operating plastics hook-and-loop members (Velcro) which co-operate with one or more complementary strips on the mobile electronic device to be attached to the display module, for example on a device bearing member.

Aptly, however, the mobile device may be received, aptly slidably received, by, and sit in receiving means, such as a cradle, mounted in or on, or integral with a display module mounting pod, which forms part of the display module.

Aptly, the retraction means of the unit may be operably connected to the display module by a tether or other link attached or fastened to the display module at one

end remote from the security module, and attached or fastened to the retraction means at the other end in or on the security module.

It is desirable to keep a mobile electronic device that is received in the display module charged while the mobile electronic device is not in use, and therefore to have electrical connection of the mobile electronic device that is received in the display module to a power source, usually in the security module.

The display module may be electrically connected to the security module, at least in a rest position in contact with or adjacent to the security module, by electrical contacts in or on the security module and co-operating contacts in or on the display module.

Alternatively, the display module may be electrically connected to the security module, even when not in a rest position in contact with or adjacent to the security module, by a twin-core electrical feeder cable between the display unit and the security module, which electrical feeder cable is mounted in or on, or is integral with the tether or other link operably connecting the retraction means to the display means.

The display module may optionally be capable of being electrically connected to the mobile electronic device by way of a twin-core electrical input cable between a power outlet socket in a position in or on the display module and the power input socket of the mobile electronic device.

The tether or other link may suitably comprise a multistrand cable of a tough metal, such as stainless steel, typically of 1.5 to 3, for example 2 to 2.5 mm constant cross-dimension, which is highly resistant to cutting, shearing or other severing methods. Optionally, the tether is sheathed in a plastics material, such as PVC.

The unauthorised permanent separation of display and security unit and device is greatly hindered by the components of the unit, in particular the tether or other link operably connecting the retraction means to the display means.

The security module is mounted on or in a security module display unit structure, e.g. of a plastics material, wood composite and/or metal, with a wall which

provides a convenient mounting and display surface for the display and security unit. The security module suitably has a security module docking means, often mounted on the wall of and/or in the security module display unit.

This docking means is so constructed and arranged that it may engage display module docking means mounted on or in, or integral with part of the display module, e.g. a display module mounting pod, which forms part of the display module, when the display module is in a rest position in contact with the security module before and after the use of a mobile device received in the display module. This facilitates contact and optionally electrical connection of the display module with the security module.

Aptly, in its rest position before or after the trial of a mobile device received in the display module, the display module is urged onto or into the security module by the action of the retraction means.

The display module docking means and security module docking means may have any construction or arrangement that permits the display module docking means and security module docking to engage with each other.

In one embodiment, the security module has female or male docking means mounted on the wall of or in the security module display unit.

In the same embodiment, the display module has corresponding male or female display module docking means mounted on or in, or integral with the display module, preferably mounted on or in, or integral with a display module mounting pod, which forms part of it.

Male docking means mounted on or in, or integral with either the display module or the security module will usually comprise an elongate member, e.g. in the form of a plug, shaft or shank. Female docking means mounted on or in, or integral with either the display module or the security module will usually comprise an elongate member, e.g. in the form of a socket, cavity or sheath.

Female docking means mounted on or in, or integral with either module will usually conform internally at least in part with the outside of the male docking means mounted on or in, or integral with the other module.

The outside of the male docking means will usually be slightly smaller than the inside of the female docking means, so that the former, and in particular its elongate member is slidable in and out of the latter, so that the male member may be snugly received in the female hollow member.

The display module docking means which aptly comprises an elongate male member, may be in the form of a plug, shaft or shank. The male member is slidable in and out of a security module docking means which comprises an elongate female member, aptly in the form of a co-operating socket, cavity or sheath, comprised in the security module docking means.

Aptly, the display module is held in its rest position before the trial use of a mobile electronic device received in the receiving means of the display module in one orientation that is compatible with user convenience. For example, mobile phones, portable media players, tablet computers, and/or hand-held computers in general, all share one characteristic: they have a display screen, and are used in a common conventional orientation that is compatible with viewing the screen of the mobile electronic device.

A device in the receiving means of the display module will usually be held in that orientation above the top face of the security module, aptly by means of the security module docking means, in particular where the latter is or comprises an elongate hollow female member, aptly in the form of a socket, cavity or sheath, co-operating with and snugly receiving an elongate male member, aptly in the form of a plug, shaft or shank in the display module docking means; or vice versa.

This orientation may be achieved by the security module docking means, such as an elongate female hollow member, and the display module docking means, such as an elongate male member, having a cross-dimension greater in a first direction, generally at right angles to the longitudinal axis of the elongate member, than in a second direction, generally at right angles to the first. For example, both elongate members may have a cross-section about their longitudinal axes that is elliptical, oval, oblong, or diamond-shaped, preferably elliptical or oval.

Additionally or alternatively, the elongate male member may have a cross-dimension greater in a first direction than in a second dimension by having a longitudinal lateral projection, such as a ridge or spline.

Where the male member has a cross-section about its longitudinal axis that is elliptical, oval, oblong, or diamond-shaped, the projection, such as a ridge or spline, may project laterally along the direction of the greatest cross-dimension, e.g. in the direction of the major axis of an elliptical cross-section.

The inside of the elongate female hollow member will then have a complementary longitudinal lateral depression, such as an indent or channel, which will also project laterally along the direction of the greatest cross-dimension, e.g. in the direction of the major axis of an elliptical cross-section.

Aptly, an elongate hollow female member, aptly in the form of a socket, cavity or sheath, co-operates with and snugly receives an elongate male member, aptly in the form of a plug, shaft or shank. To aid this, each member may taper down towards the tip of the elongate male member, and towards the bottom of the elongate hollow female member, respectively.

The outside of the male member, mounted on or in, or integral with either module, and the inside of the female member, mounted on or in, or integral with the other module may each be defined by at least one continuous side wall, which is integral with at least one end wall.

Alternatively, either or both of the members may be an open framework, e.g. an enclosure with a cage-like structure formed by intersecting wall members.
Aptly, both of the members have a structure defined by at least one continuous side wall, which is integral with at least one end wall.

The security module docking means and display module docking means aptly comprise holding means, capable of holding the display module in its rest position in contact with or adjacent to the security module. The holding means may have any construction or arrangement that assists the display module docking means and security module docking means once engaged to hold each other in contact or adjacency.

The holding means may optionally comprise a magnetic catch. That is, at least one pair of permanent magnets, one magnet being mounted on or in the security module docking means in such position and orientation that it presents an end of a first magnetic polarity to the display module docking means, and the other magnet being mounted on or in the display module docking means in such position and orientation that it presents an end of a second, opposite magnetic polarity to the security module docking means, such that the pair of magnets is capable of holding the security module docking means and display module docking means together.

In one embodiment, the security module has female docking means mounted on or in, or integral with the security module, aptly a hollow member, e.g. in the form of a socket, cavity or sheath, and the display module has corresponding male display module docking means mounted on or in, or integral with the display module, aptly a member, e.g. in the form of a plug, shaft or shank.

In this embodiment, one magnet of a pair with an end of a first magnetic polarity is mounted on or in the security module docking means hollow member, e.g. in the form of a socket, cavity or sheath.

The display module has a display module docking means member, e.g. in the form of a plug, shaft or shank, on or in which the other magnet with an end with a second, opposite magnetic polarity is mounted, such that when the display module is in its rest position, the two magnets of the pair lie opposite and attract each other.

The security module comprises retraction means, which is operably connected to the display means. It is aptly operably connected by means of a tether or other link attached or fastened to the display module at one end remote from the security module, and attached or fastened to the retraction means at the other end in or on the security module.

The retraction means may suitably comprise a winding sub-module, aptly mounted on the wall of and/or in the security module display unit, and projecting from the face of the wall opposite that facing the display module and aptly adjacent to the security module docking means, where the latter is mounted on the same wall and/or in the display unit.

The winding sub-module may suitably be in the form of a squat generally cuboidal box-shaped structure defined by at least one continuous wall. Alternatively, the winding sub-module may suitably be in the form of a squat generally cuboidal box-shaped open framework, e.g. an enclosure with a cage-like structure formed by intersecting wall members.

Either form of the winding sub-module may optionally have a planar and rectangular upper face and an opposed, parallel and coterminous, planar and rectangular lower face. The winding sub-module may aptly be mounted on the wall of and/or in the security module display unit, and projecting from the face of the wall opposite that facing the display module with a face abutting the face of the wall on which it is mounted, and is aptly adjacent to the security module docking means, where the latter is mounted on the same wall and/or within the display unit. The winding sub-module may suitably be a sealed unit, as it operates over a long life and is relatively easy to replace.

The winding sub-module may optionally comprise a winding means. The winding means may suitably comprise a cylindrical, preferably a right cylindrical, winding reel or spool, to which the end of the tether or other link remote from the display module, is attached or fastened.

The winding means may optionally be in the form of a planar, axially thin pulley wheel. It may be rotatably mounted within the winding sub-module on an axle, itself held by two recesses on or in opposing walls of the winding sub-module.

Where the winding means comprises a cylindrical, aptly a right cylindrical, winding reel or spool in the form of a planar, axially thin pulley wheel, the reel or spool may be rotatably mounted within the winding sub-module between and parallel to the coterminous, planar and rectangular upper and lower faces of a squat generally cuboidal box-shaped winding sub-module.

The tether or other link will run to the display module, to which it is attached or fastened at its end remote from the security module, through an aperture, such as a gap, hole, opening or slot, which conforms generally to the tether or other link, in a wall or wall member of the winding sub-module, which conforms generally to the tether or other link to the display module.

The winding sub-module may be mounted on a wall of and/or in a security module display unit, projecting from the face of the wall opposite that facing the display module and with a face abutting the face of the wall on which it is mounted, and is aptly adjacent to the security module docking means, where the latter is mounted on the same wall and/or within the display unit. The tether or other link will aptly run to the display module through a round aperture, through the upper face abutting the underside of the top face of the security module, and through a round aperture, through the top face of the security module, which is registered with the aperture through the upper face of the winding sub-module.

As noted hereinbefore, the security module aptly has a security module docking means, mounted on or in, or integral with one of its faces, often its top face, that is so constructed and arranged that it may engage display module docking means mounted on or in, or integral with part of the display module, when the display module is in a rest position in contact with the security module before and after the use of a mobile device received in the display module.

In one embodiment, the security module has male or (preferably) female docking means mounted on or in, or integral with the security module, and the display module has corresponding female or (preferably) male display module docking means mounted on or in, or integral with the display module.

Male docking means mounted on or in, or integral with either the display module or the security module will usually comprise an elongate member, e.g. in the form of a squat plug, shaft or shank.

Aptly, female docking means mounted on or in, or integral with either the display module or the security module will usually comprise a co-operating elongate member, e.g. in the form of a squat socket, cavity or sheath.

The male docking means, and in particular its elongate member, is slidable in and out of the female docking means, and in particular its elongate hollow member.

In such cases, the tether or other link to the display module may optionally run through an aperture, such as a gap, hole, opening or slot, preferably a round aperture which conforms generally to the tether or other link, in a wall or wall member of the security module docking means.

Such an aperture in a wall or wall member of an elongate member, e.g. in the form of an elliptical or oval cross-sectioned member, of such female or male docking means may suitably run through a round or elliptical, oval or circular, end wall of the elongate member, which extends in a direction generally at right angles to the longitudinal axis of the elongate member, e.g. the central axis of an elliptical or oval tapering cylindrical member of such female or male docking means.

The tether or other link is attached or fastened to the display module at the end remote from the security module, thereby operably connecting the retraction means to the display means.

For the retraction means to act to retract the tether or other link into the security module, and hence to retract the display module towards the security module, the winding means is resiliently biased to exert a pull-in retractive force on the tether or other link.

It hence exerts a pull-in retractive force on the display module, towards its rest position in contact with the security module after the use of a mobile device received in the display module.

Where the winding means comprises a cylindrical, aptly a right cylindrical, winding reel or spool, to which the end of the tether or other link remote from the display module is attached or fastened, the resilient bias to exert a pull-in retractive force on the tether may suitably be in the form of a spring.

The spring is anchored to the winding means, aptly a cylindrical, aptly a right cylindrical, winding reel or spool, at one end, and at the other to the (optionally squat, generally cuboidal box-shaped) structure of the winding sub-module.

Such a spring is optionally anchored at one end to the winding means, and at the other to the winding sub-module which contains the winding means in such a

sense that, when in use of a mobile device received in the display module, the display module, holding a mobile electronic device, is withdrawn away from the security module, that action tenses the spring retraction means.

The spring then exerts a pull-in retractive force on the tether, and hence on the display module, and following the use of the mobile device, the retraction means retracts the display module towards the security module.

Such a spring may optionally be in the form of a spirally coiled clock spring, lying in a mutually parallel plane to that of a winding reel or spool, which is aptly in the form of a planar, axially thin pulley wheel, and directly or indirectly anchored at one end to the winding means, and at the other end to the squat generally cuboidal box-shaped structure of the winding sub-module which contains the winding means.

Aptly, the spring is anchored in such a sense that, when in use of a mobile device received in the display module, the display module, holding a mobile electronic device, is withdrawn away from the security module, that action tightens the coils of the clock spring, and tenses the spring, which then exerts a pull-in retractive force on the tether.

The use of a spirally coiled clock spring directly or indirectly anchored at one end to an axially thin pulley wheel in the winding means has the advantage that the spring and the axially thin pulley wheel may be mounted within a thin, compact winding sub-module.

Accordingly, according to an aspect of the present invention there is provided a mobile electronic device display and security unit comprising retraction means and a display module, wherein the retraction means is operably connected to the display module, and, following a trial of a mobile device received in the display module, the retraction means retracts the display module towards the security module, and the retraction means comprises a spirally coiled clock spring.

Aptly, embodiments of this unit and its components are as so described in relation to corresponding integers in relation to the general unit herein.

The retraction means, in particular when it comprises a spring which is in the form of a spirally coiled clock spring (as described further below), may suitably exert a full retraction force on the display means in the range of 0.5 to 2.5, for example 1 to 2 kg.

Aptly, the spring may be in the form of a spirally coiled clock spring, lying in a mutually parallel plane to that of a winding reel or spool which is in the form of a planar, axially thin pulley wheel.

In such a case, the margin of the axial face of the thin pulley wheel adjacent to the clock spring may extend in a direction generally along the axis of the thin pulley wheel as an annular flange to form a squat right cylindrical drum or barrel, which acts a container housing the spirally coiled clock spring.

Aptly, the retraction means may be electrically powered, with control electronics and an initiation switch or button, the operation of which initiates retraction of the tether or other link to the security module.

The display module may optionally comprise a display module mounting pod, which forms the main body of the display module, and an elongate docking structure. Aptly, the mounting pod may be in the form of an elliptical or oval tapering cylindrical, member, e.g. in the form of a squat plug, shaft or shank. The bottom end of the mounting pod in use of the display module is nearest to the security module, and attached or fastened to the tether or other link to the security module.

The tether or other link to the security module may suitably run through an aperture, such as an opening or slot, aptly a round aperture which conforms generally to the tether or other link, in a wall or wall member of an elongate member, e.g. in the form of an elliptical or oval cross-sectioned member, and may suitably run through a round, elliptical, oval or circular, end wall of the elongate member, which extends in a direction generally at right angles to the longitudinal axis of the elongate member, e.g. the central axis of an elliptical or oval tapering cylindrical member of such male docking means.

The tether or other link is attached or fastened to the display module at the end remote from the security module, thereby operably connecting the retraction means to the display means. The tether or other link attached or fastened to the display module at the end remote from the security module may optionally run through a round end wall of the elongate member, which extends in a direction generally across the longitudinal axis of the elongate member.

In such a case, the end of the tether or other link to the display module which has run through an aperture in a wall or wall member of the mounting pod may bulge laterally of the tether or other link, e.g. it may be bulbous or globular, e.g. spherical or toroidal. Alternatively, the lateral projection may suitably be in the form of a squat generally annular ferrule around the tether or other link. This end of the tether or other link has a cross-dimension smaller than that of the aperture in the wall or wall member of the mounting pod

The display module has receiving means, such a cradle, mounted in or on, or integral with, the display module mounting pod, usually at an end of the latter remote from the security module. A live mobile device may be received, aptly slidably and snugly received, in the receiving means. Aptly, the display module should be capable of receiving a range of different forms of live mobile devices, such as mobile phones, portable media players, tablet computers, and/or hand-held computers, and different types of each such live mobile device.
Each mobile device type, such as each mobile phone has its own individual dimensions, requiring an individual receiving means matching those dimensions.

Aptly, according to certain embodiments of the present invention, the display module is demountable from the tether, allowing interchange of display modules, each specific to any given live mobile device received in a display module. This may be achieved by means of a display module docking means, such as an elongate male member, where the tether or other link attached or fastened to the display module at the end remote from the security module runs through an end wall of the elongate member, and the end of the tether or other link to the display module which has run through an aperture in a wall or wall member of the mounting pod bulges laterally of the tether or other link, e.g. it may be bulbous or globular, e.g. spherical or toroidal.

In such embodiments, a right cylindrical channel runs along the direction of the longitudinal axis of the mounting pod from the aperture in the wall or wall member of the mounting pod where the tether or other link enters the display module mounting pod, to end in a chamber, part of which defines an upper rim of the channel, running in a transverse direction to that of the channel. The tether or other link runs through the channel. The channel has a cross-dimension greater than that of the end of the tether or other link in the display module mounting pod which bulges laterally of the tether or other link.

A locking retaining means, such as a longitudinally split annular collar, in form resembling an elongate cylinder with a circular cross-section with a longitudinal split, houses the tether or other link within the display module mounting pod. The collar has an upper rim, forming a cup and extending transversely beyond the collar into an upper lip.

The bore of the collar in its rest position in the display module is smaller than the cross-dimension of the bulbous or spherical, aptly spherical, end of the tether or other link in the display module mounting pod, so that the bulbous or spherical end of the tether or other link in the display module mounting pod is received by the cup formed by the upper rim of the collar. The end of the tether or other link is pulled down into the cup by the retraction means acting on the tether or other link, so that the end or the tether tends to splay at least the upper end of the tether outwards. The channel which houses the tether or other link and the collar around it has an upper shoulder where it widens upwardly.

The upper lip of the collar, thus splayed outwards in its rest position is greater in cross-dimension than the upper rim of the channel around the collar, running in a transverse direction to that of the channel, so that the upper lip of the collar in its rest position engages the shoulder in the channel, so that the collar, and hence the tether or other link, is retained in the display module mounting pod.

Because of the longitudinal split, a co-operating key may be used to compress the upper rim at the upper end of the collar until the lip is less in cross-dimension than the bore of the channel, below the shoulder in the channel on which it sits, and lift the end of the tether or other link in the display module mounting pod.

In this way, the collar, and hence the tether or other link, is no longer retained in the display module mounting pod.

A side wall of the elongate member and/or display module mounting pod is provided with at least one keyhole extending transversely through the side wall towards the collar in its rest position.

A key which fits the keyhole or keyholes may be slid into the keyhole or keyholes transversely through the side wall towards the collar in its rest position.

As the key is slid further in, it engages the lip of the longitudinally split annular collar, to narrow the split and hence to narrow the collar until the upper lip of the collar no longer engages the upper rim of the channel, and the collar, and hence the tether or other link, is no longer retained in the display module mounting pod.

The tether or other link is constantly urged towards the security module by the action of the retraction means, to which the end of the tether or other link remote from the display module is attached or fastened within the winding sub-module, mounted on or in, or integral with the security module, and on the release of the tether or other link, the tether or other link is reeled or spooled in and runs through the end wall of the male docking means elongate member and/or the mounting pod.

Aptly, the tether or other link has a limiter, in the form of a squat ferrule around the tether or other link which prevents the tether or other link being retracted completely into the security module.

To interchange display modules, the key is then removed, and the display module is removed by lifting it out of the security module docking means, where it sits, the key is then removed.

The end of the tether or other link to be attached or fastened to a different display module of the present invention is inserted into the different display module until the upper lip of the collar in its rest position engages the upper rim of the channel, and the collar, and hence the tether or other link, is retained in the display module mounting pod.

The display and security unit according to certain aspects of the present invention is versatile in that not only different models of the same mobile electronic device type in the display module, such as mobile phones, may be readily interchanged, but different types of mobile electronic device in the display module, such as portable media players, tablet computers, and/or hand-held computers, may also be readily interchanged.

The display module comprises receiving means capable of receiving a range of different forms of mobile devices, such as mobile phones, portable media players, etc.

Aptly, the receiving means comprises a cradle, which is mounted on, or is integral with, the display module mounting pod, and usually extends transversely to the longitudinal axis of the display module mounting pod and/or the elongate docking member (if present).

The cradle may optionally comprise at least one planar device bearing member, which is so constructed and arranged that it may engage the back of a mobile electronic device, and extends transversely to the direction of the longitudinal axis of the display module mounting pod and/or the elongate docking member (if present).

The device bearing member or members may have any position, construction or arrangement that permits the or each device bearing member to fulfil its supporting role.

According to certain embodiments of the present invention, a device bearing member is a planar, rectangular framework with a central aperture, preferably a rectangular aperture which conforms to the overall rectangular shape of the framework. The display module mounting pod is optionally a cuboidal structure defined by at least one continuous wall, and is squat generally along the longitudinal axis of the display module mounting pod and/or the elongate docking member (if present).

The device bearing member may be dimensioned and positioned such that it embraces and forms an enclosure for all the side walls of the display module

mounting pod, at least towards their top edges (in a direction away from the security module).

Aptly, the device bearing member upper face is in register (i.e. flush) with the planar, rectangular upper face of the display module mounting pod in the direction transversely to the direction of the longitudinal axis of the display module mounting pod and/or the elongate docking member (if present), so that both upper faces form a device bearing member.

Aptly, the cradle is mounted on two opposing side walls of the display module mounting pod, and has an open-top and open-bottom generally cuboidal box-shaped structure, that is so constructed and arranged that it will engage and embrace all the side walls of the display module mounting pod and form an enclosure for the display module mounting pod.

Aptly, the enclosure upper face is in register (i.e. flush) with the planar, rectangular upper face of the display module mounting pod in the direction transverse to the direction of the longitudinal axis of the display module mounting pod and/or the elongate docking member (if present). In this way, both upper faces form a device bearing member. The device bearing member may extend from the side walls of the enclosure as lateral flanges.

Aptly, the cradle has at least one pair of opposing arms extending upwardly from opposing lateral edges of the device bearing member, with the at least one device bearing member disposed between the bases of the arms. The arms are means to retain a mobile electronic device in the cradle, and may have any position, construction or arrangement that is compatible with the retaining role.

Aptly, the arms extend from lateral edges of the device bearing member that are opposed across the sides of a mobile electronic device received in the cradle ('sides' being with respect to the common conventional orientation that is compatible with viewing the screen of the mobile electronic device). They may extend in a direction from front to back or left to right of the display module mounting pod (when viewing the screen of the mobile electronic device) over most or all of the length of the or all of the device bearing members of the cradle.

Each arm defines a generally C-shaped channel. Aptly, each arm defines a generally half-D-channel, with the straight arm of the half-D running in a generally horizontal direction from front to back of the cradle.

The at least one device bearing member disposed between the base of the arms, and in particular the arms, are arranged and dimensioned and positioned such that they conform to the outside of, and can embrace and slidably but snugly receive, a mobile electronic device. The arms that extend from lateral edges of the device bearing member may optionally be integral with the at least one device bearing members.

The cradle may optionally have an open-top and open-bottom generally cuboidal box-shaped structure and is mounted on two opposing side walls of the display module mounting pod, such that it will engage and embrace all the side walls of the display module mounting pod and form an enclosure for the display module mounting pod. The cradle may then be formed by two, aptly mirror-image sections mounted on opposing side walls of the display module mounting pod, and abutting along a central line.

As noted hereinbefore, the dimensions and positions of the components of the cradle that form an enclosure for a mobile electronic device received in the receiving means of the display module are usually specific to any given mobile device received in a display module, and adaptation for different forms of mobile devices, or different models of the same mobile electronic device type, is usually achieved by means of interchange of display modules, each specific to any given mobile device received in a display module.

In an alternative procedure, the cradle may be demountably mounted on the display device mounting pod, e.g. with bolts or screws, and the display module may be adapted for different forms of mobile devices, or different models of the same mobile electronic device type, by means of interchange of the display module cradle, whereby the need for the whole display module, which is specific to at best a few models of the one mobile electronic device type, to be detached from the tether.

For example, the cradle may have an open-top and open-bottom generally cuboidal box-shaped structure and be formed by two, aptly mirror-image sections mounted on opposing side walls of the display module mounting pod.

These sections may abut along a central line, and the sections may be demountably mounted on the display device mounting pod, e.g. with bolts or screws.

The cradle may be adapted for different forms of mobile devices, or different models of the same mobile electronic device type, by means of interchange of the display module cradle sections mounted on opposing side walls of the display module mounting pod, with other cradle sections specific to different models of the same mobile electronic device type or different types of mobile electronic device.

For additional security, and to combat theft and to hinder or prevent unauthorised permanent separation of a mobile electronic device in the display module from the unit, the cradle, and in particular the device bearing member or members may have attachment means for attaching a mobile electronic device to the display module.

Suitable examples of attachment means for attaching a mobile electronic device type to the display module include pressure-sensitive adhesive or co-operating plastics hook-and-loop members (Velcro).

Aptly, the edges of the rectangular upper face of a squat generally cuboidal box-shaped display module mounting pod are enclosed by and flush with the upper face of the upper edges of the device bearing member. The upper face of the display module mounting pod has a shallow rectangular depression or recess let into it. This depression or recess is adapted to receive attachment means for attaching a mobile electronic device to the display module, such as one or more strips of double-sided pressure-sensitive adhesive tape or strips of plastics hook-and-loop members (Velcro) which co-operate with one or more complementary strips on the mobile electronic device to be attached to the display module.

Aptly, it is desirable to keep a mobile electronic device that is received in the display module charged while the mobile electronic device is not in use, and

therefore to have electrical connection of the mobile electronic device that is received in the display module to a power source, usually in the security module.

Aptly, the display module may be electrically connected to the security module, even when not in a rest position in contact with or adjacent to the security module, by a twin-core electrical feeder cable between the display module and the security module, which electrical feeder cable is mounted in or on, or is integral with, the tether operably connecting the retraction means to the display module.

Aptly, the display module may be electrically connected to the security module, at least in a rest position in contact with or adjacent to the security module, by electrical contacts in or on the security module and co-operating contacts in or on the display module. The electrical contacts may conveniently be in positions on or in co-operating surfaces of the docking means of the display module and security module respectively that are register in the rest position of the display module.

These may be, for example, at opposing points on or in a side wall on the outside of a male docking member, e.g. in the form of a plug, shaft or shank, comprised in either module's docking means, and mounted on or in, or integral with either module, and on or in a side wall on the inside of a female docking member, e.g. in the form of a socket, cavity or sheath, comprised in the other module's docking means, and mounted on or in, or integral with the other module.

The contacts may optionally be resiliently biased into contact with each other.

The contacts in or on the security module are connected to a conventional power supply that is compatible with the received mobile electronic device.

Optionally, the display module is electrically connected to the security module, even when not in a rest position in contact with or adjacent to the security module, by a twin-core electrical feeder cable between the display unit and the security module, which is mounted in or on, or is integral with the tether operably connecting the retraction means to the display means. The electrical feeder cable may aptly comprise a twin-core cable of a highly conductive metal, such as copper, sheathed in a plastics material, such as PVC.

The electrical feeder cable may be adhered, or aptly thermally bonded to the outside of the tether. Alternatively, the electrical feeder cable may be mounted in the tether or other link that operably connects the retraction means to the display module.

The cable may be mounted, for example inside the sheath of a plastics material, such as PVC, around the multistrand core of a tough metal, such as stainless steel. Alternatively, the feeder cable may be mounted in the tether or other link coaxially inside a multistrand sheath of the tough metal, such as stainless steel of the tether or other link, itself coaxially inside the sheath of plastics material, such as PVC.

In either case, the feeder cable will run with the tether or other link into the retraction means, and usually onto the retraction means winding reel or spool, to which the end of the tether or other link remote from the display module, is attached or fastened.

The feeder cable may be connected to a conventional power supply that is compatible with the received mobile electronic device by, for example being connected to two annular collars of conductive metal, such as copper, on an insulative, e.g. plastics, axle held by two recesses on or in opposing walls of the winding sub-module, on which the winding reel or spool is mounted within the winding sub-module.

The two annular collars of conductive metal, such as copper, may then each be slidably contacted by a brush connected to a conventional power supply that is compatible with the received mobile electronic device.

Aptly, the electrical connections between the security module and the conventional power supply that is compatible with the received mobile electronic device may run through a master switch which may be operated only by personnel authorised by the retailer. The switch may be in a position in or on the security module display unit, or preferably away from the unit.

Aptly, the display module is capable of being electrically connected to a mobile electronic device received in the display module, usually by way of a twin-core

electrical input cable between a power outlet socket in a position in or on the display module and the power input socket of the mobile electronic device.

The power outlet socket is often in a position in the display device mounting pod communicating with a socket extension on a side of the display device mounting pod or a part of the cradle mounted on, and enclosing the pod.

The display device mounting pod will contain electrical connections between the power outlet socket in or on the display module and the electrical contacts in or on the display module which co-operate with contacts in or on the security module.

Before use of a mobile device received in the display module, the display module, holding a mobile electronic device, is in its rest position in contact with the security module, with its docking means docked, usually, in the docking means of the security module.

In use, the display module, with the mobile electronic device received in it, is picked up and withdrawn away from the security module towards the user, thereby pulling the tether or other link, above and optionally any electrical feeder cable thereon or therein, out from the security module towards the user against the action of the resiliently biased retraction means.

Following the use of the mobile device, the display module, with the mobile electronic device still received in it, returned by the user to its rest position in contact with the security module, with its docking means docked, usually, docked in the docking means of the security module.

Simultaneously, the retraction means retracts the tether or other link, and optionally any electrical feeder cable into the security module, and holds the display module, with the mobile electronic device in its rest position in contact with the security module, with its docking means, docked, usually, in the docking means of the security module.

The display and security unit may serve as a stand-alone display and security unit for live mobile electronic devices, or a number of units may share a common display unit structure, as described hereinbefore, in respect of a single security module.

The present invention will now be described hereinafter, by way of example only, with reference to the following Figures, in which:

Figures 1a and 1b show an exploded isometric view of the display module and security module respectively of a device display and security unit according to an embodiment of the present invention, with the tether omitted for clarity;

Figure 2 shows an exploded isometric view of the retraction means and part of the tether of a device display and security unit according to an embodiment of the present invention;

Figure 3 shows views of a security module docking means of a device display and security unit according to an embodiment of the present invention;

Figure 4 shows views of the display module of a device display and security unit according to an embodiment of the present invention;

Figure 5 is an exploded view of a mobile electronic device display and security unit holding a mobile electronic device, according to a further embodiment of the present invention;

Figure 6 illustrates a security module;

Figures 7a, 7b and 7c illustrate a security module;

Figure 8 illustrates parts of a display module;

Figure 9 illustrates parts of a display module; and

Figure 10 illustrates parts of a display module according a still further embodiment of the present invention.

Referring to Figures 1a, 1b and 2, a live mobile electronic device display and security unit 31 has a security module 32 (not shown in full) comprising a retraction means 33.

The retraction means 33 comprise a winding sub-module 34, mounted on the underside of the top face 65 (not shown) of the security module 32, with its upper face 3 abutting the underside of the top face 65 of the security module 32.

The winding sub-module 34 houses a cylindrical winding reel or spool, comprising a squat right cylindrical drum 22, which forms an annular flange on an integral axially thin pulley wheel 35, and is rotatably mounted within the winding sub-module 34 on an axle 36. The drum 22 houses a spirally coiled clock spring 9, which is anchored at one end to the drum 22 and at the other end to the winding sub-module 34.

An end of a tether 15 is attached to the axially thin pulley wheel 35, and the tether 15 passes from within the winding sub-module 34 through a slot 37 in the top face 3 of the winding sub-module 34, and then through an aperture 38 through the top face 65 of the security module 32, which is register with the slot 37 in the top face 3 of the winding sub-module 34. The tether 15 is thus slidable in and out of the security module 32.

The coiled clock spring 9, is anchored in such a sense that, when the tether 15 is withdrawn away from the security module 32, that action tightens the coils of the clock spring, and tenses the spring 9, which then exerts a pull-in retractive force on the tether 15.

A display module 39 capable of receiving a live mobile electronic device 18 is attached to the other end of the tether 15. The display module 39 is thus operably connected to the retraction means 33 is the security module 32 by the tether 15.

The display module 39 is held in a rest position in contact with the security module 32 before and after the use of a live mobile device 18 received in the display module 39 by the retraction means 33, which urges display module 39 into the rest position.

In use of a live mobile device 18 received in the display module 39, the display module 39, holding a mobile electronic device 18, is withdrawn away from the security module 32 against the action of the retraction means 33.

Following the use of the mobile device 18, the retraction means 33 retracts the display module 39 towards the security module 32.

Referring also to Figures 3 and 4, in the display and security unit 31, the security module 32 has docking means 42, here female docking means in the form of an elongate tapering cylindrical socket with an elliptical cross-section, and with a longitudinal lateral depression 43, here a channel, which runs laterally along the direction of the major axis of the elliptical cross-section.

The female docking means 42 is integral with a security means mounting pod 16, which is mounted within the top surface 65 of the security module 32 by means of an annular flange 40, a threaded cylindrical mounting shank 10, 13 with a circular cross-section, and a co-operating threaded circular washer 1 with a circular cross-section, whereby the top surface 65 of the security module 32 is sandwiched by the external flange 40 and the threaded washer 1. The socket 42 is dimensioned and positioned such that it conform to the outside of, and can embrace and slidably but snugly receive, a co-operating male docking means 44 on the display module 39.

Here the co-operating male docking means 44 is in the form of a tapering cylindrical shank with an elliptical cross-section, and with a longitudinal lateral projection 45, here a spline, which runs laterally along the direction of the major axis of the elliptical cross-section.

The tether 15 runs into inside of the docking socket 42 though the aperture 38 through an end wall 46 of the socket 42 mounted in the top face 65 of the security module 32, and the display module 39 is attached to the other end of the tether 15.

The display module 39 is thus slidable in and out of the security module 32 on the end of the tether 15.

In the display and security unit 31, an end of the tether 15 runs into the male docking shank 44, which is integral with a display module mounting pod 4 which is part of the display module 39, through an aperture 48 through an end wall 49 of the shank 44.

A right cylindrical channel 53 runs along the direction of the longitudinal axis of the mounting pod 4 from the aperture 48 in the wall 49 of the mounting pod 4 where the tether 15 enters the display module mounting pod 4, to end in a chamber 54, part of which defines an upper rim 55 of the channel 53, running in a transverse direction to that of the channel 53. The tether 15 runs through the channel 53. The channel 53 has a cross-dimension greater than that of the end of the tether 15 in the display module mounting pod 4, which bulges laterally of the tether 15.

A locking retaining means, here a longitudinally split annular collar 11, in form resembling an elongate cylinder with a circular cross-section tapering towards its bottom end, has a longitudinal split 14, also tapering towards the bottom end of the collar 11.

The collar 11 houses the tether 15 within the display module mounting pod 4. The collar 11 has an upper rim 58, extending transversely into an upper lip 59. The bore of the collar 11 in its rest position is smaller than the cross-dimension of the end of the tether 15 or other link in the display module mounting pod 4.

Hence the spherical (other shapes are of course possible) end 50 (not shown) of the tether 15 in the display module mounting pod 4 is retained on the upper rim 58 of the collar 11.

The upper lip 59 of the collar 11 in its rest position is greater in cross-dimension than the upper rim 55 of the channel 53, running in a transverse direction to that of the channel 53, so that the upper lip 59 of the collar 11 in its rest position engages the upper rim 55 of the channel 53, and the collar 11, and hence the tether 15 or other link, is retained in the display module mounting pod 4. Because of the longitudinal split 14, tapering towards the bottom end of the collar 11, the upper lip 59 of the collar 11 may be compressed until it is less in cross-dimension than the upper rim 55 and the bore of the channel 53, running in a longitudinal direction to the aperture 48 in the wall 49 of the mounting pod 4

where the tether 15 or other link enters the display module mounting pod 4, so that the collar 11, and hence the tether 15 or other link, is no longer retained in the display module mounting pod 4.

A side wall 51 of the shank 44 and/or display module mounting pod 4 is provided with two keyholes 52 extending transversely through the side wall 51 towards the collar 11 in its rest position. A key 12 which fits the keyholes 52 may be slid into the keyholes 52 transversely through the side wall 51 towards the collar 11 in its rest position.

As the key 12 is slid in, it engages the upper lip 59 of the longitudinally split annular collar 11 to narrow the split 14 until the upper lip 59 of the collar 11 no longer engages the upper rim 55 of the channel 53, and the collar 11, and hence the tether 15, is no longer retained in the display module mounting pod.

The tether 15 is constantly urged towards the security module 32 by the action of the retraction means 33, to which the end of the tether 15 from the display module 39 is attached or fastened within the winding sub-module 34.

On the release of the spherical end 50 of the tether 15 and the collar 11, the tether 15 is reeled or spooled in and runs through the end wall 48 of the male docking means elongate member 44 and/or the mounting pod 4.

Aptly, the tether 15 has a limiter (not shown), such as a squat ferrule around the tether 15, which prevents the tether 15 being retracted completely into the security module 32.

The display module 39 may be interchanged with another display module. To interchange display modules, once the display module 39 is detached from the tether 15, the key 12 is removed. The end of the tether 15 to be attached or fastened to a different display module of the present invention is inserted into the different display module until the upper lip 59 of the collar 11 engages the upper rim 55 of the channel 53, and the collar 11, and hence the tether 15 is retained in the new display module mounting pod.

The display module 39 is capable of receiving a live mobile electronic device 18. Accordingly, the live mobile electronic device 18 display module 39 has receiving

means, here a cradle 19 in two mirror-image sections 19a, 19b.These are mounted on opposing side walls of the display module mounting pod 4 by screws 25a, 25b, 25c, 25d (not shown) in corresponding sockets 8a, 8b, 8c, 8d, and abutting along a central line.

A live mobile device 18 may be received slidably and snugly in the cradle 19. The cradle 19 is so constructed and arranged that it may engage the back of a live mobile electronic device 18.

The two sections 19a, 19b of the cradle 19 abut along a central line, and engage and embrace all the side walls of the display module mounting pod 4 and form an enclosure for the display module mounting pod 4. The planar, rectangular framework so formed with a central rectangular aperture which conforms to the overall rectangular shape of the framework is a device bearing member 7a. The device bearing member 7a upper face is flush with the planar, rectangular upper face 7b of the display module mounting pod 4 in the direction transversely to the direction of its longitudinal axis, so that both upper faces 7a, 7b form a device bearing member, which extends transversely to the direction of the longitudinal axis of the shank 44.

The cradle 19 has a pair of opposing arms 56a, 56b, extending upwardly from, and integral with the device bearing member 7a, which is disposed between the bases of the arms 56a, 56b.

Each arm 56a, 56b defines a half-D-channel, with the straight arm of the half-D running in a generally horizontal direction from front to back of the cradle 19. The device bearing members 7a, 7b disposed between the base of the arms 56a, 56b, are arranged and dimensioned such that they conform to the outside of, and can embrace and slidably but snugly receive, a live mobile electronic device 18.

The upper face of the display module mounting pod 4 has a shallow rectangular recess 47 let into it, which is adapted to receive attachment means, here a strip of double-sided pressure-sensitive adhesive tape, which can adhere to the received live mobile electronic device 18.

In an alternative procedure, the display module 39 may be adapted for different forms of live mobile devices, or different models of the same live mobile

electronic device type, by means of interchange of the display module cradle sections 19a, 19b.

The cradle sections 19a, 19b are mounted on opposing side walls of the display module mounting pod 4 with other cradle sections 19a, 19b, mounted on opposing side walls of the display module mounting pod 4 with. They may be interchanged with other cradle sections adapted for different forms of mobile electronic devices, or different models of the same mobile electronic device type. In such interchange, the display module cradle sections 19a, 19b are demounted from the opposing side walls of the display module mounting pod 4 by removing the screws 25a, 25b, 25c, 25d from corresponding sockets 8a, 8b, 8c, 8d, and mounting other cradle sections adapted for different forms of mobile devices, or different models of the same mobile electronic device type on the same opposing side walls of the display module mounting pod 4 by means of the screws 25a, 25b, 25c, 25d in corresponding sockets 8a, 8b, 8c, 8d.

The display module 39 is held in a rest position in contact with the security module 32 before and after the use of a live mobile device 18 received in the display module 39 by holding means, here a magnetic catch, comprising two pairs of permanent magnets 5aa, 5ab, 5ba, 5bb, one magnet 5aa, 5ab of each pair being mounted in the security means mounting pod 16, which is mounted within the top surface 65 of the security module 32, and the other magnet 5ba, 5bb being mounted in the display module mounting pod 4.

Each magnet 5aa, 5ab of each pair mounted in the security means mounting pod 16 is in register with each other magnet 5ba, 5bb of the pair mounted in the display module mounting pod 4, when the display module 39 is held in a rest position in contact with the security module 32 before and after the use of the received live mobile device 18. The ends of the magnets 5aa, 5ba and 5ab, 5bb in each pair that face each other have mutually opposite magnetic polarity.

The live mobile electronic device 18 that is received in the display module is charged while the live mobile electronic device 18 is not in use, and the unit 31 therefore provides electrical connection of the live mobile electronic device 18 to a power source the security module 32.

The display module 39 is electrically connected to the live mobile electronic device 18 by way of a twin-core electrical input cable 57 between a power outlet socket in a position in or on the display module and the power input socket of the live mobile electronic device 18.

The display module 39 is electrically connected to the security module 32 in its rest position in contact with the security module 32 by electrical contacts 2aa, 2ab mounted at points in the bottom of a side wall on the inside of the socket 42.

The contacts 2aa, 2ab are mutually opposed along the direction of the minor axis of the elliptical cross-section of the socket 42.

The socket 42 is dimensioned such that it conforms to the outside of the shank 44 of the display module mounting pod 4. Two electrical contacts 2ba, 2bb mounted at points in the bottom of a side wall on the outside of the shank 44 are mutually opposed along the direction of the minor axis of the elliptical cross-section of the shank 44, and are positioned such they are in register with and engage a contact of the pair mounted in the security module 32 when the display module 39 is in its rest position in contact with the security module 32.

The electrical contacts 2ba, 2bb mounted at points in the bottom of a side wall on the outside of the shank 44 are electrically connected by a circuit 3, 6 to the power outlet socket in on the display module, in turn connected to the power input socket of the live mobile electronic device 18 by way of a twin-core electrical input cable 57.

Before use of a live mobile device 18 received in the display module 39, the display module 39, holding a live mobile electronic device 18, is in its rest position in contact with the security module 32, with its docking means 44 docked in the docking means 42 of the security module 39. In use, the display module 39, with the live mobile electronic device 18 received in it, is picked up and withdrawn away from the security module 32 towards the user, thereby pulling the tether 15 out from the security module 32 towards the user against the action of the resiliently biased retraction means 33.

Following the use of the live mobile device 18, the display module 39, with the live mobile electronic device 18 still received in it, is returned by the user to its rest position in contact with the security module 32, with its docking means 44 docked in the docking means 42 of the security module 32.

Simultaneously, the retraction means 33 retracts the tether 15 into the security module 32, and holds the display module 39, with the live mobile electronic device 18 in it, to its rest position in contact with the security module, with its docking means 44 docked in the docking means 42 of the security module 32.

Figure 5 illustrates an alternative embodiment of the present invention. In particular, Figure 5 is an exploded view of a mobile electronic device display and security unit 500 in which a mobile device 501 such as a mobile phone or ipad or ipod or tablet computer or the like is held in a display module 502 which includes a male member 503. The male member 503 is secured to a tether 504 which extends through an aperture 505 in part of a display unit. For example, the aperture 505 may be formed in a display panel 506.

The male docking member 503 provides a region which in this embodiment includes a tapered outer surface 507 docks with a mating female region 508 in a female docking pod 509. The docking pod 509 is connected to a threaded plug 510 which includes an outwardly extending flange 511. These sit on a washer 512 which has a central orifice which can be registered with the aperture 505 in the display panel 506.

An underside washer 515 is located on a further side of the panel 506 together with a rotating cup 516 which is securable to the washer 515 and which includes an inner sliding surface (not shown) in which a rotating collar 517 is located. The collar 517 has a substantially split circular body with L-shaped lugs extending therefrom on either side of a split. The L-shaped lugs 518 help locate a connecting wire in use.

A security module 530 includes a split body with an upper body part 531 and a lower body part 532. These body parts form a housing for a retraction unit 540. The two parts of the housing are secured together by four screws or other such securing elements 541. The retraction unit includes a pulley wheel 545 which rotates about a pulley axis 546. Alternatively, the pulley wheel may be fixed in place. In either a rotating mode or fixed mode the pulley assists the pulling out and retraction of the tether. The retraction unit also includes a squat cylindrical drum which itself houses a spirally coiled spring 550 which is anchored at one end to the drum housing and to the other end to the winding sub-module. The connection may be made to a central pin 560 which is secured to the two body parts of the module housing.

The rotatable collar helps the security module 530 to swivel about an effective pivot point. This helps reduce the risk that any wires will become twisted in use.

Figure 6 illustrates many of the parts shown in Figure 5 in more detail and further includes contact connectors 600 which are locatable in the female pod 509 and which are connected via a connecting wire 601 to an electrical connector 602. In use this may be connected to a further connector 603 and from there via a further connecting wire 604 to a plug 605 used to provide power.

Figure 6 also helps illustrate how the drum 610 houses the coiled spring 550 and includes an axially thin pulley wheel 611. Figure 6 also illustrates how the top body part 531 of the housing includes a seat 620 which includes a riding surface 621 onto which the split collar 517 is located in use.

Figures 7a, 7b and 7c illustrate the security module parts shown in Figures 5 and 6 connected together ready for use. The two body parts 531, 532 of the housing encompass the retraction mechanism and are connected to the two lower washers 515, 516. The uppermost of these lower washers 515 includes a channel to allow the connecting wire 601 to exit. The washers are spaced apart from an upper washer 512 by a distance x which corresponds to the thickness of the display panel 506. This distance may be set by screwing the thread 510 of the plug an appropriate distance. This separates an upper surface of the lower washer 515 from a lower surface of the upper washer 512. The connecting wire 601 can be seen in Figure 7a extending across the distance x and the aperture 505 in the display panel 506 is sized to accommodate this wire. The wire extends into the female pod 509 to the connectors 600 which act as contact connectors to make an electrical connection to corresponding connectors in the male part of the display unit when the display unit is retracted into the female docking region 508. The tether 504 together with a bulbous end 700 extends from within the housing through a central bore in the plug 510 and through a central through hole in the female pod 509. This extends to the display module where the end of the tether is secured.

Figure 8 illustrates parts of the display module 800 in more detail. The display module includes a display body 801 which is inclined. That is to say, a lower surface 802 of the display module is in a plane which is substantially parallel with a planar surface of the display panel 506. An upper surface of the display module which is provided by an adhesive sheet 803 supported in a support plate 804 has a plane which is angled with respect to the plane of the display panel. In use this helps locate a live mobile terminal at an angle with respect to a display panel. This can be helpful for a user.

The male region 503 encompasses a longitudinally split annular collar 805 in a form resembling an elongate cylinder with a circular cross-section. The collar houses the bulbous end 700 of the tether 504. Two electrodes 806, 807 are connected into respective slots 808, so that in use when the male region is docked into the female region 508 of the female pod 509 these electrodes make electrical contact with a corresponding electrode 600. The electrodes are connected to a circuit board 810 which includes control circuitry so that any mobile device secured to the display module which is housed in a retracted mode of operation is recharged. This occurs regardless of which of the electrodes 806, 807 in the male region of the display unit connect with which electrode 600 in the female pod. Thus, the circuitry enables a change in polarity to occur so that charging occurs regardless of which way around the male part on the display module connects to the female part. The circuit board 810 which carries the circuitry components is supported by a display unit panel 811 which sits in an open mouth region 820 of the display unit body 801. This is duly located by guides 821 on the body 801 guiding inset regions 822 on the panel.

Figure 8 also illustrates how an electrical connector 830 may be connected via a connecting plug 831 to a socket in the display module body 801. A further plug 832 is of a type which can connect with and duly charge a specific device which is being displayed. Thus, the connector 830 is changed when different devices are to be displayed.

Figure 9 illustrates a slidable housing 900 which may be connected to the display unit shown in Figure 8. The display housing 900 includes two substantially C-shaped bodies 901, 902 in which an inner surface of the larger C-shaped body is slidable against an outer surface of the smaller C-shaped body. An end 903 of each C-shaped body is connected to a respective jaw piece 904, 905 which includes a substantially L-shaped resilient support 906. In use the distance between the jaws may be set by sliding the C-shaped parts together an appropriate distance to clamp a particular mobile terminal therebetween. The jaws are then fixed in place by securing the unit to the display unit 800 shown in Figure 8 using securing screws 910.

Figure 10 illustrates parts of a display module 1000 according to a further embodiment of the present invention. The display module 1000 includes a display body 1001 which has a straight configuration. That is to say, a lower surface 1002 of the display module is in a plane which is substantially parallel with a planar surface of the display panel 506. An upper surface of the display module which is provided by an adhesive sheet 1003 supported in a support plate 1004 has a plane which is likewise substantially parallel with a planar surface of the display panel 506. In use this helps locate a live mobile terminal so that a screen of the terminal is substantially parallel with a display panel. This can be helpful to a user.

The male region 503 encompasses a longitudinally split annular collar 1005 in the form resembling an elongate cylinder with a circular cross-section. The collar houses the bulbous end 700 of the tether 504. Two electrodes 1006, 1007 are connected into respective slots 1008 so that in use when the male region is docked into the female region 508 of the female pod 509, these electrodes make electrical contact with a corresponding electrode 600. The electrodes are connected to a circuit board 1010 which includes control circuitry so that any mobile terminal secured to the display module which is housed in a retracted mode of operation can be recharged. This occurs regardless of which of the electrodes 1006, 1007 in the male region of the display unit connect with whichever electrode 600 in the female pod. Thus, the circuitry enables a change in polarity to occur so that charging occurs regardless of which way around the male part on the display module connects to the female part. The circuit board 1010 which carries the circuitry components is supported by a display unit panel 1011 which sits in an open mouth region 1020 of the display unit body 1001. This is duly located by guides 1021 on the body 1001 guiding inset regions 1022 on the panel.

Figure 10 also illustrates how an electrical connecter 1030 may be connected via a connecting plug 1031 to a socket in the display module body 1001. A further plug 1032 is of a type which can connect with and duly charge a specific device which is being displayed. Thus, the connector 1030 is changed when different devices are to be displayed.

A key 1050 is utilised by a user to release the tether and thus enable the display module 1000 to be replaced. This might be desired when an angled display module is desired or when a mounting of the type shown in Figure 9 which is for a particular electronic device requires a specific display module.

Throughout the description and claims of this specification, the words "comprise" and "contain" and variations of them mean "including but not limited to" and they are not intended to (and do not) exclude other moieties, additives, components, integers or steps. Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

Features, integers, characteristics or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith. All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of the features and/or steps are mutually exclusive. The invention is not restricted to any details of any foregoing embodiments. The invention extends to any novel one, or novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

Claims

1. A mobile electronic device display and security unit comprising
a security module comprising a retraction unit, and
a display module capable of holding a mobile electronic device; wherein
the retraction unit is operably connected to the display module and the display module is electrically connected to the security module at least in a rest position in contact with or adjacent to the security module before and after the use of a mobile device received in the display module, and is capable of being electrically connected to the mobile electronic device; whereby, in use of a mobile device received in the display module, the display module, holding a mobile electronic device, is withdrawn away from the security module against the action of the retraction unit, and following the use of the mobile device, the retraction unit retracts the display module towards the security module.

2. A unit according to claim 1, wherein the retraction unit is operably connected to the display module by a tether.

3. A unit according to claim 1, wherein the display module is electrically connected to the security module by electrical contacts in or on the security module and co-operating contacts in or on the display module.

4. A unit according to claim 3, wherein, the electrical contacts are in positions on or in co-operating surfaces of a docking region of the display module and security module respectively that are registered together in the rest position of the display module.

5. A unit according to claim 2, wherein the display module is electrically connected to the security module by an electrical feeder cable between the display module and the security module, which is mounted in or on, or is integral with the tether which operably connects the retraction unit to the display module.

6. A unit according to claim 2, wherein the retraction unit is resiliently biased to exert a pull-in retractive force on the tether, and hence on the display module, towards a rest position in contact with the security module.

7. A unit according to claim 2, wherein the retraction means is resiliently biased to exert a pull-in retractive force on the tether, and hence on the display module, towards a rest position in contact with the security module.

8. A unit according to claim 7, wherein the resilient bias to exert a pull-in retractive force on the tether is a spring.

9. A unit according to claim 2, wherein the retraction unit comprises a reel, to which an end of the tether is attached.

10. A unit according to claim 9, wherein the reel comprises a planar, axially thin pulley wheel.

11. A unit according to claim 2, wherein the retraction unit comprises a winding sub-module.

12. A unit according to claim 1, wherein the security module is mounted on a wall of and/or within a security module display unit.

13. A unit according to claim 11, wherein the winding sub-module is mounted on a wall of and/or in the security module display unit, projecting from the face of the wall opposite that facing the display module.

14. A unit according to claim 6, wherein the spring is a spirally coiled clock spring.

15. A unit according to claims 9 and 14, wherein the clock spring is mounted, and the reel is rotatably mounted, within the winding sub-module.

16. A unit according to claim 15, wherein the clock spring is anchored at one end to the reel and at the other end to the winding sub-module in such a sense that, when the display module is withdrawn away from the security module, that action tightens the coils of the clock spring, and tenses the spring, which then exerts a pull-in retractive force on the tether.

17. A unit according to claim 1, wherein security module docking region, mounted on or in, or integral with part of the security module is so constructed and arranged that it may engage the display module docking region mounted on or in, or integral with part of the display module.

18. A unit according to claim 17, wherein the security module docking unit is mounted on or in, or integral with the top face of the security module display unit, and the display module docking region is mounted on or in, or integral with a display module mounting pod.

19. A unit according to claim 17, wherein the security module has a female or male docking region mounted on or in, or integral with the security module, and the display module has a corresponding male or female display module docking region mounted on or in, or integral with the display module.

20. A unit according to claim 17, wherein the security module has a female docking region mounted on or in, or integral with the security module, and the display module has a corresponding male display module docking region mounted on or in, or integral with the display module.

21. A unit according to claim 17, wherein the male docking region mounted on or in, or integral with the display module is an elongate shank, and the female docking region mounted on or in, or integral with the security module comprises an elongate socket.

22. A unit according to claim 17, wherein the female docking region mounted on or in, or integral with either module conforms internally, at least in part, with the outside of the male docking region mounted on or in, or integral with the other module.

23. A unit according to claim 1, wherein the security module docking region and display module docking region comprise at least one holding element, capable of holding the display module in a rest position in contact with or adjacent to the security module.

24. A unit according to claim 23, wherein the holding elements comprise a magnetic catch, comprising at least one pair of permanent magnets, a first magnet being mounted on or in the security module docking region in such position and orientation that it presents an end of a first magnetic polarity to the display module docking region, and a further magnet being mounted on or

in the display module docking region in such position and orientation that it presents an end of a second, opposite magnetic polarity to the security module docking region, such that the pair of magnets is capable of holding the security module docking region and display module docking region together.

25. A unit according to claim 1, wherein the display module has at least one attachment member for attaching a mobile electronic device type to the display module, on a device bearing member.

26. A unit according to claim 25, wherein the attachment member comprises pressure-sensitive adhesive, or co-operating plastics hook-and-loop members which co-operate with one or more complementary strips on the mobile electronic device to be attached to the display module,

27. A unit according to claim 1, wherein the display module has at least one receiving element, mounted in or on, or integral with the display module, to receive a mobile electronic device in the display module.

28. A unit according to claim 27, wherein the receiving element comprises a cradle to slidably receive a mobile electronic device type in the display module.

29. A unit according to claim 2, wherein the display module is demountably mounted on the tether, allowing interchange of display modules.

30. A unit according to claim 29, wherein the display module is demountably mounted on the tether by a locking retaining element.

31. A unit according to claim 30, wherein the locking retaining element comprises a longitudinally split annular collar which retains the tether in the display module and may be compressed to release of the tether from the display module.

32. A unit according to claim 27 or 28, wherein the receiving element is demountably mounted on the display module, allowing interchange of the receiving element.

33. A unit according to claim 1 which is locatable to swivel with respect to a display wall member.

34. A unit according to claim 1 comprising a pulley element located to guide a tether during a recoil mode of operation.

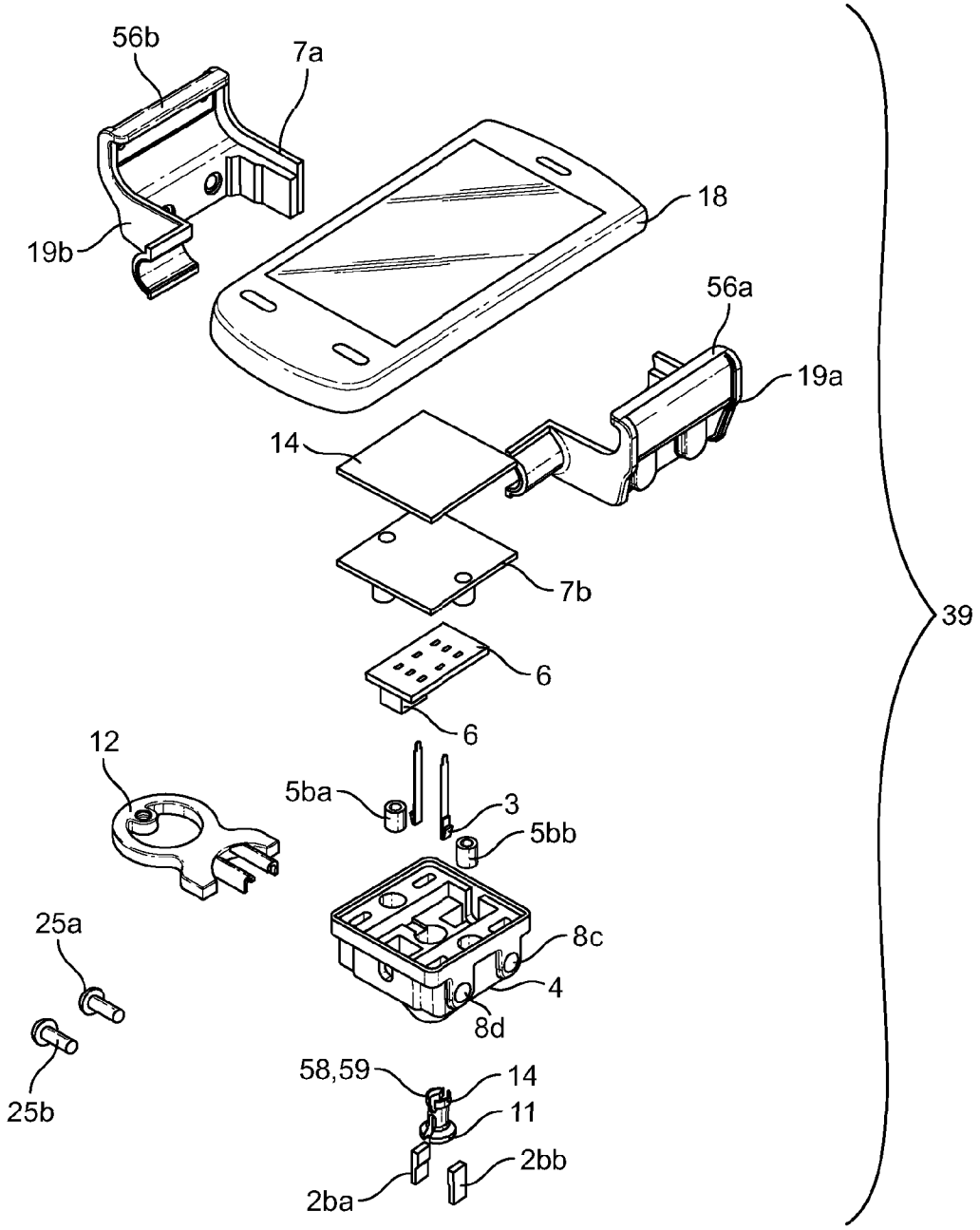
56b
7a
18
19b
56a
19a
14
7b
39
6
6
12
5ba
3
5bb
25a
8c
4
8d
25b
58,59
14
11
2bb
2ba

FIG. 1a

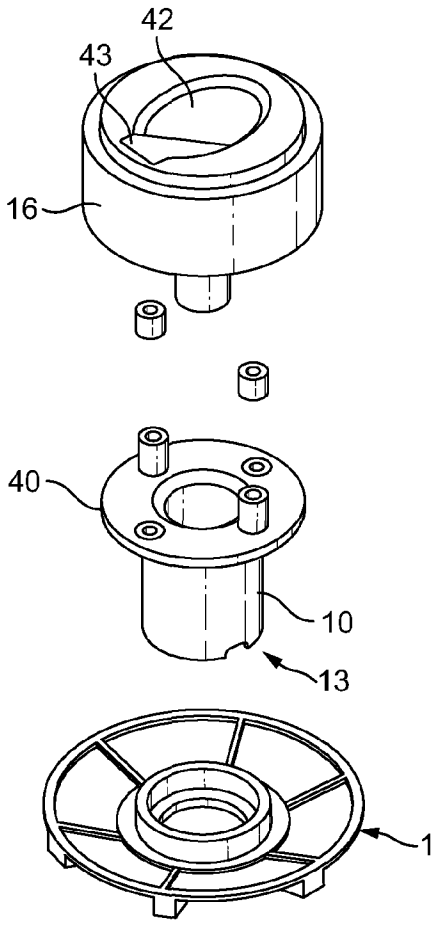

FIG. 1b

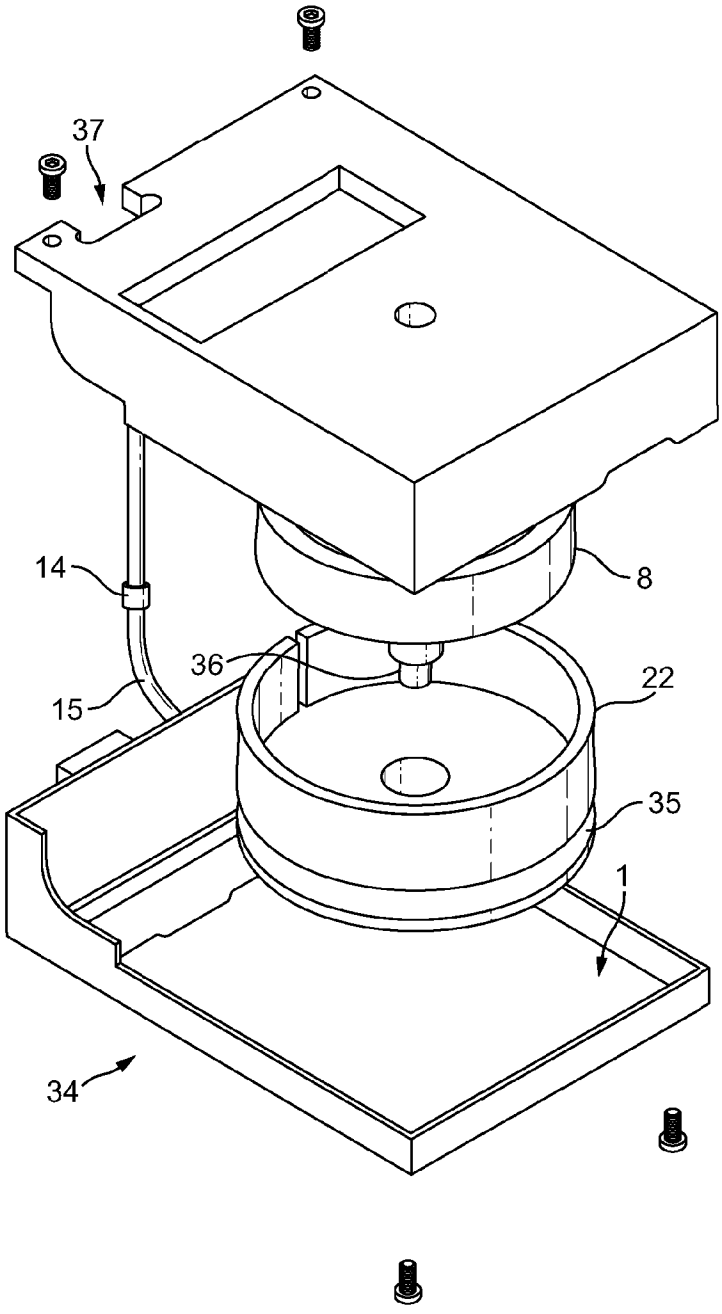

FIG. 2

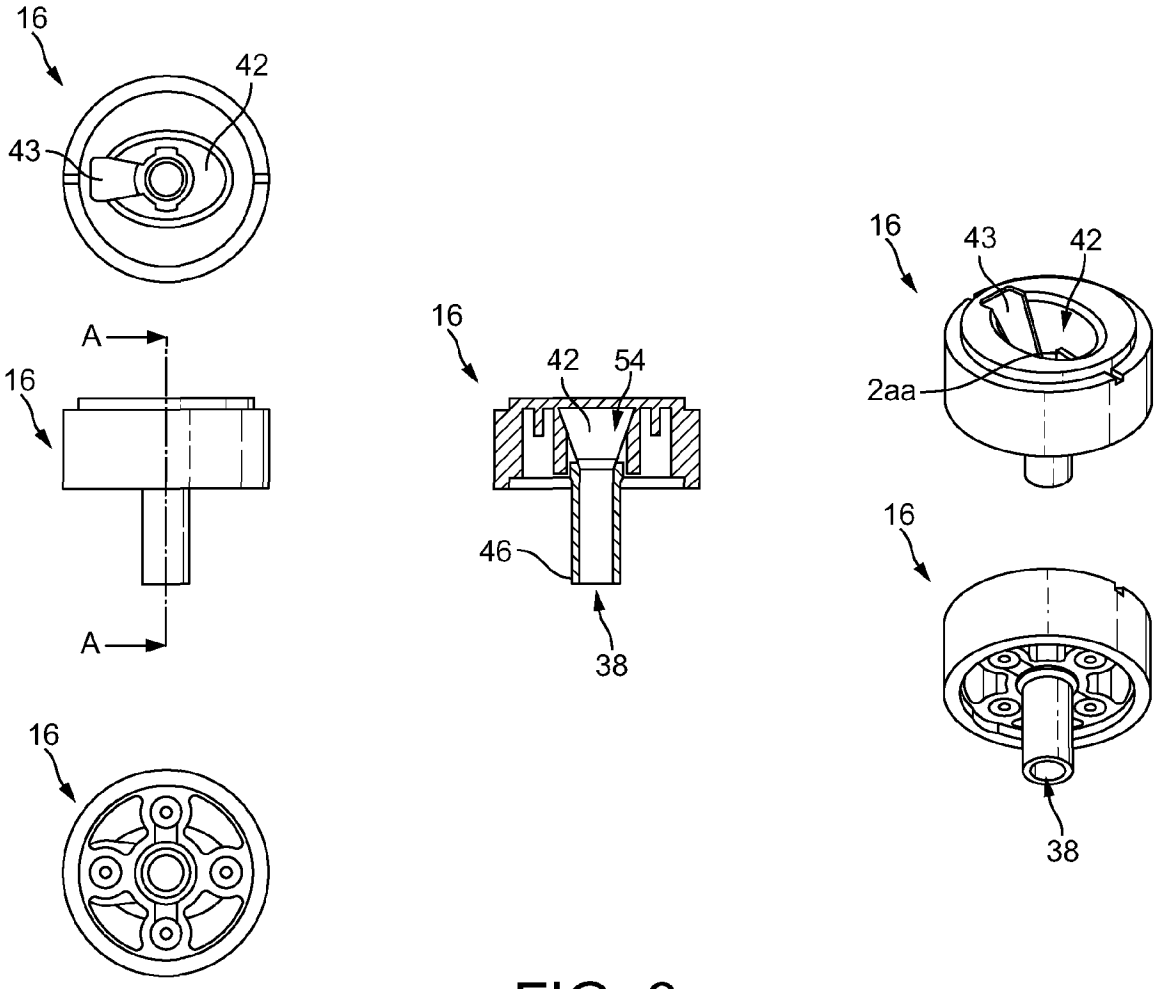

FIG. 3

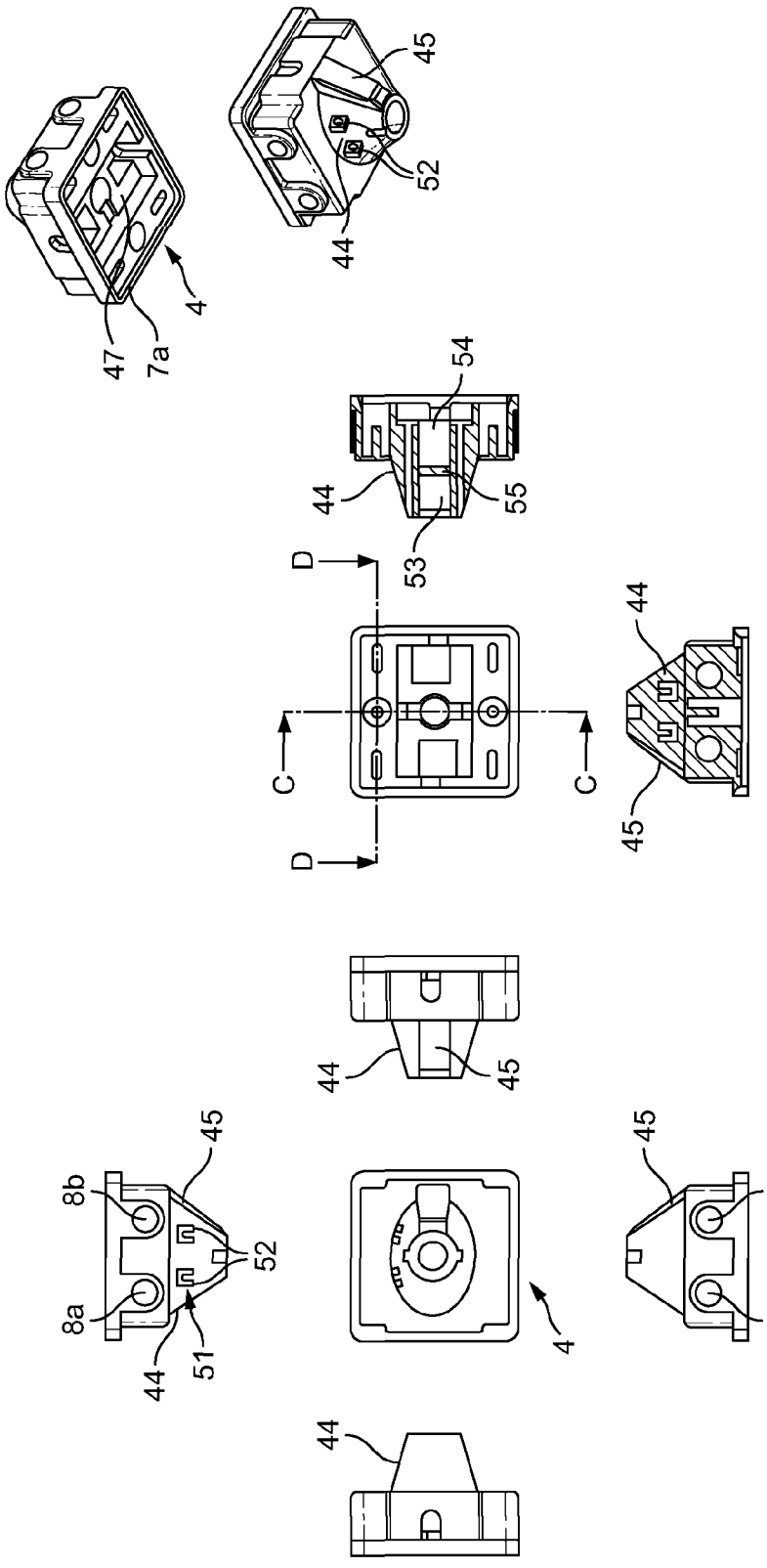
45
52
44
4
47
7a
54
44
55
53
D
C
C
D
44
45
44
45
8b
45
52
8a
44
51
4
45
8d
8c

FIG. 4

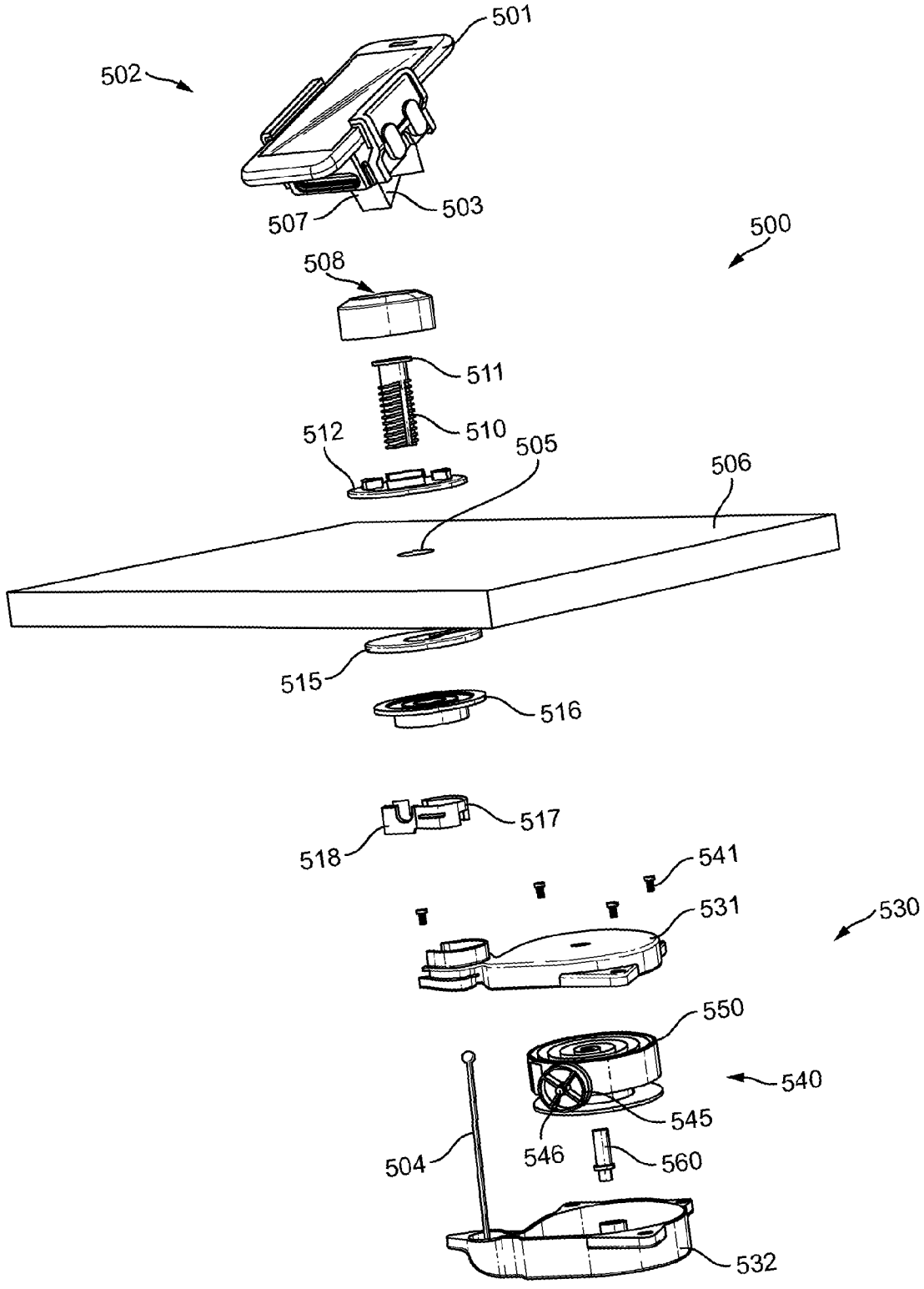
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FIG. 5

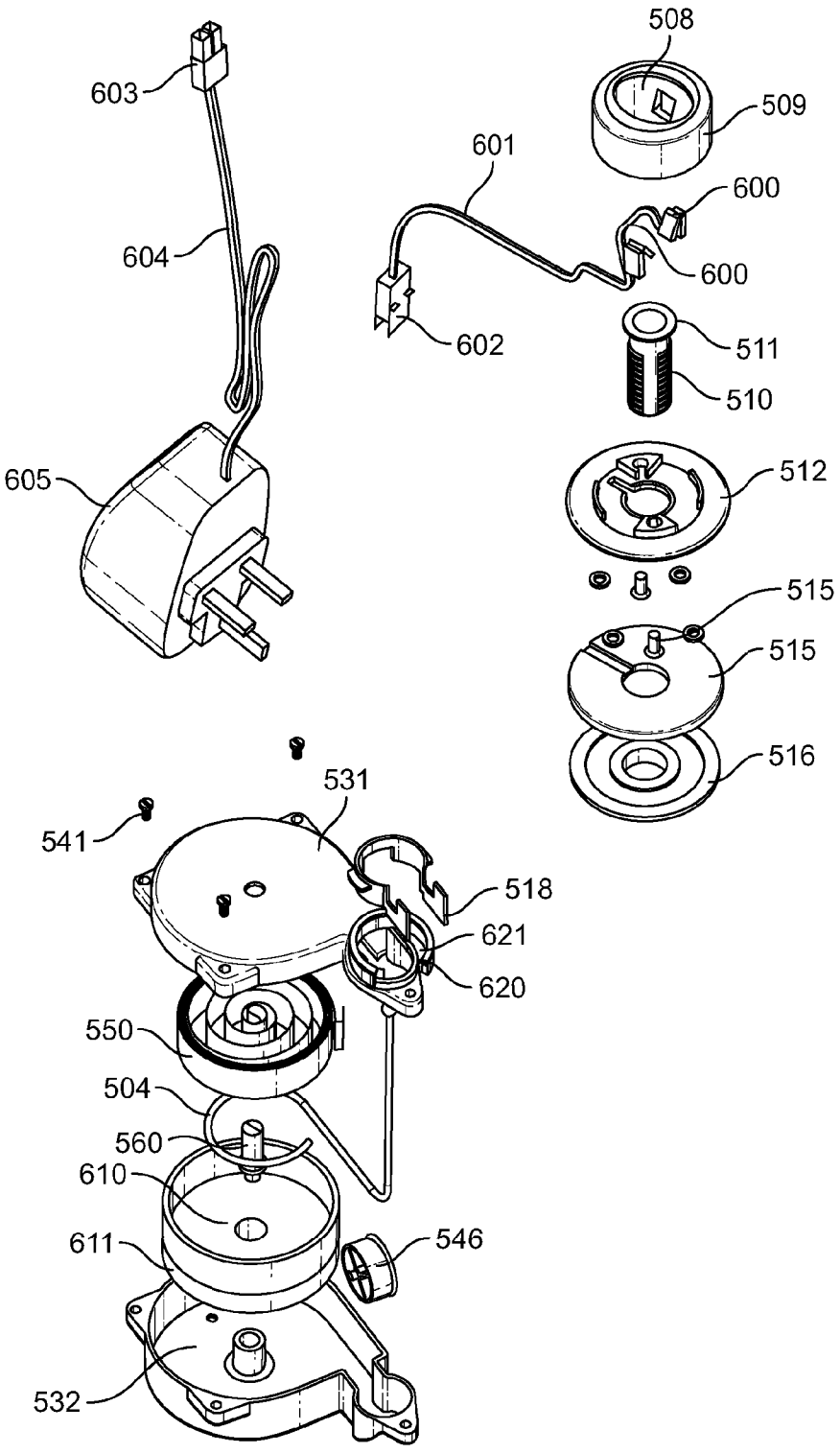
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FIG. 6

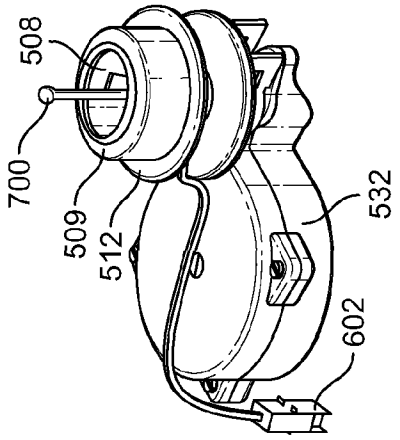

FIG. 7c

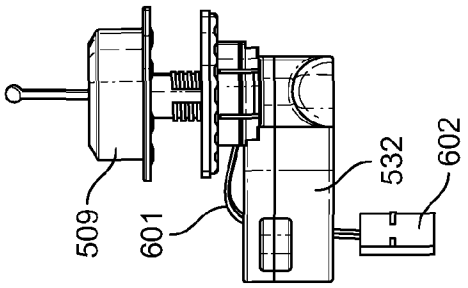

FIG. 7b

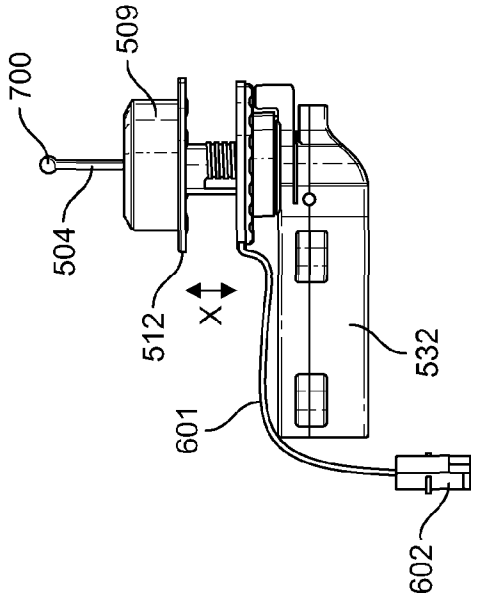

FIG. 7a

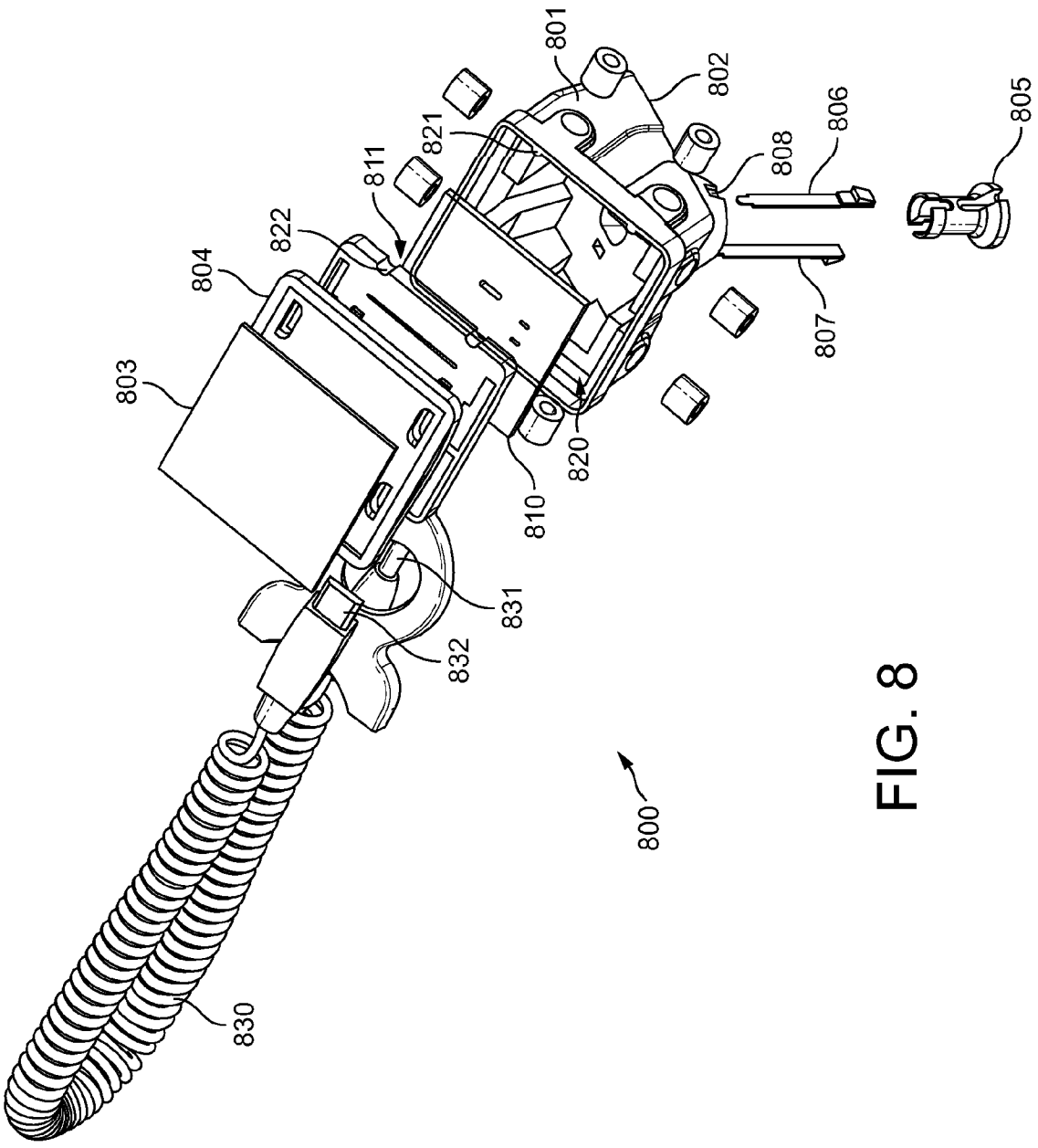
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FIG. 8

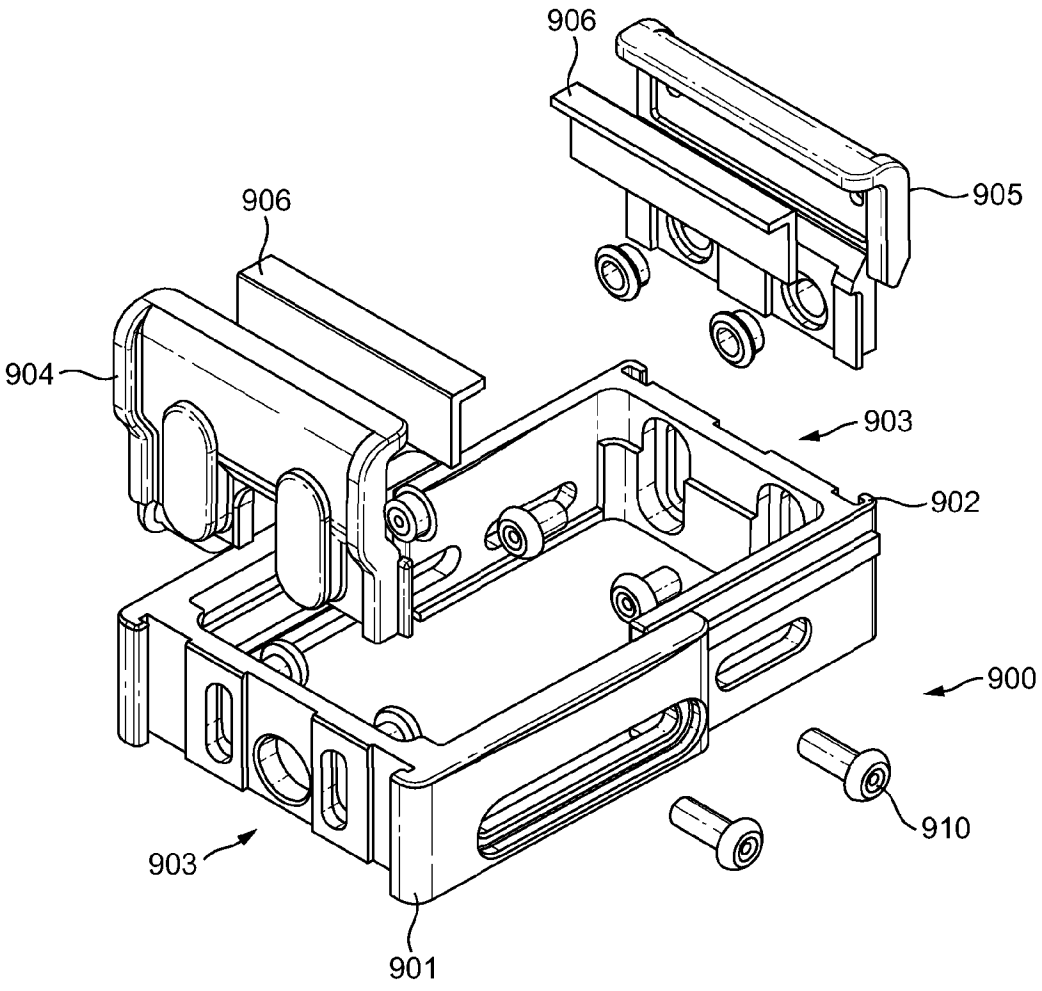
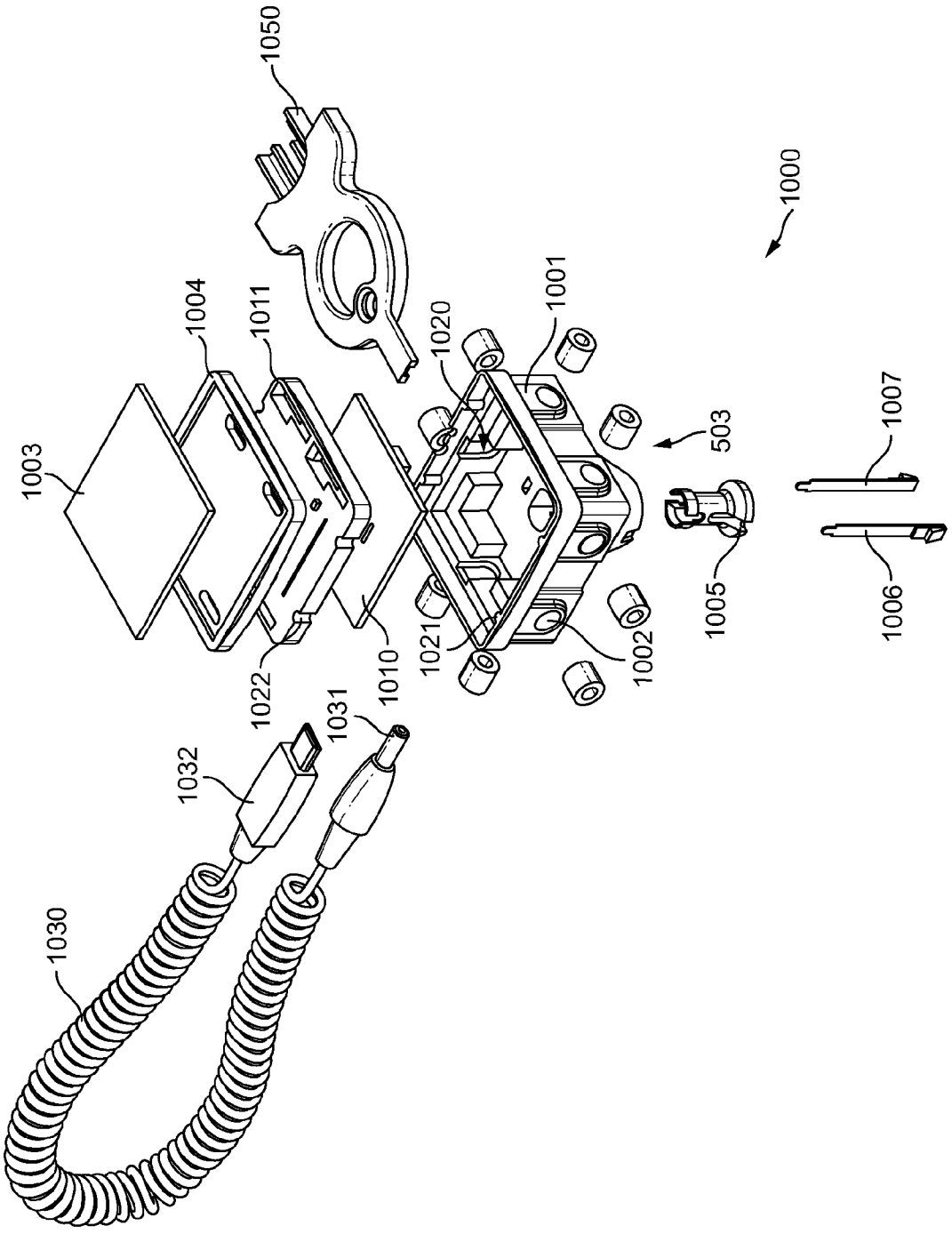


FIG. 9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1003
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1007
1022
1010
1021
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1031
1032
1030

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/052285

A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47F E05B G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7 209 038 B1 (DECONINCK JOSEPH F [US] ET AL) 24 April 2007 (2007-04-24) the whole document	1-20,22, 23, 25-27,33

X	US 2007/194918 A1 (RABINOWITZ ALAN [US] ET AL) 23 August 2007 (2007-08-23)	1-3, 5-23,25, 27,28, 32,34
Y	the whole document	4,24

Y	AT 506 665 A1 (SAILER MARCO [AT]) 15 October 2009 (2009-10-15) page 3, last paragraph - page 4, last paragraph; figure	4,24

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 March 2012	13/03/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	van Hoogstraten, S

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2011/052285

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7209038 B1	24-04-2007	US 7209038 B1	24-04-2007
		US 7327276 B1	05-02-2008
US 2007194918 A1	23-08-2007	NONE	
AT 506665 A1	15-10-2009	NONE	

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(71) Applicant and
(72) Inventor: **ESCUIN GARCÍA, Jorge** [ES/ES]; C. Ripolles Mas Ferrer, 3, E-08859 Begues (Barcelona) (ES).

(74) Agent: **BARLOCCI, Anna**; Balmes, 114 4rt, E-08008 Barcelona (ES).

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Published:

— *with international search report (Art. 21(3))*

(54) Title: A SECURITY OPTICAL FIBER SENSOR

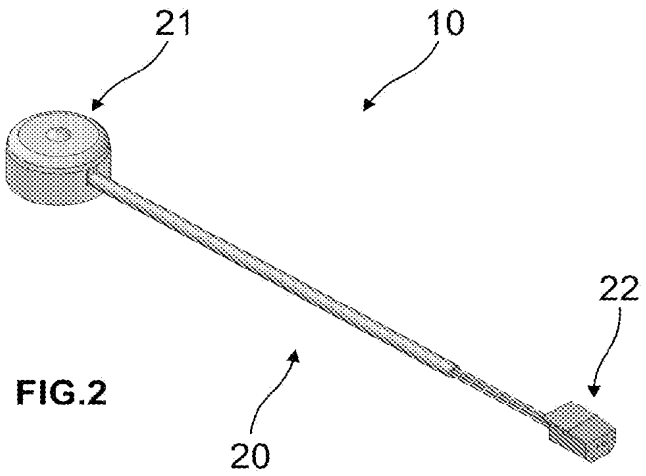

FIG.2

(57) Abstract: The invention relates to a security sensor (10) comprising a sensing device (21), a coming optical fiber element and a going optical fiber element, the sensing device (21) comprising a housing that receives a first end of the coming element and a first end of the going element. It is characterized in that the first end of the coming element and the first end of the going element in the housing are not aligned, and in that when a light beam enters the housing through the first end of the coming element, at least part of said light beam is reflected within the housing and exits through the first end of the going element.

WO 2009/103793 A1

A security optical fiber sensor

The present invention relates to a security sensor. More specifically, the invention relates a security sensor comprising a sensing device, a coming optical fiber element and a going optical fiber element, the sensing device comprising a housing that receives a first end of the coming element and a first end of the going element.

The invention also relates to an extension device of said security sensor, a method for controlling the security sensor, a device for controlling the security sensor suitable for carrying out such a method, and a computer program for controlling the security sensor.

BACKGROUND ART

A security sensor is an anti-theft device to prevent the theft or loss of any object exposed to the public, for example, in open access and free service, in shelves, exhibitors, etc. that for its high value are always most likely to disappear with the consequent and irreparable economic loss.

The US patent no. 5003292 with title "*Fiber optic security system for protecting equipment from tampering*" describes a fiber optic security system for protecting expensive equipment from tampering or theft. The fiber optic security system comprises an emitter for generating signals, a detector connected to an alarm for monitoring the signals and a sensing coupler or photon switch that is easily mounted to each piece of equipment that requires protection without defacing the equipment. The sensing coupler mounts the tips of optical fiber ends in a position aligned along a single axis to allow light generated by the emitter to pass through. Any attempt to remove the sensing coupler causes the tips to be misaligned and the light to be deflected. This causes an optic path interrupt and causes the detector to trigger an alarm.

Said security system has a drawback in the arrangement of the optical fiber ends. Because the ends are aligned, any movement of the protected object can

cause their misalignment and, consequently, the system generates an alarm due to an optic path interrupt. Therefore, said system only can be used in objects that are not moved or handled by the purchasers (for example, said system cannot be used in clothes, mp3/mp4 players, etc.).

DISCLOSURE OF THE INVENTION

Therefore, an object of the invention is to provide a security sensor that can be used for protecting any type of object.

This object is achieved in accordance with claim 1 by providing a security sensor in which the first end of the coming element and the first end of the going element in the housing are not aligned, and in which when a light beam enters the housing through the first end of the coming element, at least part of said light beam is reflected within the housing and exits through the first end of the going element.

The provision of the arrangement of the ends of the optical fiber elements and the configuration of the housing allows the sensor protecting any type of object. The movement of the protected object causes no problem because light always enters in the housing through the coming element, reflects in the housing and exits through the going element. The security sensor only generates an alarm when at least one of the elements is cut or when anybody attempts to remove the sensing device from the protected object.

In one embodiment of the invention, the sensor further comprises means for connecting the sensor to a control device, said connection means being arranged at the second end of the coming element and the second end of the going element. The connection means may be a plug with a retainer.

In another embodiment, the sensing device comprises means for attaching the sensor to the object to be protected. For example, the attaching means may be a pad with a special adhesive.

Preferably, the housing comprises a hole, which is covered by the object to be protected when the sensor is attached to the object. The provided hole allows external light to enter in the housing when somebody attempts to remove the sensor from the protected object. This way, external light is detected by the control device and an alarm is triggered.

Alternatively, the hole may be a transparent portion of the housing. This way, the provided transparent portion allows external light to enter in the housing when somebody attempts to remove the sensor from the protected object.

Further, the sensing device may comprise a lighting signal, which may have the function of a beacon.

In one embodiment, the coming element and the going element are made of plastic optical fiber.

According to another aspect, the invention provides an extension device for a security sensor comprising a sensing device, a coming optical fiber element and a going optical fiber element, the sensing device comprising a housing that receives a first end of the coming element and a first end of the going element, means for aligning the first end of the coming element of the sensor and the second end of the coming element of the extension device, and means for aligning the first end of the going element of the sensor and the second end of the going element of the extension device, so that when a light beam enters the housing of the extension device through the first end of the coming element of the extension device, at least part of said light beam is reflected within the housing of the extension device and exits through the first end of the going element of the extension device.

This way, the protection can be extended to different parts of the object or the same security sensor can protect different objects.

According to yet another aspect of the invention, it is provided a device for controlling a security sensor comprising means for emitting a light beam through

the coming optical fiber element, means for receiving the light beam through the going optical fiber element, means for determining an expected light beam, to be received by the receiving means, from the emitted light beam, means for verifying if the received light beam corresponds with the expected light beam, and means for triggering an alarm when the light beam received by the receiving means is not the expected one.

The control device, from the emitted light beam and the received light beam, determines if an alarm must be triggered:

- If any or both of the optical fiber elements are cut, the verifying means determines that the received light beam (light is not received) is different from the expected light beam and triggers an alarm;
- In case of anybody attempts to remove the security sensor from the protected object, external light enters in the housing through the hole of the housing, and said light is detected by the control device (the expected light beam is different from the received light beam, that is, the received light beam corresponds to the emitted light beam plus the external light). Obviously, in said case, the control device also triggers an alarm.

In another embodiment, the emitting means emits a pulsating light beam. This way, means for determining an expected light beam determines that the expected light beam is a pulsating one. In case of the received light beam is not a pulsating one, the control device triggers an alarm.

In one embodiment, the triggering means triggers an alarm when the light level of the light beam received by the receiving means is under a predetermined threshold (i.e. at least one optical fiber element has been cut).

On the other hand, the triggering means triggers an alarm when the light level of the light beam received by the receiving means is over a predetermined threshold (i.e. anybody has attempted to remove the security sensor from the protected object and light has entered in the housing).

The control device further may comprise means for receiving the connecting means of the security sensor.

In a preferred embodiment of the invention, a system for protecting an object comprises a security sensor and a device for controlling said security sensor, the connecting means of the security sensor being connected to the means for receiving the connecting means of the control device.

According to another aspect of the invention, it is provided a method for controlling a security sensor, comprising the steps of:

a. Emitting a light beam;

b. Receiving a light beam;

c. Determining an expected light beam from the emitted light beam;

d. Verifying if the received light beam corresponds with the expected light beam;

In case of negative result, executing the step of:

e. Generating an alarm.

According to yet another aspect, the invention provides a computer program comprising program instructions for causing a computer to perform the method for storing multimedia files. Said computer program may be embodied on storing means (for example, on a record medium, on a computer memory or on a read-only memory) or carried on a carrier signal (for example, on an electrical or optical carrier signal).

BRIEF DESCRIPTION OF THE DRAWINGS

In the following detailed description of some possible embodiments, other features and advantages of the invention will appear, each description being made with reference to the following drawings:

Fig.1 is a schematic diagram illustrating the system for protecting an object, according to the invention;

Fig.2 is a schematic diagram illustrating the security sensor of the system of Fig.1, according to the invention;

Fig.3 is a schematic diagram illustrating the optical fiber cable of the security sensor of Fig.2;

Fig.4 is a schematic diagram illustrating the housing of the sensing device of the security sensor of Fig.2;

Fig.5 is a flow chart illustrating the method for controlling the security sensor of Fig.2, according to the invention.

DETAILED DESCRIPTION

In the following detailed description, embodiments of a system for protecting an object according to the invention will be described. In said embodiments, the object is a multimedia player, which is exposed to the public, for example, in open access and free service, in an exhibitor.

Basically, as can be seen in Fig.1, the system for protecting the multimedia player 11 comprises a security optical fiber sensor 10 and a device 12 for controlling said security sensor 10.

The security sensor 10 (see Fig.2) comprises an optical fiber cable 20, a sensing device 21 arranged in a first end of the cable 20, and a connector 22 arranged in the second end of the cable 20.

As can be seen in Fig.3, the optical fiber cable 20 comprises a first optical fiber element 30 (hereinafter referred to as coming element) and a second optical fiber element 31 (hereinafter referred to as going element) and presents a coiled configuration. The cable 20 also comprises one flexible cover for each element 30,31, said covers being joined to form the single cable 20.

The coming and going elements 30,31 are made of plastic optical fiber and present polish ends. On the other hand, the elements have a diameter of approximately 1 mm.

The sensing device 21 comprises a housing. Said housing comprises a top lid 40 and a lower lid 41.

The lower lid 41 comprises flaps 42 for joining the top lid with the lower lid, a hole 43 through which light enters in the housing when the sensing device is being removed from the multimedia player 11, and two holes 44 for receiving a first end of the coming element 30 and a first end of the going element 31 respectively. The lower lid 41 also comprises a pad (not shown) for attaching the security sensor 10 to the multimedia player 11. Said pad comprises a suitable adhesive element for attaching the sensing device 21 to the multimedia player 11.

In a preferred embodiment of the invention, the first end of the coming element 30 and the first end of the going element 31 has to be a predetermined minimum distance from the reflective surface (the protected object surface or the housing surface) for achieving good results.

Alternatively, the hole 43 may be a transparent portion provided in the lower lid 41. This way, the provided transparent portion allows external light to enter in the housing when somebody attempts to remove the sensor from the multimedia player.

The top lid 40 comprises a transparent portion 45 that shows the light beam that arrives to the housing, obtaining the effect of a beacon (a lighting signal).

The connector 22 is a plug comprising a retainer for maintaining the connection between the security sensor 10 and the control device 12. The connector, For example, may be an HFBR-4516 Duplex Latching Connector.

The control device 12 comprises an element for receiving the connector 22 of the security sensor 10, a light emitter (e.g. a Light-Emitting Diode – LED) for emitting a light beam (e.g. a pulsating light beam), a light receiver (e.g. a light sensor) for receiving the emitted light beam, a computer program for controlling the security sensor 10, and a computer system on which the computer program is executed. Further, the control device 12 may comprise means for connecting the device to a computer network (e.g., a WiFi network) or to another computer

system. This way, the data obtained by the control device 12 may be sent to the other computer system for their processing.

The computer program comprises a module for determining the expected light beam from the emitted light beam, a module for verifying if the received light beam is the expected light beam, and a module for triggering an alarm in case of the result in the verifying module is negative (that is, the received light beam does not correspond with the expected light beam).

It is possible to use an extension device of the security sensor 10 for extending the protection to other parts of the multimedia player 11 or for protecting more than one multimedia player (or another object). Said extension device comprises a sensing device, a coming optical fiber element and a going optical fiber element, the sensing device comprising a housing (with the same configuration than the housing of the sensing device 21 of the security sensor 10) that receives a first end of the coming element and a first end of the going element. Further, the extension device comprises means for aligning the first end of the coming element (30) of the sensor (10) and the second end of the coming element of the extension device, and means for aligning the first end of the going element (31) of the sensor (10) and the second end of the going element of the extension device, so that when a light beam enters the housing of the extension device through the first end of the coming element of the extension device, at least part of said light beam is reflected within the housing of the extension device and exits through the first end of the going element of the extension device.

The aligning means may be comprised in the housing, for example, in the lower lid of the housing.

Fig.5 is a flow chart illustrating a preferred embodiment of a method for controlling a security sensor, according to the invention. Thus, beginning in a state in which the security sensor 10 is connected to the control device 12 by means of the connector 22 and the element for receiving said connector, the method for controlling the security sensor 10 comprises the following steps:

a. The light emitter emits a light beam (e.g. a pulsating light beam) through the coming element 30 (more specifically, through the second end of the coming element) of the security sensor 10;

b. The light receiver receives a light beam through the going element 31 (more specifically, through the second end of the going element) of the security sensor 10;

c. The determining module determines the expected light beam from the emitted light beam;

d. The verifying module verifies if the received light beam is the expected light beam;

In case of negative result, in a step (e), the triggering module triggers an alarm (e.g. an audible alarm and/or a visual alarm flashing the beacon).

Obviously, when the light emitter emits the light beam through the coming element 30, said light beam enters in the housing of the sensing device 21 through the first end of the coming element 30. Next, the light beam is reflected within the housing (the light beam is reflected on the housing surface and/or the protected object surface) and exits through the first end of the going element 31. The light beam exiting from the housing is the light beam received in the control device 12 (by the receiving means).

In case of light beam, within the housing, is reflected on the protected object surface, the control device 12 may comprise means for detecting the colour of the object surface and means for generating a light beam according to the detected colour.

Basically, it is possible to describe the verification of the received light beam in the control device 12 according to the following steps:

- Verifying if the light level of the received light beam is under a first predetermined threshold (at least one of the elements 30,31 are cut);

In case of positive result, executing the step of:

- Generating an alarm;

In case of negative result, executing the steps of:

- Verifying if the light level of the received light beam is over a second

predetermined threshold (the sensing device 21 is being removed from the protected object and external light enters in the housing);

In case of positive result, executing the step of:

- Generating an alarm.

On the other hand, if the emitted light beam is a pulsating light beam, it is possible to describe the verification of the received light beam in the control device 12 according to the following steps:

- Verifying if the received light beam is a pulsating light beam;

In case of negative result, executing the step of:

- Generating an alarm.

If anybody cut at least one of the optical fiber elements, the receiving means do not receive the light beam (that is, the received light beam is not pulsating). If anybody attempts to remove the sensing device 21 from the multimedia player 11, light (obviously, not pulsating) enters in the housing and exits from it through the first end of the going element. Consequently, the received light beam is not pulsating.

Thus, while the preferred embodiments of the security sensor, the extension device, the control device, the system for protecting and object and the method for controlling the sensor device have been described in reference to the environment in which they were developed, they are merely illustrative of the principles of the invention. Other embodiments and configurations may be devised without departing from the scope of the appended claims.

Further, although the embodiments of the invention described with reference to the drawings comprise computer apparatus and processes performed in computer apparatus, the invention also extends to computer programs, particularly computer programs on or in a carrier, adapted for putting the invention into practice. The program may be in the form of source code, object code, a code intermediate source and object code such as in partially compiled form, or in any other form suitable for use in the implementation of the processes according to the invention. The carrier may be any entity or device

capable of carrying the program.

For example, the carrier may comprise a storage medium, such as a ROM, for example a CD ROM or a semiconductor ROM, or a magnetic recording medium, for example a floppy disc or hard disk. Further, the carrier may be a transmissible carrier such as an electrical or optical signal, which may be conveyed via electrical or optical cable or by radio or other means.

When the program is embodied in a signal that may be conveyed directly by a cable or other device or means, the carrier may be constituted by such cable or other device or means.

Alternatively, the carrier may be an integrated circuit in which the program is embedded, the integrated circuit being adapted for performing, or for use in the performance of, the relevant processes.

CLAIMS

1. A security sensor (10) comprising a sensing device (21), a coming optical fiber element (30) and a going optical fiber element (31), the sensing device (21) comprising a housing (40,41) that receives a first end of the coming element (30) and a first end of the going element (31), **characterized** in that the first end of the coming element (30) and the first end of the going element (31) in the housing (40,41) are not aligned, and in that when a light beam enters the housing through the first end of the coming element, at least part of said light beam is reflected within the housing and exits through the first end of the going element.

2. A sensor according to claim 1, further comprising means (22) for connecting the sensor (10) to a control device (12), said connection means being arranged at the second end of the coming element (30) and the second end of the going element (31).

3. A sensor according to any of claims 1 or 2, wherein the sensing device (21) comprises means for attaching the sensor to the object (11) to be protected.

4. A sensor according to claim 3, wherein the housing (40,41) comprises a hole (43), which is covered by the object (11) to be protected when the sensor (10) is attached to the object.

5. A sensor according to any of claims 1 to 4, wherein the sensing device (21) comprises a lighting signal (45).

6. A sensor according to any of claims 1 to 5, wherein the coming element (30) and the going element (31) are made of plastic optical fiber.

7. An extension device for a security sensor (10) according to any of claims 1 to 6, **characterized** in that it comprises a sensing device, a coming optical fiber element and a going optical fiber element, the sensing device comprising a housing that receives a first end of the coming element and a first end of the

going element, means for aligning the first end of the coming element (30) of the sensor (10) and the second end of the coming element of the extension device, and means for aligning the first end of the going element (31) of the sensor (10) and the second end of the going element of the extension device, and in that when a light beam enters the housing of the extension device through the first end of the coming element of the extension device, at least part of said light beam is reflected within the housing of the extension device and exits through the first end of the going element of the extension device.

8. A device (12) for controlling a security sensor (10) according to any of claims 1 to 6, **characterized** in that it comprises means for emitting a light beam through the coming optical fiber element (30), means for receiving the light beam through the going optical fiber element (31), means for determining an expected light beam, to be received by the receiving means, from the emitted light beam, means for verifying if the received light beam corresponds with the expected light beam, and means for triggering an alarm when the light beam received by the receiving means is not the expected one.

9. A control device (12) according to claim 8, wherein the emitting means emits a pulsating light beam.

10. A control device (12) according to claim 9, wherein the triggering means triggers an alarm when the light beam received by the receiving means is not a pulsating light beam.

11. A control device (12) according to any of claims 8 or 9, wherein the triggering means triggers an alarm when the light level of the light beam received by the receiving means is under a predetermined threshold.

12. A control device (12) according to any of claims 8 or 9, wherein the triggering means triggers an alarm when the light level of the light beam received by the receiving means is over a predetermined threshold.

13. A control device (12) according to any of claims 8 to 12, further comprising

means for receiving the connecting means (22) of the security sensor (10).

14. A system for protecting an object (11) comprising a security sensor (10) according to any of claims 1 to 6 and a device (12) for controlling said security sensor (10) according to any of claims 8 to 13, the connecting means (22) of the security sensor (10) being connected to the means for receiving the connecting means, of the control device (12).

15. A method for controlling a security sensor (10) according to any of claims 1 to 6, comprising the steps of:

a. Emitting a light beam;

b. Receiving a light beam;

c. Determining an expected light beam from the emitted light beam;

d. Verifying if the received light beam corresponds with the expected light beam;

In case of negative result, executing the step of:

e. Generating an alarm.

16. A computer program comprising program instructions for causing a computer to perform the method for controlling a security sensor (10) according to claim 15.

17. A computer program according to claim 16, embodied on storing means.

18. A computer program according to claim 16, carried on a carrier signal.

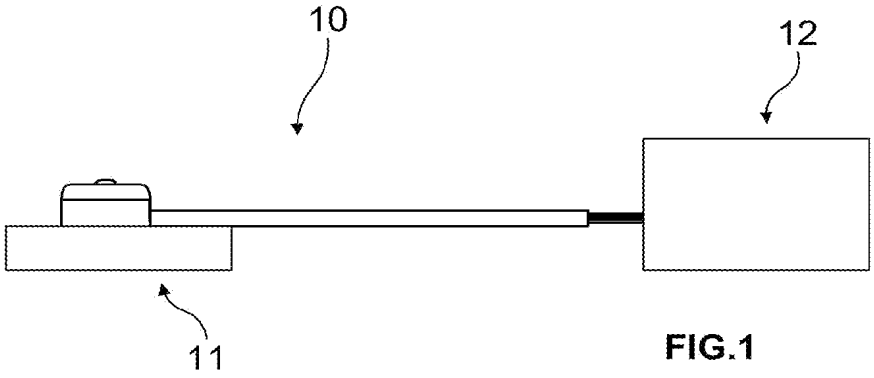

FIG.1

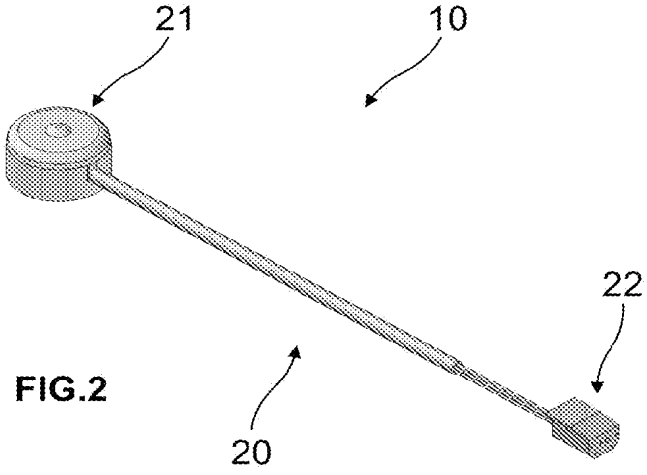

FIG.2

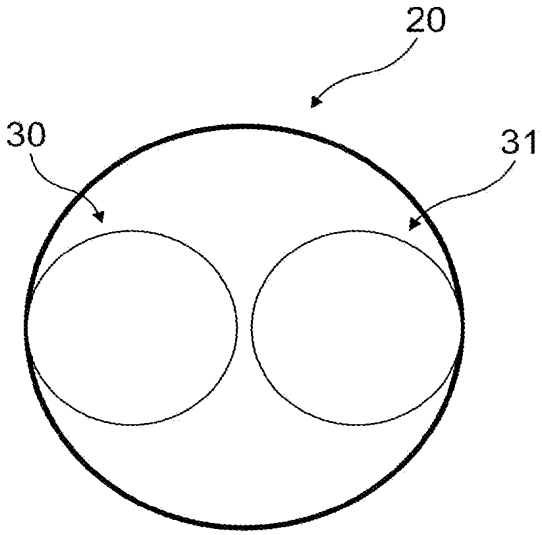

FIG.3

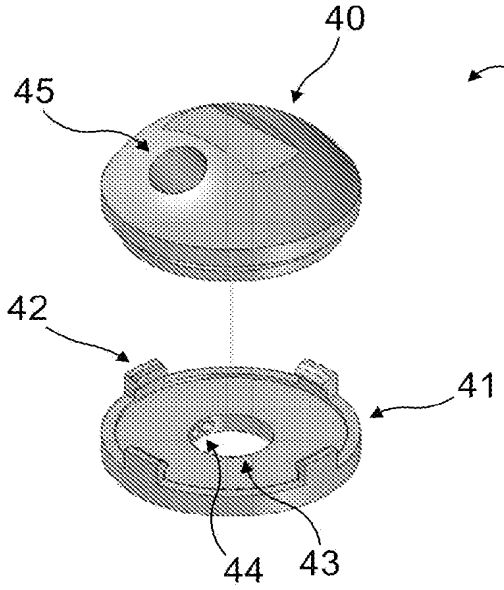

FIG.4

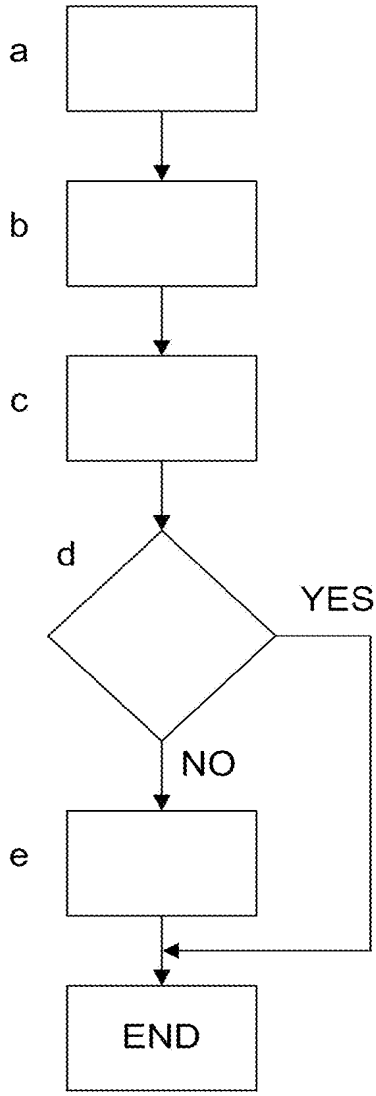

FIG.5

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/052049

A. CLASSIFICATION OF SUBJECT MATTER
INV. G08B13/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G08B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 726 546 A (RIGO DE RIGHI DAVIDE [IT]) 14 August 1996 (1996-08-14) figure 1 column 3, line 51 - column 4, line 16 column 5, lines 36-46 figures 3,4	1-3,6, 8-18 4,5
X	DE 34 36 030 A1 (SCHUBERT PETER [DE]) 17 April 1986 (1986-04-17) the whole document	1-3,6, 8-18
X	JP 63 257712 A (MATSUSHITA ELECTRIC WORKS LTD) 25 October 1988 (1988-10-25) figures 1,7 abstract	7
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 May 2009	18/05/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	de la Cruz Valera, D

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/052049

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 57 190920 A (NIPPON TELEGRAPH & TELEPHONE) 24 November 1982 (1982-11-24) figure 1 abstract -----	7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/052049

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6

   A security sensor, constructive details of the security sensor.

1.1. claim: 7

   An extension for a fibre optics element

1.2. claims: 8-14

   A device for generating and receiving a signal.

1.3. claims: 15-18

   Claims 15 to 18 introduce the operating detection logic of a security sensor and the software and hardware associated thereto.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2009/052049

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0726546	A	14-08-1996	IT	MI950246 A1	12-08-1996
DE 3436030	A1	17-04-1986	NONE		
JP 63257712	A	25-10-1988	NONE		
JP 57190920	A	24-11-1982	NONE		

(19) Deutsches Patent- und Markenamt

(10) **DE 10 2009 049 738 A1** 2011.04.28

(12) # Offenlegungsschrift

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(71) Anmelder:
Logokett GmbH, 47877 Willich, DE

(74) Vertreter:
Patent- und Rechtsanwaltssozietät Maucher, Börjes & Kollegen, 79102 Freiburg

(72) Erfinder:
Brenner, Rainer, 79331 Teningen, DE

(56) Für die Beurteilung der Patentfähigkeit in Betracht gezogene Druckschriften:

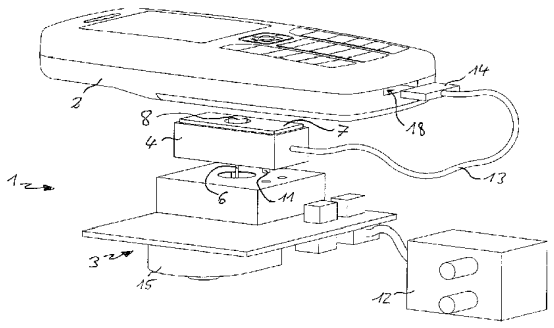
US	**2007/01 52 819**	**A1**
DE	**92 03 980**	**U1**
AT	**5 06 665**	**A1**

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

Prüfungsantrag gemäß § 44 PatG ist gestellt.

(54) Bezeichnung: **Vorrichtung zur Sicherung von Gegenständen**

(57) Zusammenfassung: Eine Vorrichtung (1) zur Sicherung von Gegenständen (2), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, weist eine Basiseinheit (3) und eine Sensoreinheit (4) auf, die über eine einen Lichtwellenleiter aufweisende Sicherungsleine (6) miteinander verbunden sind. Die Sensoreinheit (4) weist eine Elektronikeinheit (5) auf, die einen durch den Gegenstand (2) in einer den Gegenstand (2) beaufschlagenden Verbindungsposition betätigten Taster (8) und/oder eine elektrische Verbindungsleitung (13) zum Verbinden mit einer elektrischen Anschlussbuchse (18) des Gegenstandes (2) aufweist. Die Sensoreinheit (4) weist einen optischen Sender (9) und die Basiseinheit (3) einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine (6) auf und es ist ein bei Lösen des Tasters (8) und/oder bei Veränderung der Strom- und/oder Spannungswerte an der Verbindungsleitung (13) auslösbarer Signalgeber vorgesehen (Figur 1).



Beschreibung

[0001] Die Erfindung bezieht sich auf eine Vorrichtung zur Sicherung von Gegenständen, insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen.

[0002] Im Einzelhandel entsteht durch Diebstahl ein hoher Schaden, weswegen insbesondere hochwertige beziehungsweise hochpreisige und gleichzeitlich handliche Gegenstände, beispielsweise Mobiltelefone, MP3-Player oder dergleichen Elektro-Kleingeräte, aber auch Gegenstände wie Parfümflaschen, üblicherweise gegen Diebstahl gesichert sind. Insbesondere betrifft dies Gegenstände in freier Präsentation, also Vorführgeräte, die der Kunde in die Hand nehmen soll oder als Tester ausgestellte Parfümflaschen.

[0003] Zur Sicherung derartiger Gegenstände werden häufig Leinensicherungen verwendet, bei denen der zu sichernde Gegenstand mit einer, gegebenenfalls aus einer Aufwickelbox ausgezogenen Leine verbunden wird. Dies bietet jedoch nur ein geringes Sicherheitsniveau, da die Leine mit vergleichsweise geringem Aufwand durchtrennt und der Gegenstand entfernt werden kann.

[0004] Es besteht daher insbesondere die Aufgabe, eine Vorrichtung der eingangs genannten Art zu schaffen, die ein erhöhtes Sicherheitsniveau ermöglicht.

[0005] Die erfindungsgemäße Lösung dieser Aufgabe besteht darin, dass eine Basiseinheit und eine Sensoreinheit vorgesehen sind, die über eine einen Lichtwellenleiter aufweisende Sicherungsleine miteinander verbunden sind, dass die Sensoreinheit eine Elektronikeinheit aufweist, die einen durch den Gegenstand in einer den Gegenstand beaufschlagenden Verbindungsposition betätigten Taster und/oder eine elektrische Verbindungsleitung zum Verbinden mit einer elektrischen Anschlußbuchse des Gegenstandes aufweist, dass die Sensoreinheit einen optischen Sender und die Basiseinheit einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine aufweist, und dass ein bei Lösen des Tasters und/oder bei Veränderung der Strom- und/oder Spannungswerte an der Verbindungsleitung auslösbarer Signalgeber vorgesehen ist.

[0006] Weist die Sensoreinheit einen Taster auf, wird die Sensoreinheit zur Sicherung des Gegenstandes mit dem Gegenstand verbunden, derart, dass der Taster in dieser Verbindungsposition betätigt ist. Mit Hilfe des Tasters kann so ein Diebstahlversuch durch Trennen des Gegenstandes von der Sensoreinheit erkannt und ein Alarm über den Signalgeber ausgelöst werden. Ebenso kann der Signalgeber ausgelöst werden, wenn eine elektrische Verbindungsleitung zwischen Gegenstand und Sensoreinheit getrennt wird, was als Sabotage- oder Diebstahlversuch interpretiert werden kann. Somit lassen sich elektronische Gegenstände, beispielsweise Mobiltelefone, MP3-Player, Navigationsgeräte etc., die eine geeignete Anschlußbuchse, beispielsweise eine USB- oder auch eine gerätespezifische Schnittstelle, aufweisen, absichern.

[0007] Die an der Sensoreinheit anfallende Information über das Auslösen des Tasters oder der Veränderung der elektrischen Signalwerte der Verbindungsleitung wird mit Hilfe der optischen Signalübertragungseinrichtung an die Basiseinheit weitergeleitet, die ihrerseits mit dem Signalgeber zur Alarmsignalisierung in Wirkverbindung steht.

[0008] Die Sicherungsleine erfüllt zwei Funktionen. Einerseits die mechanische Verbindung zwischen Basiseinheit und Sensoreinheit und damit dem zu sichernden Gegenstand, andererseits die Signalübertragung zwischen Sensoreinheit und Basiseinheit mittels des Lichtwellenleiters.

[0009] Die erfindungsgemäße Vorrichtung besitzt gegenüber vorbekannten Sicherungseinrichtungen auch den Vorteil einer reduzierten Störanfälligkeit, da die opto-elektronische Signalübertragungseinrichtung praktisch verschleißfrei arbeitet.

[0010] Die beiden Sicherungsmerkmale – Taster und elektrische Verbindungsleitung – können jeweils separat oder in Kombination miteinander an einer Sicherungs-Vorrichtung vorgesehen sein. Wenn kein Taster vorgesehen ist, ist eine Beaufschlagung des zu sichernden Gegenstandes durch die Sensoreinheit nicht notwendig, sondern es reicht eine Verbindung über die elektrische Verbindungsleitung aus. Die Sensoreinheit kann in diesem Falle separat beispielsweise an einem Verkaufsregal angeordnet sein.

[0011] Die Elektronikeinheit der Sensoreinheit kann eine Knopfzelle oder dergleichen kleine Batterie zur Spannungsversorgung aufweisen. Eine bevorzugte Ausführungsform sieht jedoch vor, dass die Elektronikeinheit einen Kondensator oder dergleichen Spannungspuffer als Ladungsspeicher aufweist, dass die Sensoreinheit und die Basiseinheit jeweils elektrische Kontaktierungen aufweisen, die in einer Ruheposition miteinander elektrisch leitend verbunden sind, und dass die Basiseinheit eine Stromversorgungseinrichtung zum Laden des Ladungsspeichers der Elektronikeinheit in Ruheposition der Sensoreinheit aufweist.

[0012] Somit ist die Elektronikeinheit stets betriebsbereit und es müssen keine Batterien überprüft und

ausgewechselt werden. Zudem kann bei Sicherung von elektronischen Geräten über die elektrischen Kontaktierungen und die vorbeschriebene elektrische Verbindungsleitung zum Gegenstand dessen Akku permanent geladen werden, wenn die Sensoreinheit in der Basiseinheit eingesetzt ist, so dass der Gegenstand, beispielsweise ein Mobiltelefon, stets betriebsbereit zu Vorführzwecken präsentiert werden kann.

[0013] Eine Ausführungsform der erfindungsgemäßen Vorrichtung zur Sicherung von Gegenständen, für die eigenständiger Schutz beansprucht wird sieht vor, dass eine Basiseinheit und eine Sensoreinheit vorgesehen sind, die über eine einen Lichtwellenleiter aufweisende Sicherungsleine miteinander verbunden sind, dass ein Ende des Lichtwellenleiters an der in einer den Gegenstand beaufschlagenden Verbindungsposition an dem zu sichernden Gegenstand anliegenden Seite der Sensoreinheit mündet und das andere Ende des Lichtwellenleiters mit einem optischen Empfänger in der Basiseinheit verbunden ist, und dass ein mit dem optischen Empfänger in Wirkverbindung stehender Signalgeber vorgesehen ist.

[0014] Die Sensoreinheit wird so mit dem Gegenstand verbunden, dass das freie Ende des Lichtwellenleiters durch den Gegenstand abgedeckt ist. Somit kann kein Licht in den Lichtwellenleiter dringen. Wenn die Sensoreinheit jedoch von dem Gegenstand entfernt wird oder die Sicherungsleine mit dem Lichtwellenleiter durchtrennt wird, so liegt ein Ende des Lichtwellenleiters offen und es kann Licht auf diesen Fallen, was an dem optischen Empfänger in der Basiseinheit registriert wird. Der Lichteinfall kann als Sabotage- oder Diebstahlversuch interpretiert und der Signalgeber ausgelöst werden. Somit ist eine einfache und kostengünstige, aber dennoch effektive Diebstahlsicherung gebildet. Die Sensoreinheit erfüllt die Aufgabe der Befestigung an dem zu sichernden Gegenstand und die Aufnahme des Endes des Lichtwellenleiters, so dass diese klein und unauffällig ausgebildet sein kann und eine optisch ansprechende Warenpräsentation mit der Sicherungs-Vorrichtung möglich ist.

[0015] Um Fehlalarme durch Streulicht oder sonstige geringfügige Lichteinflüsse zu verhindern ist es zweckmäßig, wenn dem optischen Empfänger eine Auswerteeinrichtung mit einem Speicher für einen Referenzwert und einem Komparator zum Vergleichen eines mit dem optischen Empfänger gemessenen Messwertes und dem Referenzwert zugeordnet ist. Die Auswerteeinrichtung kann so konfiguriert sein, dass der Signalgeber erst ausgelöst wird, wenn der Messwert, also die am Lichtwellenleiter und dem optischen Empfänger einfallende Lichtmenge einen Referenzwert übersteigt, während bei nur schwachen und/oder sehr kurzzeitigen Lichteinfällen noch keine Signalgebung erfolgt.

[0016] Die Sicherungsleine kann ein den Lichtwellenleiter umgebendes Metallgeflecht aufweisen. Dieses dient einerseits zur erhöhten mechanischen Stabilität bei hohen Zugbelastungen oder Bewegungen und andererseits als Sabotage- und Diebstahlschutz gegen ein Abreißen oder Durchschneiden der Sicherungsleine.

[0017] Die Sicherungsleine kann als glatte Leine oder in der Art eines Spiralkabels ausgebildet sein. Es ist auch möglich, dass die Sicherungsleine in einer Aufwickeleinrichtung unter Zugspannung aufwickelbar ist. Dabei ist die Sicherungsleine in Ruhelage innerhalb der Aufwickeleinrichtung untergebracht und die optische Präsentation des zu sichernden Gegenstandes ist nicht durch die Sicherungsleine beeinträchtigt. Dies ist insbesondere vorteilhaft bei einer Vielzahl von Gegenständen, die beispielsweise nebeneinander auf einem Regal angeordnet sind.

[0018] Der Signalgeber kann insbesondere ein akustischer und/oder optischer Signalgeber sein, um eine auffällige Signalisierung eines Diebstahl- oder Sabotageversuchs anzuzeigen.

[0019] Um verschiedenartige Gegenstände mit unterschiedlichen Formgebungen sichern zu können, ist es zweckmäßig, wenn die Sensoreinheit ein formbares Adapterteil zur Anpassung an unterschiedliche zu sichernde Gegenstände aufweist.

[0020] Um den zu sichernden Gegenstand schnell und einfach mit der Sensoreinheit zu verbinden ist es vorteilhaft, wenn die Sensoreinheit eine Klebefläche zur Verbindung mit dem Gegenstand aufweist. Alternativ kann beispielsweise eine Klemm- oder Schraubverbindung vorgesehen sein. Denkbar sind auch Verbindungen mittels Kabelbindern oder dergleichen Befestigungsmaterial.

[0021] Die erfindungsgemäße Vorrichtung kann für verschiedene Präsentationsformen vorgesehen und ausgebildet sein, beispielsweise für eine Frontmontage an der Vorderkante eines Regalbodens mittels einer Schraubfixierung der Basiseinheit, als frei aufstellbare Vorrichtung auf Tischen, Regalböden oder Produktkartons, oder auch zur Frontmontage auf Schräg-/Senkrecht-Displays mittels Klebe- oder Schraubbefestigung.

[0022] Die erfindungsgemäße Vorrichtung kann gegebenenfalls auch für eine bidirektionale Datenübertragung über den Lichtwellenleiter der Sicherungsleine ausgebildet sein, um beispielsweise Steuersignale von der Basisstation an die Sensoreinheit zu übertragen. Hierzu können in der Basiseinheit ein zusätzlicher optischer Sender und in der Sensoreinheit ein optischer Empfänger vorgesehen sein.

[0023] Nachstehend sind Ausführungsbeispiele der erfindungsgemäßen Vorrichtung anhand der Zeichnungen näher erläutert. Es zeigt zum Teil schematisiert:

[0024] Fig. 1 eine perspektivische Ansicht einer Sicherungs-Vorrichtung mit einem Taster und einer elektrischen Verbindungsleitung zur Sicherung eines Mobiltelefons,

[0025] Fig. 2 eine Schnittdarstellung der Anordnung aus Fig. 1 und

[0026] Fig. 3 eine Sicherungs-Vorrichtung mit einem durch den zu sichernden Gegenstand endseitig verdeckbaren Lichtwellenleiter.

[0027] Eine im Ganzen mit **1** bezeichnete Vorrichtung zur Sicherung von Gegenständen **2** gegen unbefugtes Mitnehmen weist gemäß Fig. 1 eine Basiseinheit **3** und eine an dem zu sichernden Gegenstand **2** anbringbare Sensoreinheit **4** auf. Basiseinheit **3** und Sensoreinheit **4** sind über eine einen Lichtwellenleiter aufweisende Sicherungsleine **6** miteinander verbunden. Die Basiseinheit **3** kann beispielsweise an einem Verkaufsregal fest installiert sein.

[0028] Die Sensoreinheit **4** weist zum Verbinden mit dem Gegenstand **2** eine Klebefläche **7** auf. Der Besseren Übersicht halber ist der Gegenstand **2** (Mobiltelefon) in den Figuren beabstandet zur Sensoreinheit **4** dargestellt. In Gebrauchslage liegt die Klebefläche **7** der Sensoreinheit **4** flächig am Gegenstand **2** an und stellt so eine feste Verbindung her.

[0029] Um bei der Vorrichtung **1** gemäß Fig. 1 und Fig. 2 ein Lösen des Gegenstandes **2** von der Sensoreinheit **4** zu erkennen und Alarm auslösen zu können, ist eine Elektronikeinheit **5** in der Sensoreinheit **4** vorgesehen (Fig. 2), der ein Taster **8** zugeordnet ist, der bei Beaufschlagung der Sensoreinheit **4** durch den Gegenstand **2** betätigt wird. Beim Lösen des Gegenstandes **2** von der Sensoreinheit **4** wird der Kontakt des Tasters **8** geöffnet und ein nicht dargestellter Signalgeber ausgelöst. Zur Übermittlung des Schaltzustandes des Tasters **8** an die Basiseinheit **3** und den Signalgeber ist in der Sensoreinheit **4** ein mit der Elektronikeinheit **5** und dem Taster **8** zusammenwirkender optischer Sender **9** und an der Basiseinheit **3** ein nicht dargestellter optischer Empfänger am Ende des Lichtwellenleiters der Sicherungsleine **6** vorgesehen, die mit dem Lichtwellenleiter der Sicherungsleine **6** eine optische Signalübertragungseinrichtung bilden.

[0030] Zur Spannungsversorgung der Elektronikeinheit **5** weist diese einen Ladungsspeicher **10** auf, der vorzugsweise ein Kondensator, aber auch ein Akku sein kann. Dieser Ladungsspeicher **10** wird über elektrische Kontaktierungen **11** an der Basiseinheit **3** und der Sensoreinheit **4** und eine Stromversorgungseinrichtung **12** (Fig. 1) in einer Ruheposition, in der die Sensoreinheit **4** auf der Basiseinheit **3** aufliegt, geladen.

[0031] Gemäß Fig. 1 und Fig. 2 ist eine elektrische Verbindungsleitung **13** zum Verbinden der Elektronikeinheit **5** mit dem Gegenstand **2**, hier ein Mobiltelefon, vorgesehen. Über diese Verbindungsleitung **13** kann einerseits ein Akku des zu sichernden Gegenstandes **2** geladen werden. Hierzu wird die Stromversorgungseinrichtung **12** über die Kontaktierungen **11** an die Verbindungsleitung **13** durchverbunden. In Ruheposition der Sensoreinheit **4** und bei miteinander verbundenen Kontaktierungen **11** wird der Akku des Gegenstandes **2** geladen, so dass der Gegenstand **2** stets betriebs- und vorführbereit ist.

[0032] Andererseits kann die Elektronikeinheit **5** zur Überwachung der Strom- und oder Spannungswerte an der Verbindungsleitung **13** ausgebildet sein. Wenn der Stecker **14** der Verbindungsleitung **13** von dem Gegenstand **2** getrennt wird, also aus der Anschlußbuchse **18** abgezogen wird, so ändern sich die Signale an der Verbindungsleitung **13** und die Elektronikeinheit **5** kann dies als unerlaubte Manipulation oder Diebstahlversuch interpretieren und über die Signalübertragungseinrichtung den Signalgeber auslösen.

[0033] Bei der Vorrichtung **1b** gemäß Fig. 3 mündet ein Ende **17** der den Lichtwellenleiter aufweisenden Sicherungsleine **6** an der Seite der Sensoreinheit **4**, die in einer Verbindungsposition den zu sichernden Gegenstand **2** beaufschlägt. Das freie Ende **17** des Lichtwellenleiters wird so in der Verbindungsposition von dem Gegenstand **2** abgedeckt, so dass kein Licht in den Lichtwellenleiter eindringen kann. Wenn der Gegenstand **2** jedoch beim Versuch, den Gegenstand **2** zu stehlen, von der Sensoreinheit **4** getrennt wird, wie in Fig. 3 gezeigt, so fällt Umgebungslicht auf das Ende **17** der Sicherungsleine **6** und dessen Lichtwellenleiter, was an einem nicht dargestellten optischen Empfänger der Basiseinheit **3** erkannt wird, woraufhin der Signalgeber ausgelöst werden kann.

[0034] Zusätzlich ist in der Anordnung gemäß Fig. 3 eine elektrische Verbindungsleitung **13** vorgesehen, mit der ein Akku des Gegenstands **2** geladen werden kann, wenn die Sensoreinheit **4** in einer Ruheposition mit der Basiseinheit **3** verbunden ist und mit den Kontaktierungen **11** eine leitende Verbindung zu einer in **Fig.** 4 nicht dargestellten Stromversorgungseinrichtung hergestellt ist.

[0035] In den Figuren ist jeweils noch eine Aufwickeleinrichtung **15** erkennbar, mit der die Sicherungsleine unter Zugspannung aufwickelbar ist, so dass diese in Ruhelage der Sensoreinheit **4** und des Gegenstandes **2** stets geordnet und nicht sichtbar untergebracht ist, wodurch sich eine optisch ansprechen-

de Warenpräsentation ohne störende Sicherungsleinen ergibt. Zum Vorführen oder Ausprobieren des gesicherten Gegenstandes **2** kann dieser jedoch einfach ergriffen und die Sicherungsleine **6** dabei gegen die Zugkraft aus der Aufwickeleinrichtung **15** herausgezogen werden.

Patentansprüche

1. Vorrichtung (**1**) zur Sicherung von Gegenständen (**2**), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, **dadurch gekennzeichnet**, dass eine Basiseinheit (**3**) und eine Sensoreinheit (**4**) vorgesehen sind, die über eine einen Lichtwellenleiter aufweisende Sicherungsleine (**6**) miteinander verbunden sind, dass die Sensoreinheit (**4**) eine Elektronikeinheit (**5**) aufweist, die einen durch den Gegenstand (**2**) in einer den Gegenstand (**2**) beaufschlagenden Verbindungsposition betätigten Taster (**8**) und/oder eine elektrische Verbindungsleitung (**13**) zum Verbinden mit einer elektrischen Anschlußbuchse (**18**) des Gegenstandes (**2**) aufweist, dass die Sensoreinheit (**4**) einen optischen Sender (**9**) und die Basiseinheit (**3**) einen optischen Empfänger zur Bildung einer optischen Signalübertragungseinrichtung mit dem Lichtwellenleiter der Sicherungsleine (**6**) aufweist, und dass ein bei Lösen des Tasters (**8**) und/oder bei Veränderung der Strom- und/oder Spannungswerte an der Verbindungsleitung (**13**) auslösbarer Signalgeber vorgesehen ist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Elektronikeinheit (**5**) einen Kondensator oder dergleichen Spannungspuffer als Ladungsspeicher aufweist, dass die Sensoreinheit (**4**) und die Basiseinheit (**3**) jeweils elektrische Kontaktierungen (**11**) aufweisen, die in einer Ruheposition miteinander elektrisch leitend verbunden sind, und dass die Basiseinheit (**3**) eine Stromversorgungseinrichtung (**12**) zum Laden des Ladungsspeichers der Elektronikeinheit (**5**) in Ruheposition der Sensoreinheit (**4**) aufweist.

3. Vorrichtung (**1b**) zur Sicherung von Gegenständen (**2**), insbesondere ausgestellten Waren, gegen unbefugtes Mitnehmen, dadurch gekennzeichnet, dass eine Basiseinheit (**3**) und eine Sensoreinheit (**4**) vorgesehen sind, die über eine einen Lichtwellenleiter aufweisende Sicherungsleine (**6**) miteinander verbunden sind, dass ein Ende (**17**) des Lichtwellenleiters an der in einer den Gegenstand (**2**) beaufschlagenden Verbindungsposition an dem zu sichernden Gegenstand (**2a**) anliegenden Seite der Sensoreinheit (**4**) mündet und das andere Ende des Lichtwellenleiters mit einem optischen Empfänger in der Basiseinheit (**3**) verbunden ist, und dass ein mit dem optischen Empfänger in Wirkverbindung stehender Signalgeber vorgesehen ist.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, dass dem optischen Empfänger eine Auswerteeinrichtung mit einem Speicher für einen Referenzwert und einem Komparator zum Vergleichen eines mit dem optischen Empfänger gemessenen Messwertes und dem Referenzwert zugeordnet ist.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, dass die Sicherungsleine (**6**) ein den Lichtwellenleiter umgebendes Metallgeflecht aufweist.

6. Vorrichtung nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, dass die Sicherungsleine (**6**) in einer Aufwickeleinrichtung (**15**) unter Zugspannung aufwickelbar ist.

Es folgen 3 Blatt Zeichnungen

Anhängende Zeichnungen

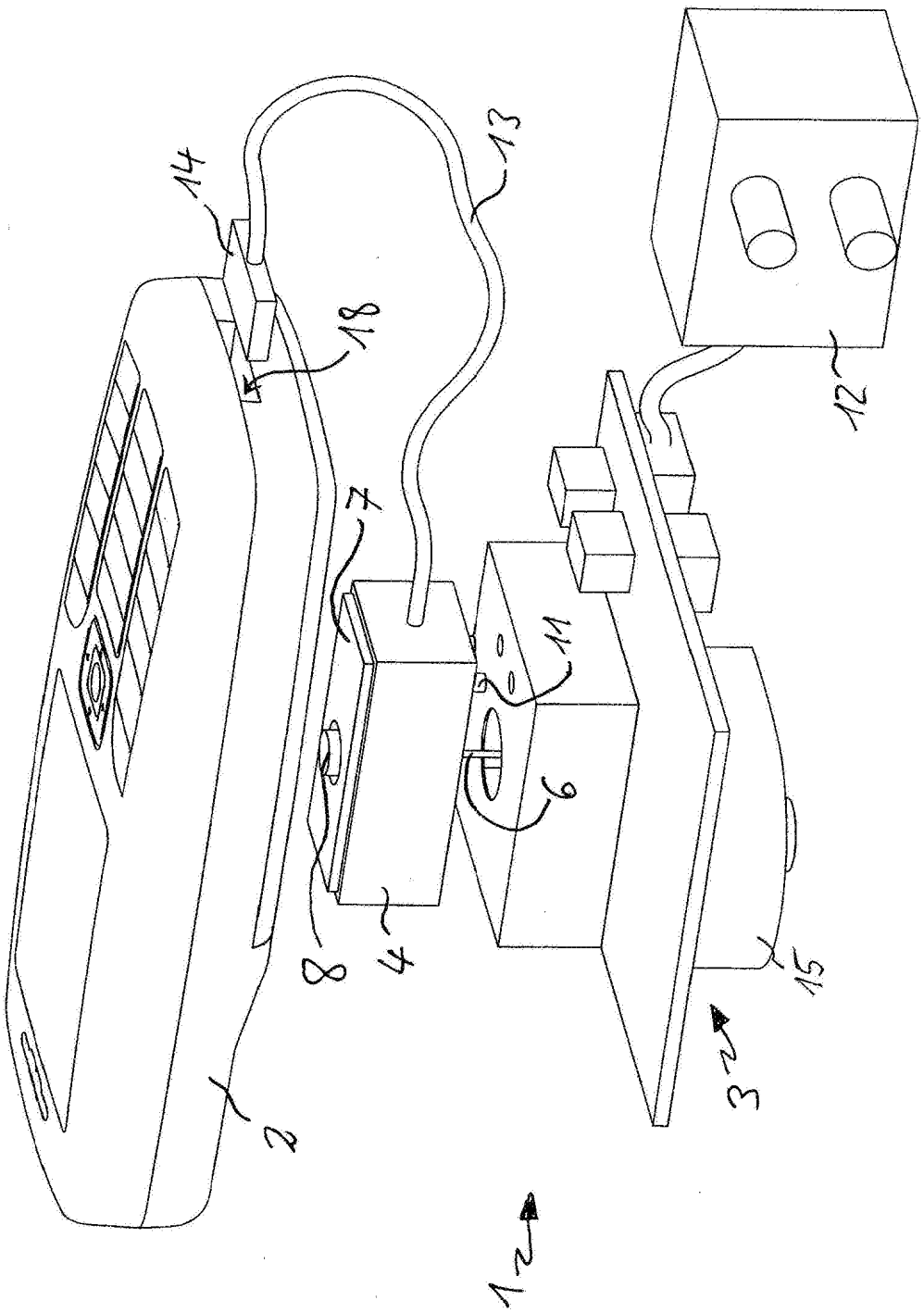


Fig. 1

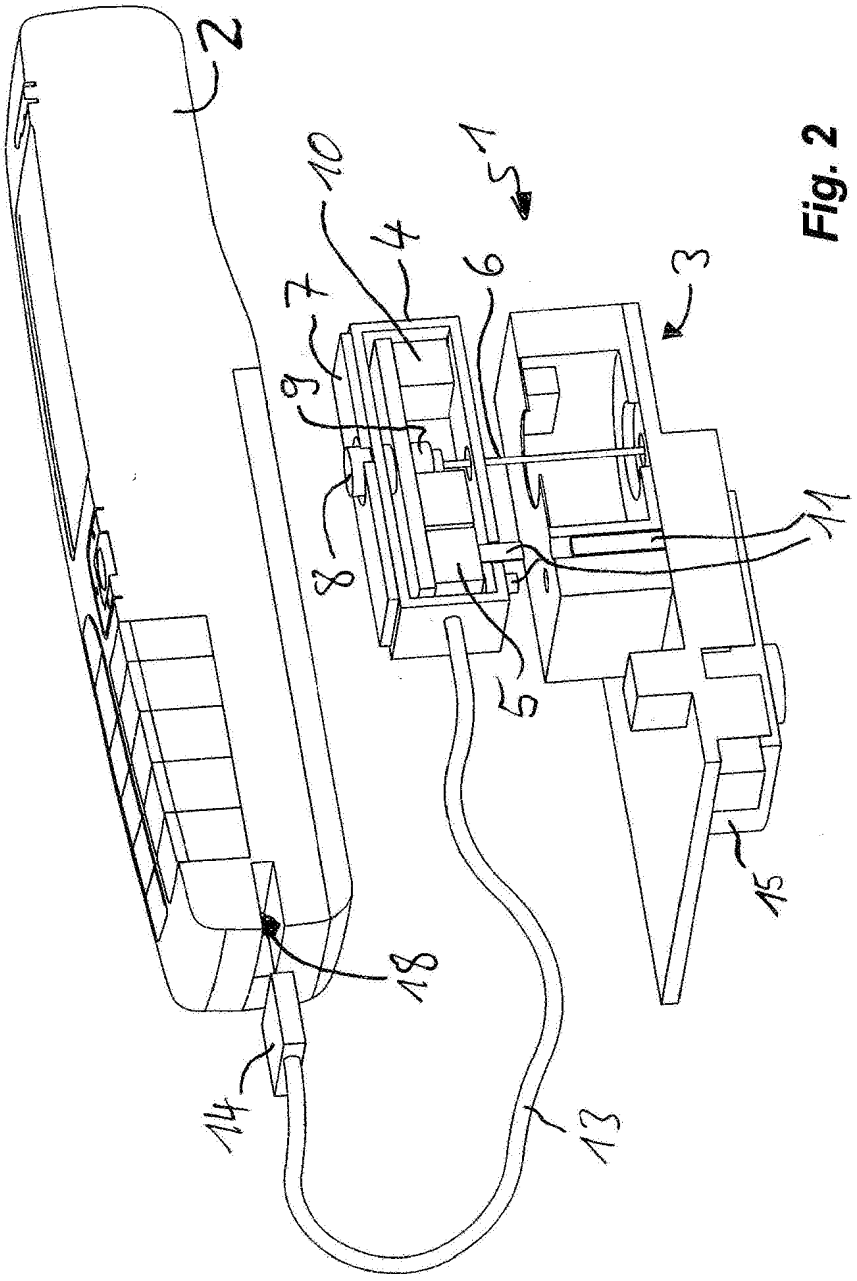


Fig. 2

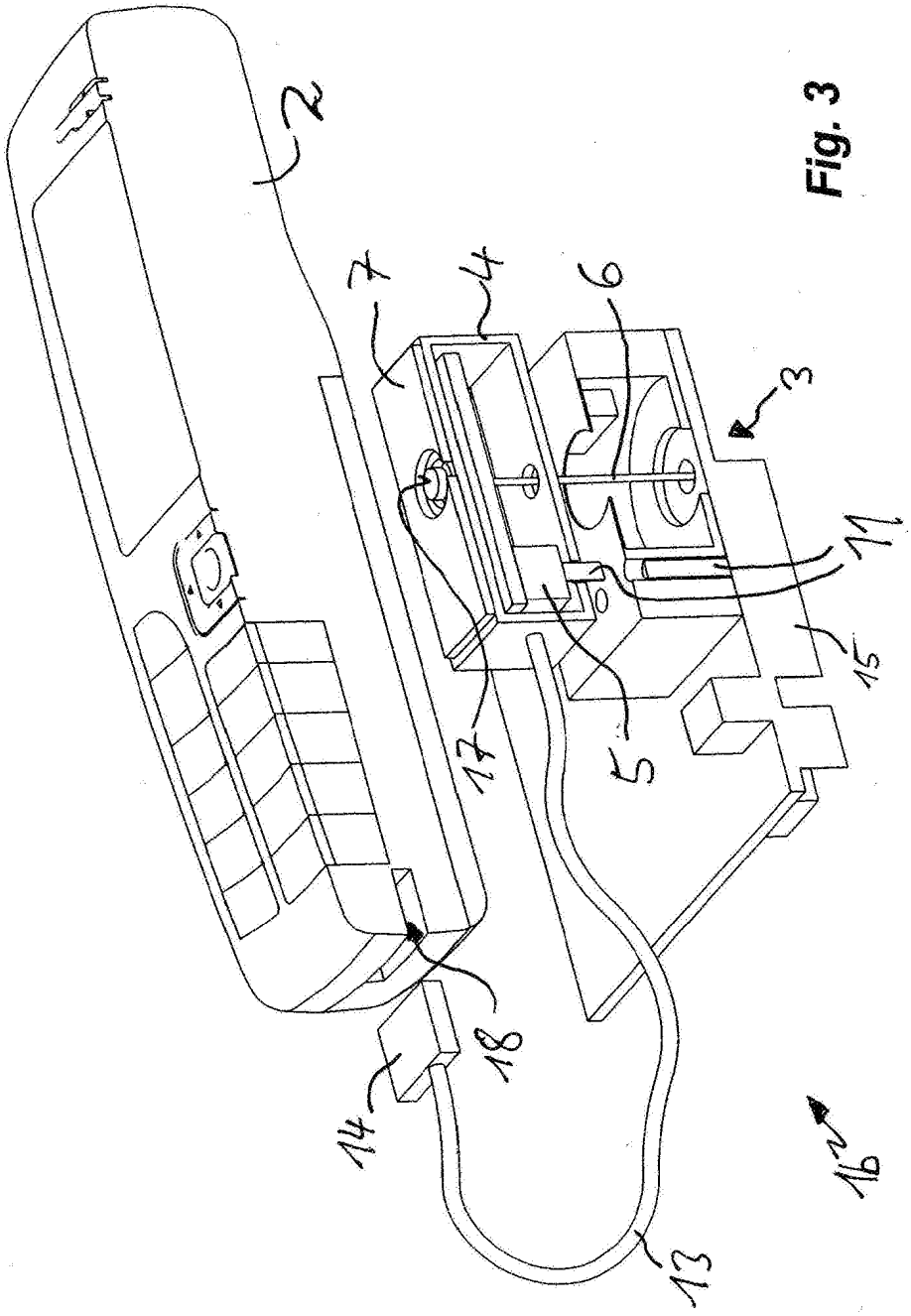


Fig. 3

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(71) Applicant:
Logokett GmbH, 47877 Willich, DE

(74) Representative:
Patent- und Rechtsanwaltssozietät Maucher, Börjes & Kollegen, 79102 Freiburg

(72) Inventor:
Brenner, Rainer, 79331 Teningen, DE

(56) Documents considered for the evaluation of patentability:

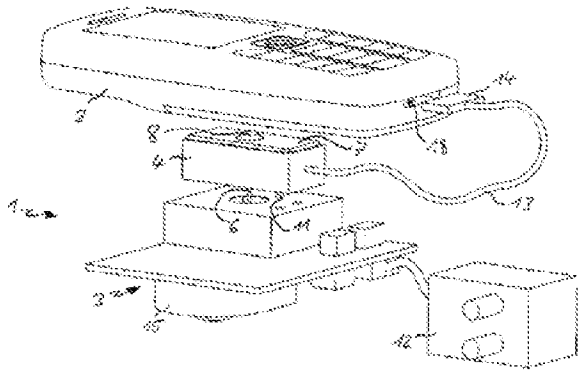
US	**2007/01 52 819**	**A1**
DE	**92 03 980**	**U1**
AT	**5 06 665**	**A1**

The following specifications have been taken from the documents submitted by the applicant.

Request for examination pursuant to § 44 PatG has been filed.

(54) Designation: **Apparatus for securing objects**

(57) Abstract: An apparatus (1) for securing objects (2), more particularly exhibited goods, against unauthorized taking, has a base unit (3) and a sensor unit (4), which are connected to each other by means of a securing tether (6) having an optical waveguide. The sensor unit (4) has an electronic unit (5), which has a push-button switch (8) that is actuated by the object (2) in a connection position in which the object (2) is acted upon and/or an electrical connecting line (13) for connecting to an electrical connection socket (18) of the object (2). The sensor unit (4) has an optical transmitter (9) and the base unit (3) has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether (6), and a signaling device is provided, which can be triggered when the push-button switch (8) is released and/or when the current and/or voltage values at the connecting line (13) change (figure 1).



Description

[0001] The invention relates to an apparatus for securing objects, more particularly exhibited goods, against unauthorized taking.

[0002] In retail, theft causes great losses, and therefore in particular high-value or high-priced objects which are also easy to handle, such as cellular telephones, MP3 players, or similar small electronic devices, but also objects such as perfume bottles, are typically secured against theft. In particular, this applies to objects that are freely presented, i.e., demonstration devices that the customer should hold or perfume bottles exhibited as samples.

[0003] In order to secure such objects, tether security systems are often used, in the case of which the object to be secured is connected to a tether, which is optionally pulled out from a winding box. However, this offers only a low level of security, because the tether can be severed relatively easily and the object can be removed.

[0004] Therefore, there exists, in particular, the problem of creating an apparatus of the type mentioned above that enables an increased level of security.

[0005] According to the invention, said problem is solved in that a base unit and a sensor unit are provided, which are connected to each other by means of a securing tether having an optical waveguide, the sensor unit has an electronic unit, which has a push-button switch that is actuated by the object in a connection position in which the object is acted upon and/or an electrical connecting line for connecting to an electrical connection socket of the object, the sensor unit has an optical transmitter and the base unit has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether, and a signaling device is provided, which can be triggered when the push-button switch is released and/or when the current and/or voltage values at the connecting line change.

[0006] If the sensor unit has a push-button switch, then, in order to secure the object, the sensor unit is connected to the object in such a way that the push-button switch is actuated in this connection position. By means of the push-button switch, a theft attempt by separating the object from the sensor unit can be detected, and an alarm can be triggered by means of the signaling device. The signaling device can also be triggered if an electrical connecting line between the object and the sensor unit is disconnected, which can be interpreted as a sabotage attempt or theft attempt. Thus, electronic objects, such as cellular telephones, MP3 players, and navigation devices, that have a suitable connection socket, such as a USB interface or a device-specific interface, can be secured.

[0007] The information regarding the triggering of the push-button switch or the change in the electrical signal values of the connecting line, which information arises at the sensor unit, is forwarded to the base unit by means of the optical signal transfer device, and the base unit in turn is operatively connected to the signaling device for alarm signaling.

[0008] The securing tether performs two functions: first, the mechanical connection between the base unit and the sensor unit and therefore the object to be secured; second, the signal transfer between the senor unit and the base unit by means of the optical waveguide.

[0009] In comparison with previously known securing devices, the apparatus according to the invention also has the advantage of reduced susceptibility to faults, because the optoelectronic signal transfer device operates practically without wear.

[0010] The two securing features – the push-button switch and the electrical connecting line – can be provided separately or in combination with each other on a securing apparatus. If a push-button switch is not provided, it is not necessary that the sensor unit acts upon the object to be secured; rather, a connection by means of the connecting line is sufficient. In this case, the sensor unit can be arranged separate, for example on a sales rack.

[0011] The electronic unit of the sensor unit can have a button cell or similar small battery for supplying voltage. However, in a preferred embodiment, the electronic unit has a capacitor or similar voltage buffer as a charge store, the sensor unit and the base unit each have electrical contact elements, which are connected to each other in an electrically conductive manner in a resting position, and the base unit has a power supply device for charging the charge store of the electronic unit in the resting position of the sensor unit.

[0012] Thus, the electronic unit is always ready for operation and no batteries have to be checked and replaced. In addition, when electronic devices are secured, the battery of the object can be continuously charged via the electrical contact elements and the aforementioned electrical connecting line to the object if the sensor unit is inserted in the base unit, so that the object, such as a cellular telephone, can be presented in such a way that the object is always ready for operation for demonstration purposes.

[0013] One embodiment of the apparatus for securing objects according to the invention, for which embodiment independent protection is claimed, provides that a base unit and a sensor unit are provided, which are connected to each other by means of a securing tether having an optical waveguide, that one end of the optical waveguide leads to the side of the sensor unit that lies against the object to be secured in a connection position in which the object is acted upon and the other end of the optical waveguide is connected to an optical receiver in the base unit, and that a signaling device operatively connected to the optical receiver is provided.

[0014] The sensor unit is connected to the object in such a way that the free end of the optical waveguide is covered by the object. Thus, no light can enter the optical waveguide. However, if the sensor unit is removed from the object or the securing tether having the optical waveguide is severed, one end of the optical waveguide is open and light can hit said end, and this is registered at the optical receiver in the base unit. The incidence of light can be interpreted as a sabotage attempt or theft attempt and the signaling device can be triggered. Thus, a simple and economical yet effective theft protection system is formed. The sensor unit fulfils the task of fastening to the object to be secured and of accommodating the end of the optical waveguide, and therefore the sensor unit can be designed small and inconspicuous and goods can be presented in a visually appealing manner with the securing apparatus.

[0015] In order to prevent false alarms caused by scattered light or other minor light influences, it is advantageous if an evaluating device having a store for a reference value and a having a comparator for comparing a measurement value measured by means of the optical receiver and the reference value is associated with the optical receiver. The evaluating device can be configured in such a way that the signaling device is not triggered until the measurement value, i.e., the amount of light incident on the optical waveguide and on the optical receiver, exceeds a reference value, while signaling does not occur in the case of only weak and/or very brief incidence of light.

[0016] The securing tether can have a metal braid surrounding the optical waveguide. The metal braid provides increased mechanical stability in the case of high tensile loads or movements and provides sabotage protection and theft protection against the tearing off or cutting of the securing tether.

[0017] The securing tether can be designed as a smooth tether or in the manner of a spiral cable. It is also possible that the securing tether can be wound in a winding device under tensile stress. In this case, the securing tether is accommodated in the winding device in the resting position and the visual presentation of the object to be secured is not impaired by the securing tether. This is advantageous particularly in the case of a large number of objects, which, for example, are arranged adjacent to each other on a rack.

[0018] In particular, the signaling device can be an acoustic and/or optical signaling device in order to provide conspicuous signaling of a theft attempt or sabotage attempt.

[0019] So that objects of various kinds, having different shapes, can be secured, it is advantageous if the sensor unit has a shapeable adapter part for adapting to different objects to be secured.

[0020] In order to connect the object to be secured to the sensor unit quickly and easily, it is advantageous if the sensor unit has an adhesive surface for connecting to the object. Alternatively, a clamping connection or threaded connection, for example, can be provided. Connections by means of cable ties or similar fastening material are also conceivable.

[0021] The apparatus according to the invention can be provided and designed for various presentation forms, for example for front mounting on the front edge of a shelf by means of threaded fastening of the base unit, as a freely positionable apparatus on tables, shelves, or product boxes, or for front mounting on angled/vertical displays by means of adhesive fastening or threaded fastening.

[0022] The apparatus according to the invention can optionally also be designed for bidirectional data transfer via the optical waveguide of the securing tether, in order, for example, to transfer control signals from the base station to the sensor unit. For this purpose, an additional optical transmitter can be provided in the base unit and an optical receiver can be provided in the sensor unit.

[0023] Below, exemplary embodiments of the apparatus according to the invention are explained in greater detail on the basis of the drawings. The drawings show the following, with partial schematization:

[0024] **Figure 1**: a perspective view of a securing apparatus, having a push-button switch and an electrical connecting line, for securing a cellular telephone.

[0025] **Figure 2**: a sectional illustration of the assembly from **figure 1**.

[0026] **Figure 3**: a securing apparatus, having an optical waveguide, which can be covered up at an

end of the optical waveguide by the object to be secured.

[0027] According to **figure 1**, an apparatus for securing objects **2** against unauthorized taking, which apparatus as a whole is labeled as **1**, has a base unit **3** and a sensor unit **4** that can be attached to the object **2** to be secured. The base unit **3** and the sensor unit **4** are connected to each other by means of a securing tether **6** having an optical waveguide. The base unit **3** can, for example, be fixedly installed on a sales rack.

[0028] The sensor unit **4** has an adhesive surface **7** for connecting to the object **2**. For the sake of clarity, the object **2** (cellular telephone) is shown spaced apart from the sensor unit **4** in the drawings. In the usage position, the adhesive surface **7** of the sensor unit **4** lies against the object **2** over an area and thus establishes a fixed connection.

[0029] In order to be able to detect a detachment of the object **2** from the sensor unit **4** and to trigger an alarm in the case of the apparatus **1** according to **figure 1** and **figure 2**, an electronic unit **5** is provided in the sensor unit **4** (**figure 2**), with which electronic unit **5** a push-button switch **8** is associated, which is actuated when the object **2** acts upon the sensor unit **4**. When the object **2** is detached from the sensor unit **4**, the contact of the push-button switch **8** is opened and a signaling device, which is not shown, is triggered. In order to transfer the switching state of the push-button switch **8** to the base unit **3** and the signaling device, an optical transmitter **9**, which interacts with the electronic unit **5** and the push-button switch **8**, is provided in the sensor unit **4** and, at the base unit **3**, an optical receiver, which is not shown, is provided at the end of the optical waveguide of the securing tether **6**, and said optical transmitter **9** and said optical receiver form an optical signal transfer device with the optical waveguide of the securing tether **6**.

[0030] In order to supply voltage to the electronic unit **5**, the electronic unit **5** has a charge store **10**, which can be preferably a capacitor, or also an accumulator. Said charge store **10** is charged by means of electrical contact elements **11** on the base unit **3** and on the sensor unit **4** and by means of a power supply device **12** (**figure 1**) in a resting position, in which the sensor unit **4** lies on the base unit **3**.

[0031] According to **figure 1** and **figure 2**, an electrical connecting line **13** is provided for connecting the electronic unit **5** to the object **2**, here a cellular telephone. Firstly, an accumulator of the object **2** to be secured can be charged via said connecting line **13**. For this purpose, the power supply device **12** is connected to the connecting line **13** by means of the contact elements **11**. In the resting position of the sensor unit **4** and with the contact elements **11** connected to each other, the accumulator of the object **2** is charged so that the object **2** is always ready for operation and demonstration.

[0032] Secondly, the electronic unit **5** can be designed to monitor the current and/or voltage values at the connecting line **13**. If the connector **14** of the connecting line **13** is disconnected from the object **2**, i.e., is pulled out of the connection socket **18**, the signals at the connecting line **13** change and the electronic unit **5** can interpret this as unpermitted manipulation or a theft attempt and can trigger the signaling device by means of the signal transfer device.

[0033] In the case of the apparatus **1b** according to **figure 3**, one end **17** of the securing tether **6** having the optical waveguide leads to the side of the sensor unit **4** that acts upon the object **2** to be secured in a connection position. The free end **17** of the optical waveguide is thus covered by the object **2** in the connection position so that no light can enter the optical waveguide. However, if the object **2** is disconnected from the sensor unit **4** in an attempt to steal the object **2**, as shown in **figure 3**, ambient light hits the end **17** of the securing tether **6** and the optical waveguide of the securing tether **6**, and this is detected at an optical receiver (not shown) of the base unit **3**, and the signaling device can be triggered as a result.

[0034] In addition, in the assembly according to **figure 3**, an electrical connecting line **13** is provided, by means of which an accumulator of the object **2** can be charged when the sensor unit **4** is connected to the base unit **3** in a resting position and a conductive connection to a power supply device, which is not shown in **figure 3**, is established by means of the contact elements **11**.

[0035] A winding device **15** can also be seen in the drawings, by means of which the securing tether can be wound under tensile stress so that the securing tether is always accommodated in an orderly and concealed manner in the resting position of the sensor unit **4** and of the object **2**, resulting in a visually appealing presentation of goods without disturbing securing tethers. However, in order to demonstrate or try out the secured object **2**, the secured object **2** can be simply grabbed and the securing tether **6** can be pulled out of the winding device **15** against the tensile force.

Claims

1. An apparatus (**1**) for securing objects (**2**), more particularly exhibited goods, against unauthorized taking, **characterized in that** a base unit (**3**) and a sensor unit (**4**) are provided, which are connected to each other by means of a securing

tether (**6**) having an optical waveguide, that the sensor unit (**4**) has an electronic unit (**5**), which has a push-button switch (**8**) that is actuated by the object (**2**) in a connection position in which the object (**2**) is acted upon and/or an electrical connecting line (**13**) for connecting to an electrical connection socket (**18**) of the object (**2**), that the sensor unit (**4**) has an optical transmitter (**9**) and the base unit (**3**) has an optical receiver for forming an optical signal transfer device with the optical waveguide of the securing tether (**6**), and that a signaling device is provided, which can be triggered when the push-button switch (**8**) is released and/or when the current and/or voltage values at the connecting line (**13**) change.

2. The apparatus according to claim 1, characterized in that the electronic unit (**5**) has a capacitor or similar voltage buffer as a charge store, that the sensor unit (**4**) and the base unit (**3**) each have electrical contact elements (**11**), which are connected to each other in an electrically conductive manner in a resting position, and that the base unit (**3**) has a power supply device (**12**) for charging the charge store of the electronic unit (**5**) in the resting position of the sensor unit (**4**).

3. An apparatus (**1b**) for securing objects (**2**), more particularly exhibited goods, against unauthorized taking, characterized in that a base unit (**3**) and a sensor unit (**4**) are provided, which are connected to each other by means of a securing tether (**6**) having an optical waveguide, that one end (**17**) of the optical waveguide leads to the side of the sensor unit (**4**) that lies against the object (**2a**) to be secured in a connection position in which the object (**2**) is acted upon and the other end of the optical waveguide is connected to an optical receiver in the base unit (**3**), and that a signaling device operatively connected to the optical receiver is provided.

4. The apparatus according to claim 3, characterized in that an evaluating device having a store for a reference value and a having a comparator for comparing a measurement value measured by means of the optical receiver and the reference value is associated with the optical receiver.

5. The apparatus according to one of claims 1 to 4, characterized in that the securing tether (**6**) has a metal braid that surrounds the optical waveguide.

6. The apparatus according to one of claims 1 to 5, characterized in that the securing tether (**6**) can be wound in a winding device (**15**) under tensile stress.

Three pages of drawings follow.

Attached drawings

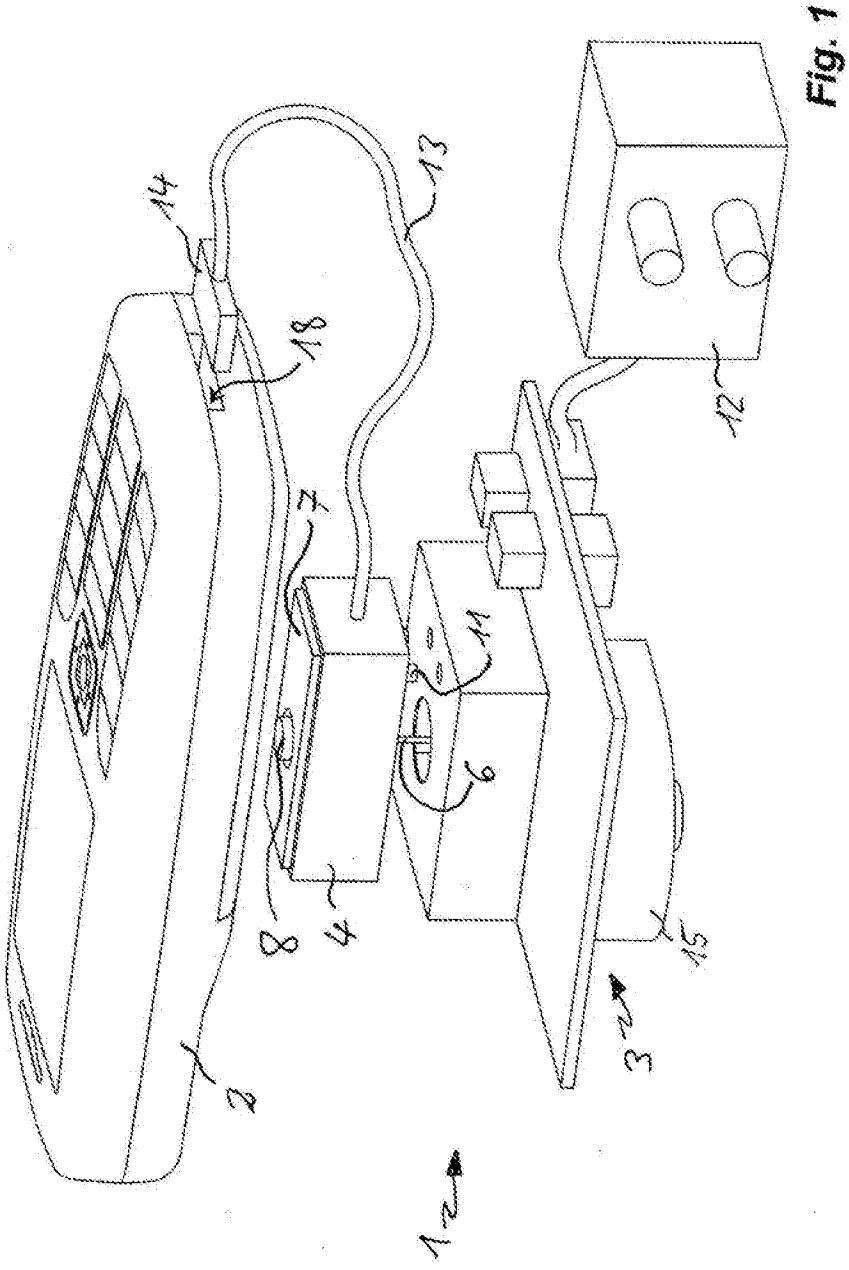


Fig. 1

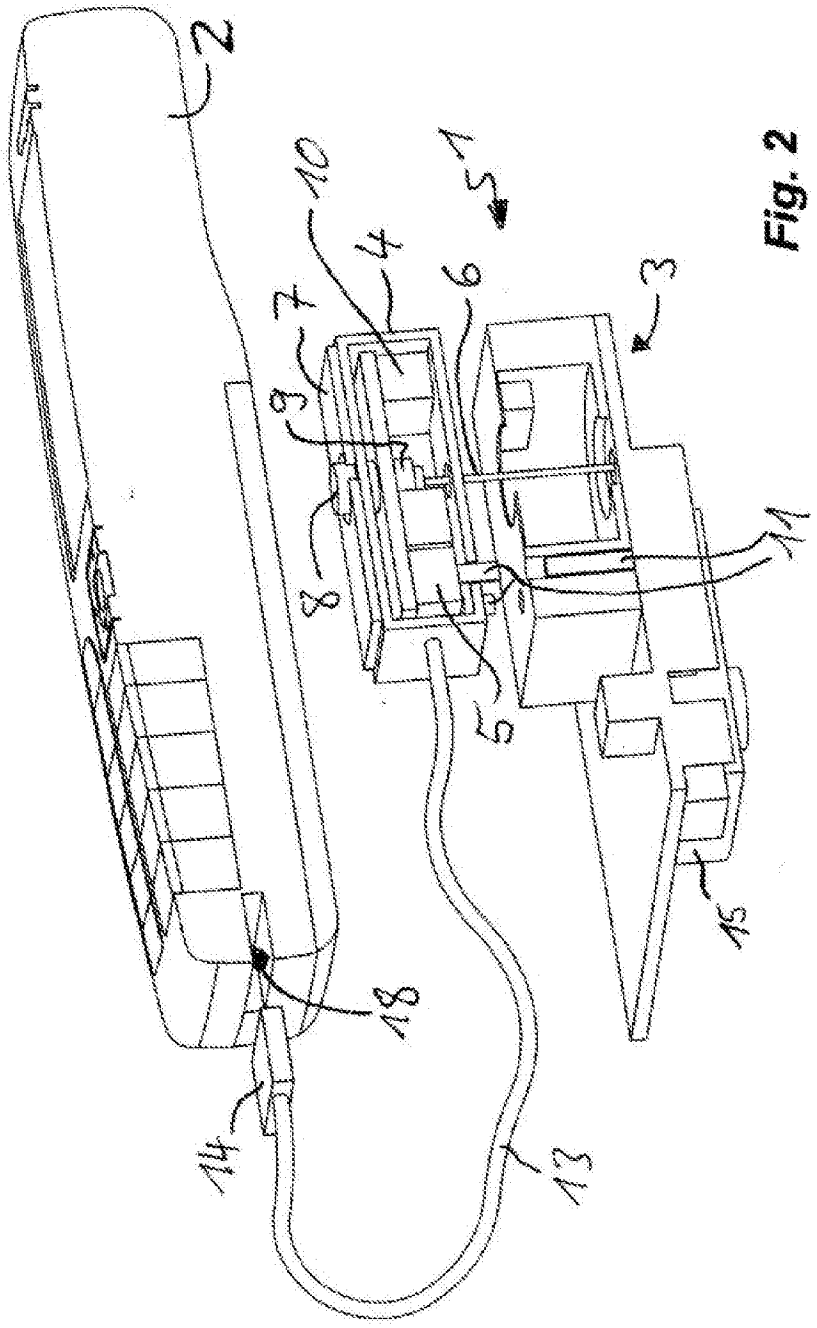


Fig. 2

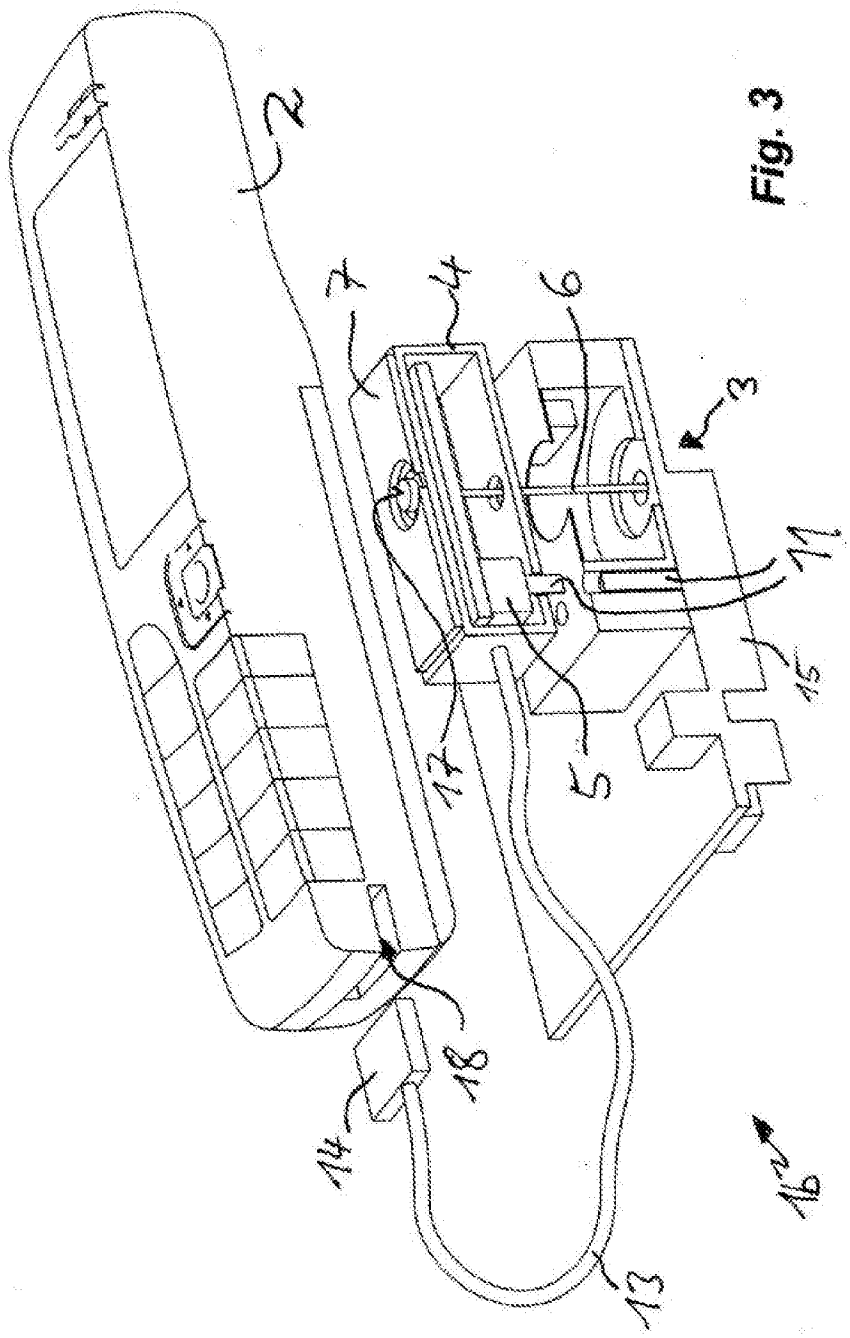


Fig. 3

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: Trent A. Kirk
Invue Security Products Inc.
15015 Lancaster Highway
Charlotte, NC 28277
United States of America

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference P1232D/PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US16/56239	International filing date *(day/month/year)* 10 October 2016 (10.10.2016)
Applicant INVUE SECURITY PRODUCTS INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally twomonths from the date of transmittal of the international search report.

   How? Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.
   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparationfor international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phas**until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filedwithin 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **19 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45 *bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Shane Thomas Telephone No. PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2014)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: Trent A. Kirk
Invue Security Products Inc.
15015 Lancaster Highway
Charlotte, NC 28277
United States of America

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 01 FEB 2017
Applicant's or agent's file reference P1232D/PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US16/56239	International filing date *(day/month/year)* 10 October 2016 (10.10.2016)
Applicant INVUE SECURITY PRODUCTS INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally twomonths from the date of transmittal of the international search report.

   How? Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.
   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparation for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filedwithin 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **19 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45 *bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2014)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P1232D/PCT	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US16/56239	International filing date *(day/month/year)* 10 October 2016 (10.10.2016)	(Earliest) Priority Date *(day/month/year)* 12 October 2015 (12.10.2015)
Applicant INVUE SECURITY PRODUCTS INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box NdV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US16/56239

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
See extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-23

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US16/56239

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A47F 5/08; B65H 75/26, 75/44; G08B 13/14 (2017.01)
CPC - A47F 5/0861; B65H 75/265, 75/4415, 75/4471; G08B 13/1463
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): A47F 5/08; G08B 13/02, 13/06, 13/12, 13/14; H02G 11/02; B65H 75/02, 75/18, 75/26, 75/34, 75/38, 75/44, 75/48 (2017.01)
CPC: A47F 5/08 , 5/0807, 5/0861; G08B 13/14, 13/1409, 13/1418, 13/1427, 13/1436, B65H 75/26, 75/265, 75/34, 75/4415, 75/4471

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, Other Countries (INPADOC), RU, AT, CH, TH, BR, PH); Google Patent, Google Scholar, IEEE, Total Patent, EBSCO
Keywords: merchandise, security, anti-theft, sensor, recoiler, retract, base, stand, puck, cable, tether, cord, spool, reel, rotate, helical

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y --- A	US 5,156,242 A (DITZIG, A) October 20, 1992; abstract, figures 2-5, column 3, lines 4-25, 45-60, column 6, lines 1-10	23 --- 1, 2, 4, & 6-22 --- 3 & 5
Y --- A	US 2015/028145 A1 (INVUE SECURITY PRODUCTS INC) January 29, 2015; figures 10, 11, paragraphs [0013], [0039], [0040], [0042], [0043], [0045], [0049], [0050], [0052], [0053], claim 21	1, 2, 4, & 6-22 --- 3 & 5
Y --- A	US 3,617,659 A (FREEMAN, J) November 2, 1971; figures 8, 13, column 5, line 73 to column 6, line 25, line 63 to column 7, line 12	4, 6, & 7 --- 5
Y --- A	US 5,375,786 A (TA-YUEH, H et al.) December 27, 1994; figure 5, column 2, lines 23-42, column 3, lines 3-34	11, 12, 20, & 21 --- 5
Y	WO 2015/053913 A1 (INVUE SECURITY PRODUCTS INC) April 16, 2015; paragraphs [0018], [0019], [0021], figure 2	15
Y	WO 2015/112670 A1 (INVUE SECURITY PRODUCTS INC) July 30, 2015; paragraph [0027], figure 2	22
A	US 2012/0188082 A1 (BERGLUND, D et al.) July 26, 2012; entire document	1-23

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 January 2017 (09.01.2017)	07 FEB 2017
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US16/56239

-***-Continued from Box No. III Observations where unity of invention is lacking -***-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-23 appear to be directed towards a merchandise security system for displaying and protecting an article of merchandise from theft.

Group II: Claims 24-25 appear to be directed towards an auxiliary port for connection to an auxiliary device to create a sense loop.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.

The special technical features of Group I are a recoiler for a merchandise security system, comprising: a rotatable member defining a helical recess on an outer surface thereof; and a cable to be unwound from and wound on the rotatable member as the cable is extended and retracted, wherein the cable is configured to be extended from the base in response to the sensor being lifted off of the base, and wherein the cable is configured to be retracted into the base in response to the sensor being moved to a seated position on the base, wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member, which are not present in Group II.

The special technical features of Group II are an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the article of merchandise, wherein a sense loop is defined in the cable and the auxiliary port for detecting a security event, which are not present in Group I.

The common technical features are a merchandise security system for displaying and protecting an article of merchandise from theft, comprising: a sensor configured to be secured to the article of merchandise; a base for removably supporting the sensor and the article of merchandise thereon; a cable configured to be operably connected to the sensor and the base.

US 2012/0188082 A1 to Berglund, D. et al. (hereinafter Berglund) discloses a merchandise security system for displaying and protecting an article of merchandise from theft (a merchandise display security system for displaying and protecting an article of merchandise M from theft; abstract, figure 1, paragraphs [0014], [0015])), comprising: a sensor configured to be secured to the article of merchandise (a sensor 25 configured to be secured to the article of merchandise M, as shown; figure 1, paragraph [0016]); a base for removably supporting the sensor and the article of merchandise thereon (a base 40 for removably supporting the sensor 25 and the article of merchandise M thereon; figure 1, paragraph [0017]); a cable configured to be operably connected to the sensor and the base (cable 62 configured to be operably connected to sensor 25 and free end 52 of base 40; figure 2, paragraph [0017]).

Since these common features are previously disclosed by Berglund, they are not special and Groups I-II lack unity.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: Trent A. Kirk
Invue Security Products Inc.
15015 Lancaster Highway
Charlotte, NC 28277
United States of America

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	01 FEB 2017
Applicant's or agent's file reference P1232D/PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US16/56239	10 October 2016 (10.10.2016)	12 October 2015 (12.10.2015)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - A47F 5/08; B65H 75/26, 75/44; G08B 13/14 (2017.01)
CPC - A47F 5/0861; B65H 75/265, 75/4415, 75/4471; G08B 13/1463

Applicant INVUE SECURITY PRODUCTS INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 *bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	09 January 2017 (09.01.2017)	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US16/56239

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US16/56239

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:

   ☐ paid additional fees.

   ☐ paid additional fees under protest and, where applicable, the protest fee.

   ☐ paid additional fees under protest but the applicable protest fee was not paid.

   ☒ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with.

   ☒ not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-23 appear to be directed towards a merchandise security system for displaying and protecting an article of merchandise from theft.

Group II: Claims 24-25 appear to be directed towards an auxiliary port for connection to an auxiliary device to create a sense loop.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.

The special technical features of Group I are a recoiler for a merchandise security system, comprising: a rotatable member defining a helical recess on an outer surface thereof; and a cable to be unwound from and wound on the rotatable member as the cable is extended and retracted, wherein the cable is configured to be extended from the base in response to the sensor being lifted off of the base, and wherein the cable is configured to be retracted into the base in response to the sensor being moved to a seated position on the base, wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member, which are not present in Group II.

The special technical features of Group II are an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the article of merchandise, wherein a sense loop is defined in the cable and the auxiliary port for detecting a security event, which are not present in Group I.

The common technical features are a merchandise security system for displaying and protecting an article of merchandise from theft, comprising: a sensor configured to be secured to the article of merchandise; a base for removably supporting the sensor and the article of merchandise thereon; a cable configured to be operably connected to the sensor and the base.

US 2012/0188082 A1 to Berglund, D. et al. (hereinafter Berglund) discloses a merchandise security system for displaying and protecting an article of merchandise from theft (a merchandise display security system for displaying and protecting an article of merchandise M from theft; abstract, figure 1, paragraphs [0014], [0015])), comprising: a sensor configured to be secured to the article of merchandise (a sensor 25 configured to be secured to the article of merchandise M, as shown; figure 1, paragraph [0016]); a base for removably supporting the sensor and the article of merchandise thereon (a base 40 for removably supporting the sensor 25 and the article of merchandise M thereon; figure 1, paragraph [0017]); a cable configured to be operably connected to the sensor and the base (cable 62 configured to be operably connected to sensor 25 and free end 52 of base 40; figure 2, paragraph [0017]).

Since these common features are previously disclosed by Berglund, they are not special and Groups I-II lack unity.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts.

   ☒ the parts relating to claims Nos. 1-23

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US16/56239

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-22	YES
	Claims	23	NO
Inventive step (IS)	Claims	3 & 5	YES
	Claims	1, 2, 4, 6-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims	NONE	NO

2. Citations and explanations:

Claim 23 lacks novelty under PCT Article 33(2) as being anticipated by US 5,156,242 A to Ditzig, A. (hereinafter "Ditzig").

As per claim 23, Ditzig discloses a recoiler (a cord winding device 10 (recoiler); abstract, figure 3, column 3, lines 4-19) for a merchandise security system (the preamble is not brought into the body of the claim and carries no patentable weight), comprising: a rotatable member defining a helical recess on an outer surface thereof (a spool 20 (rotatable member) defining a helical channel 21 (recess) on an outer surface thereof; abstract, figures 2, 3, column 3, lines 10-20); and a cable configured to be unwound from and wound on the rotatable member as the cable is extended and retracted (cord 12 (a cable) configured to be unwound from and wound on the spool 20 as the cord 12 is extended and retracted; figures 2, 3, column 3, lines 20-25, 55-60), wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member (helical channel 21 is configured to receive cord 12 therein as the cord 12 is wound on the spool 20, as shown; abstract, figures 2-4).

Claims 1, 2, 8-10, 13, 14, & 16-19 lack an inventive step under PCT Article 33(3) as being obvious over US 2015/0028145 A1 to InVue Security Products Inc. (hereinafter "InVue") in view of Ditzig.

As per claim 1, InVue discloses a merchandise security system for displaying and protecting an article of merchandise from theft (a security system 150 for displaying and protecting an item of merchandise 154 from theft; figure 11, paragraphs [0049], [0052]), comprising: a sensor configured to be secured to the article of merchandise (a sensor 156 configured to be secured to the item of merchandise 154, as shown; figure 11, paragraph [0049]); a base for removably supporting the sensor and the article of merchandise thereon (sensor 142 and display stand 122 (together base) for removably supporting sensor 156 and the item of merchandise 154 thereon; figure 11, paragraph [0049]); a recoiler operably coupled to the sensor (motorized recoiler assembly 100 operably coupled to sensor 156 for motor 106 actuation; figure 11, paragraphs [0049], [0050]), the recoiler comprising a rotatable member defining a recess (motorized recoiler assembly 100 comprising rotatable reel 108 defining a recess for tether 102, as shown; figures 10, 11, paragraph [0042]); and a cable configured to connect to the sensor and to be unwound from and wound on the rotatable member as the cable is extended and retracted (tether 102 (a cable) configured to connect to the sensor 156, as shown, and to be unwound from and round on the rotatable reel 108 as tether 102 is extended and retracted; figure 11, paragraphs [0039], [0040], [0042]), wherein the cable is configured to be extended from the base in response to the sensor being lifted off of the base (tether 102 is configured to be extended from display stand 122 in response to sensor 156 being lifted off of sensor 142 and display stand 122; figure 11, paragraphs [0039], [0040], [0045], [0049]), and wherein the cable is configured to be retracted into the base in response to the sensor being moved to a seated position on the base (tether 102 is configured to be retracted into display stand 122 in response to sensor 156 being moved to a returned position (seated position) on sensor 142 and display stand 122; figure 11, paragraphs [0039], [0040], [0045], [0049]). InVue fails to disclose a rotatable member defining a helical recess; and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member. Ditzig discloses a rotatable member defining a helical recess (a spool 20 (rotatable member) defining a helical channel 21 (recess); abstract, figures 2, 3, column 3, lines 10-20); and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member (helical channel 21 is configured to receive cord 12 (cable) therein as the cord 12 is wound on the spool 20, as shown; abstract, figures 2-4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Ditzig, by including a rotatable member defining a helical recess; and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member, in order to gain the advantages of providing a surface that is capable of more securely retaining the cable than a flat surface would be, and such that the helical recess separates the turns of the cable, thereby reducing kinking and tangles, and serving to guide the movement of the cable as it is extended or retracted on the rotatable member, making use of the system smoother, more reliable, and easier (Ditzig, abstract, figures 2-4).

-***-Continued Within the Next Supplemental Box-***-

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US16/56239

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claims 19 & 20 are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof:

In claims 19 & 20, there appears to be an error in the language "wherein placing comprising placing". For the purposes of this opinion, as is best understood, the language has been interpreted as "wherein placing comprises placing" to restore clarity, continuity, and grammar to the claim.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US16/56239

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fu lly supported by the description, are made:

Claims 1, 15, 16, 24, & 25 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 1, 16, & 24 are indefinite for the following reasons:

In claims 1, 15, 16, 24, & 25 there appears to be a lack of antecedent basis in the language "the item of merchandise". For the purposes of this opinion, as is best understood, the language has been interpreted as "the article of merchandise" to restore antecedent basis, clarity, and continuity to the claim.

In claim 15, there appears to be a lack of antecedent basis in the language "The merchandise security device of Claim 1". For the purposes of this opinion, as is best understood, the language has been interpreted as "The merchandise security system of Claim 1" to restore antecedent basis, clarity, and continuity to the claim.

Supplemental Box

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-***-Continued from Box V: Citations and Explanations-***-

As per claim 2, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue fails to disclose wherein an outer surface of the rotatable member defines the helical recess. Ditzig discloses disclose wherein an outer surface of the rotatable member defines the helical recess (an outer surface of the spool 20 defines the helical channel 21; abstract, figures 2, 3, column 3, lines 10-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Ditzig, by including wherein an outer surface of the rotatable member defines the helical recess, in order to gain the advantages of providing a surface that is capable of more securely retaining the cable than a flat surface would be, and such that the helical recess separates the turns of the cable, thereby reducing kinking and tangles, and serving to guide the movement of the cable as it is extended or retracted on the rotatable member, making use of the system smoother, more reliable, and easier (Ditzig, abstract, figures 2-4).

As per claim 8, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue discloses wherein the rotatable member is configured to rotate about an axis as the cable is wound on and unwound from the rotatable member (rotatable reel 108 is configured to rotate about an axis of rotation co-axial with axle 120 as tether 102 is wound and unwound from the rotatable reel 108; figures 10, 11, paragraphs [0042], [0043]).

As per claim 9, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue discloses wherein the cable is configured to be wound about the rotatable member such that the cable overlaps itself on the rotatable member (tether 102 is configured to be wound about the rotatable reel 108 such that tether 102 overlaps itself on the rotatable reel 108, as shown; figure 10, paragraph [0042]).

As per claim 10, InVue, in view of Ditzig, discloses the merchandise security system of Claim 9. InVue discloses wherein the cable is configured to be wound about the rotatable member to define a first layer of cable (tether 102 is configured to be wound about the rotatable reel 108 to define a first layer of tether 102, as shown; figure 10, paragraph [0042]), and wherein the cable is configured to be wound about the first layer of cable to define a second layer of cable (tether 102 is configured to be wound about the first layer of tether 102 to define a second layer of tether 102, as shown; figure 10, paragraph [0042]). InVue fails to disclose wherein the cable is configured to be wound within the helical recess to define a first layer of cable. Ditzig discloses wherein the cable is configured to be wound within the helical recess to define a first layer of cable (cord 12 is configured to be wound within the helical channel 21 to define a first layer of cord 12, as shown; abstract, figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Ditzig, by including wherein the cable is configured to be wound within the helical recess to define a first layer of cable, in order to gain the advantages of securely retaining the cable in a first layer, such that the helical recess separates the turns of the cable, thereby reducing kinking and tangles, and serving to guide the movement of the cable as it is extended or retracted on the rotatable member, making use of the system smoother, more reliable, and easier (Ditzig, abstract, figure 3).

As per claim 13, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue wherein the rotatable member comprises a spool (the rotatable reel 108 is in the form of a spool, as shown; figure 10).

As per claim 14, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue discloses wherein the base is configured to house the recoiler therein (display stand 122 is configured to house the motorized recoiler assembly 100 in housing 104 of the display stand 122, as shown; figure 11, paragraphs [0039], [0043]).

As per claim 16, InVue discloses a method for displaying and protecting an article of merchandise from theft (a method for displaying and protecting an item of merchandise 154 from theft; figure 11, paragraphs [0013], [0052], claim 21 of InVue), comprising: securing a sensor to the article of merchandise (coupling a sensor 156 to the item of merchandise 154; figure 11, paragraph [0049]), a recoiler operably coupled to the sensor and comprising a rotatable member defining a recess (motorized recoiler assembly 100 operably coupled to sensor 156 for motor 106 actuation and comprising rotatable reel 108 defining a recess for tether 102, as shown; figures 10, 11, paragraphs [0042], [0049], [0050]); attaching a base to a support surface for removably supporting the sensor and the article of merchandise thereon (attaching sensor 142 (base) to display stand 122 (support surface) for removably supporting sensor 156 and the item of merchandise 154 thereon; figure 11, paragraph [0049]); and connecting a cable to the sensor (connecting a tether 102 (a cable) to the sensor 156, as shown; figure 11, paragraphs [0040], [0049]), wherein the cable is configured to be extended from the base in response to the sensor being lifted off of the base (tether 102 is configured to be extended from sensor 142 on display stand 122 in response to sensor 156 being lifted off of sensor 142 and display stand 122; figure 11, paragraphs [0039], [0040], [0045], [0049]), wherein the cable is configured to be retracted into the base in response to the sensor being moved to a seated position on the base (tether 102 is configured to be retracted into display stand 122 at sensor 142, as shown, in response to sensor 156 being moved to a returned position (seated position) on sensor 142 and display stand 122; figure 11, paragraphs [0039], [0040], [0045], [0049]). InVue fails to disclose a rotatable member defining a helical recess; and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member. Ditzig discloses a rotatable member defining a helical recess (a spool 20 (rotatable member) defining a helical channel 21 (recess); abstract, figures 2, 3, column 3, lines 10-20); and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member (helical channel 21 is configured to receive cord 12 (cable) therein as the cord 12 is wound on the spool 20, as shown; abstract, figures 2-4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of InVue, as taught by Ditzig, by including a rotatable member defining a helical recess; and wherein the helical recess is configured to at least partially receive the cable therein as the cable is wound on the rotatable member, in order to gain the advantages of providing a surface that is capable of more securely retaining the cable than a flat surface would be, and such that the helical recess separates the turns of the cable, thereby reducing kinking and tangles, and serving to guide the movement of the cable as it is extended or retracted on the rotatable member, making use of the system smoother, more reliable, and easier (Ditzig, abstract, figures 2-4).

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As per claim 17, InVue, in view of Ditzig, discloses the method of Claim 16. InVue discloses further comprising lifting the sensor and the article of merchandise from the base (lifting sensor 156 and the item of merchandise 154 from the sensor 142, as shown; figure 11, paragraph [0049]).

As per claim 18, InVue, in view of Ditzig, discloses the method of Claim 17. InVue discloses further comprising placing the sensor on the base such that the cable winds about the rotatable member and overlaps itself on the rotatable member (placing sensor 156 on sensor 142 such that the tether 102 winds about the rotatable reel 108 and overlaps itself on the rotatable reel 108, as shown; figures 10, 11, paragraphs [0042], [0049]).

As per claim 19, InVue, in view of Ditzig, discloses the method of Claim 18. InVue discloses wherein placing comprises placing the sensor on the base such that the cable winds about the rotatable member and within the recess to define a first layer of cable (placing comprises placing sensor 156 on sensor 142 such that tether 102 winds about the rotatable reel 108 and within the recess to define a first layer of tether 102; figures 10, 11, paragraphs [0042], [0049]) and such that the cable winds about the first layer of cable to define a second layer of cable (tether 102 winds about the first layer of tether 102 to define a second layer of tether 102, as shown; figure 10, paragraph [0042]). InVue fails to disclose wherein placing comprises placing the sensor on the base such that the cable winds within the helical recess to define a first layer of cable. Ditzig discloses wherein placing comprises placing the handset on the base such that the cable winds within the helical recess to define a first layer of cable (placing comprises placing handset 26 on base 16 such that cord 12 is configured to be wound within the helical channel 21 to define a first layer of cord 12, as shown; abstract, figures 1, 3, column 3, lines 10-25, column 6, lines 1-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of InVue, as taught by Ditzig, by including wherein placing comprises placing the handset on the base such that the cable winds within the helical recess to define a first layer of cable, wherein the handset of Ditzig is the sensor of InVue, in order to gain the advantages of allowing the helical recess to guide the movement of the cable as it is extended or retracted on the rotatable member when the sensor is placed on the base, making use of the system smoother, more reliable, and easier, and helping to keep the appearance of the cable tidy after the article of merchandise has been examined and returned by a customer (Ditzig, abstract, figures 2-4).

Claims 4, 6, & 7 lack an inventive step under PCT Article 33(3) as being obvious over InVue, in view of Ditzig, in further view of US 3,617,659 A to Freeman, J. (hereinafter "Freeman").

As per claim 4, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue fails to disclose further comprising a spring fixed to one end of the rotatable member. Freeman discloses further comprising a spring fixed to one end of the rotatable member (spring 55 fixed to portion 10 of spring motor chamber of hub 22 (one end of the rotatable member); figures 8, 13, column 5, line 73 to column 6, line 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Freeman, by including a spring fixed to one end of the rotatable member, in order to gain the advantages of providing a simple and efficient means of rotating the rotatable member that provides the ability to rotate in one direction to coil the cable but still allow uncoiling of the cable from the rotatable member (Freeman, figures 8, 13, column 5, line 73 to column 6, line 25).

As per claim 6, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue further discloses further comprising a slip ring electrically connected to the cable (a slip ring electrically connected to tether 102; paragraph [0053]). InVue fails to disclose a slip ring coupled to the rotatable member. Freeman discloses a slip ring coupled to the rotatable member (a slipring 75 coupled to hub 22 via slipring block 70, as shown; figure 13, column 6, line 63 to column 7, line 12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Freeman, by including a slip ring coupled to the rotatable member, in order to gain the advantages of providing a means of electrically connecting the cable with components with a slip ring so that the cable's connection is not interrupted by the rotation of the rotating member, allowing it to remain alarmed constantly during winding and unwinding, for instance (Freeman, figure 13, column 6, line 63 to column 7, line 12).

As per claim 7, InVue, in view of Ditzig, in further view of Freeman, discloses the merchandise security system of Claim 6. InVue further discloses wherein the cable comprises a plurality of electrical conductors that are electrically connected to the slip ring (tether 102 comprises electrical conductors in electrical communication (electrically connected) with the slip ring; paragraphs [0052], [0053]).

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Claims 11, 12, 20, & 21 lack an inventive step under PCT Article 33(3) as being obvious over InVue, in view of Ditzig, in further view of US 5,375,786 A to Ta-Yueh, H. et al. (hereinafter "Yueh").

As per claim 11, InVue, in view of Ditzig, discloses the merchandise security system of Claim 10. InVue fails to disclose wherein the cable is configured to be wound in a first helical direction to define the first layer of cable and to be wound in a second helical direction to define the second layer of cable. Yueh discloses wherein the cable is configured to be wound in a first helical direction to define the first layer of cable (wire 11 (cable) is configured to be wound in a rightly pitched spiral coil (first helical direction) to define first coiling of wire 11 (first layer of cable), as shown; figure 5, column 3, lines 3-34) and to be wound in a second helical direction to define the second layer of cable (wire 11 (cable) is configured to be wound in a lefty pitched spiral coil (second helical direction) to define second coiling of wire 11 (second layer of cable), as shown; figure 5, column 3, lines 3-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Yueh, by including wherein the cable is configured to be wound in a first helical direction to define the first layer of cable and to be wound in a second helical direction to define the second layer of cable, in order to gain the advantages of providing an efficient and orderly way of coiling a cable, such that a long cable which would require multiple layers of coiling to be stowed is stored appropriately in ordered layers so that it does not tangle, kink, or otherwise become knotted or disorderly, and is stored more efficiently than if the cable were allowed to coil loosely in an unstructured manner, thereby reducing the amount of space required to store the cable when coiled, increasing the ease of use of the system, and reducing the risk of malfunction (Yueh, figure 5, column 3, lines 3-34).

As per claims 12 & 21, InVue, in view of Ditzig, in further view of Yueh, discloses the merchandise security system of and method of Claims 11 & 20, respectively. InVue fails to disclose wherein the first and second helical directions are opposite to one another. Yueh discloses wherein the first and second helical directions are opposite to one another (rightly pitched spiral coil and lefty pitched spiral coil are opposite directions to one another, as shown; figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Yueh, by including wherein the first and second helical directions are opposite to one another, in order to gain the advantages of layering the cable in a manner that is simple yet space-conscious and efficient, more so than if it were simply wound in multiple disorderly layers in the same direction (Yueh, figure 5, column 3, lines 3-34).

As per claim 20, InVue, in view of Ditzig, discloses the method of Claim 19. InVue discloses wherein placing comprises placing the sensor on the base (placing comprises placing sensor 156 on sensor 142; figures 10, 11, paragraphs [0042], [0049]). InVue fails to disclose wherein the cable winds in a first helical direction to define the first layer of cable and to wind in a second helical direction to define the second layer of cable. Yueh discloses the cable winds in a first helical direction to define the first layer of cable (wire 11 (cable) winds in a rightly pitched spiral coil (first helical direction) to define first coiling of wire 11 (first layer of cable), as shown; figure 5, column 3, lines 3-34 and to wind in a second helical direction to define the second layer of cable (wire 11 (cable) winds in a lefty pitched spiral coil (second helical direction) to define second coiling of wire 11 (second layer of cable), as shown; figure 5, column 3, lines 3-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by Yueh, by including wherein the cable winds in a first helical direction to define the first layer of cable and to wind in a second helical direction to define the second layer of cable, in order to gain the advantages of providing an efficient and orderly way of coiling a cable, such that a long cable which would require multiple layers of coiling to be stowed is stored appropriately in ordered layers so that it does not tangle, kink, or otherwise become knotted or disorderly, and is stored more efficiently than if the cable were allowed to coil loosely in an unstructured manner, thereby reducing the amount of space required to store the cable when coiled, increasing the ease of use of the system, and reducing the risk of malfunction (Yueh, figure 5, column 3, lines 3-34).

Claim 15 lacks an inventive step under PCT Article 33(3) as being obvious over InVue, in view of Ditzig, in further view of WO 2015/053913 A1 to InVue Security Products Inc. (hereinafter "InVue 2").

As per claim 15, InVue, in view of Ditzig, discloses the merchandise security system of Claim 1. InVue fails to disclose further comprising an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the article of merchandise. InVue 2 discloses further comprising an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the article of merchandise (audio jack 266 (auxiliary port) disposed within alarming base 250, as shown, and configured to operably connect, via connector 34, to headphones H (auxiliary device) of audio player 40 (article of merchandise); paragraphs [0018], [0019], [0021], figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of InVue, as taught by InVue 2, by including further comprising an auxiliary port disposed within the base and configured to operably connect to an auxiliary device of the article of merchandise, in order to gain the advantages of giving the base the ability to operably connect to an auxiliary device that would otherwise need to be plugged into the article of merchandise, such as for an audio device and headphone set being conveniently displayed for sale together, giving a user the ability to use products together to test them even if the audio device has a security device plugged into its auxiliary port; additionally, it allows the base to potentially be configured as a charging hub for multiple devices, making a more versatile display, giving a retailer additional flexibility in displaying merchandise; furthermore, the auxiliary device may benefit from being plugged into the base rather than directly to the article of merchandise if the base is alarmed, thereby alarming the auxiliary device as well (InVue 2, paragraph [0021], figure 2).

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
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Claim 22 lacks an inventive step under PCT Article 33(3) as being obvious over InVue, in view of Ditzig, in further view of WO 2015/112670 A1 to InVue Security Products Inc. (hereinafter "InVue 3").

As per claim 22, InVue, in view of Ditzig, discloses the method of Claim 16. InVue fails to disclose wherein connecting comprises connecting the cable to the sensor with a releasable connector. InVue 3 discloses wherein connecting comprises connecting the cable to the sensor with a releasable connector (connecting comprises connecting tether 14 (cable) to sensor 12 with releasable connector 22; paragraph [0027], figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of InVue, as taught by InVue 3, by including wherein connecting comprises connecting the cable to the sensor with a releasable connector, in order to gain the advantages of providing a connector that allows the cable and sensor to be connected or disconnected as desired, making it convenient for a user, such as a sales associate, to disconnect the sensor from the cable such as for when replacing the article of merchandise with another or performing maintenance on the article of merchandise, or when otherwise needing to remove it from the display, as well as being able to reliably connect it when it is desired that the sensor be connected to the cable such as when the product is on display and alarmed; the releasability provides the display with more versatility than if the sensor and cable had a hard-wired connection (InVue 3, paragraph [0027], figure 2).

Claim 3 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest wherein the helical recess has a pitch of less than about 5 mm.

In the first closest prior art, InVue discloses the recess (recess for tether 102, as shown; figure 10).

In the second closest prior art, Ditzig discloses the helical recess (the helical channel 21; abstract, figures 2, 3, column 3, lines 10-20).

In the third closest prior art, Yueh discloses the helical recess has a pitch (helical groove 221 has a pitch; figure 5, column 2, lines 23-42).

InVue, Ditzig, Yueh, and the references of record fail to disclose wherein the helical recess has a pitch of less than about 5 mm. It would not have been obvious to one of ordinary skill in the art at the time the invention was made to have employed this system, because none of the references uncovered disclosed the nuances of the instant claim in a cumulative manner while still allowing for a plausible motivation to combine said references. Specifically, although Ditzig teaches the helical aspect of the recess, Ditzig does not indicate what the pitch of the recess is. Yueh discloses a helical recess with a pitch, but does not disclose the pitch; also, the helical recess is used for guiding the cable onto the rotatable member – it is not on the surface of the rotatable ember itself. Additionally, it would not be obvious to modify the helical recess of Ditzig, since Ditzig is already modifying the recess of InVue. The references taken solely, or in combination, fail to provide the required limitations, and modification of any complementary combination of the references of record would be impermissible and not provide any advantages over the present application.

Claim 5 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a slip ring at an opposite end of the spring.

In the first closest prior art, InVue discloses further comprising a slip ring (a slip ring electrically connected to tether 102; paragraph [0053]).

In the second closest prior art, Ditzig discloses further comprising the spring (spring member 43; figure 5, column 3, lines 45-60).

In the third closest prior art, Freeman discloses further comprising a slip ring (a slipring 75; figure 13, column 6, line 63 to column 7, line 12).

InVue, Ditzig, Freeman, and the references of record fail to disclose a slip ring at an opposite end of the spring. It would not have been obvious to one of ordinary skill in the art at the time the invention was made to have employed this system, because none of the references uncovered disclosed the nuances of the instant claim in a cumulative manner while still allowing for a plausible motivation to combine said references. Particularly, the slip ring of Freeman is not attached at an opposite end of the spring, and further modification of the slip ring of Freeman, already modifying InVue, would not be obvious. The references taken solely, or in combination, fail to provide the required limitations, and modification of any complementary combination of the references of record would be impermissible and not provide any advantages over the present application.

Claims 1-23 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Filer:	Trent Aaron Kirk/Lauren Martin
Attorney Docket Number:	P1232D/US/E

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	4	50	200
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**985**

Electronic Acknowledgement Receipt

EFS ID:	32094254
Application Number:	15926326
International Application Number:	
Confirmation Number:	6691
Title of Invention:	RECOILER FOR A MERCHANDISE SECURITY SYSTEM
First Named Inventor/Applicant Name:	David N. Berglund
Customer Number:	88320
Filer:	Trent Aaron Kirk/Lauren Martin
Filer Authorized By:	Trent Aaron Kirk
Attorney Docket Number:	P1232D/US/E
Receipt Date:	20-MAR-2018
Filing Date:	
Time Stamp:	14:56:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$985
RAM confirmation Number	032118INTEFSW00001516506090
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	P1232D-US-E_ADS.pdf	1823621 81fd191fe9ffe97587a4fd2a1a02c72353f8d0b0	no	9
Warnings:					
Information:					
2	Power of Attorney	P1232D-US-E_POAP1.pdf	102000 789b200074b16dda9ae5e0e641ba8cb1634adc04	no	1
Warnings:					
Information:					
3	Power of Attorney	P1232D-US-E_POAP2.pdf	486004 8ea425be9541ca93c5fef553b295fb5bc099e556	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
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Information:					
5		P1232D-US-E_app.pdf	101607 93a56440b12707977e718281d858697a1b251040	yes	16

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	12
Claims	13	15

	Abstract		16	16	
Warnings:					
Information:					
6	Drawings-only black and white line drawings	P1232D-US-E_Dwgs.pdf	133227 f2783bec9e76b346cc6c0bb272bb5db21c80e655	no	10
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Information:					
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Information:					
8	Foreign Reference	WO2015053913.pdf	798973 60065cb90fef86dfe39ba9dc0f26f6f51652d463	no	20
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Information:					
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Information:					
18	Non Patent Literature	S1500_Sell_Sheet.pdf	1568317 f0525d4dd0555cba58025f893fcfc95e901c5e81	no	8
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Information:					
19	Non Patent Literature	HS150_SellSheet_FA.pdf	1381244 786332ce8cbc1ec06a66912d2b42b531a755c860	no	8
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Information:					

20	Non Patent Literature	HS400_SellSheet_FA.pdf	1354461 20361001d81702086d0f2eecfd73ff4b85c600b3	no	8
Warnings:					
Information:					
21	Other Reference-Patent/App/Search documents	P1232D-PCT-ISR-WO.pdf	1880087 a8c14a52a19035166149a4acb36d9ee2cf3b7ee0	no	16
Warnings:					
Information:					
22	Other Reference-Patent/App/Search documents	P1232D-EP_EESR_2-9-18.pdf	543395 0bbbf600215024fec225d7f7ceae7aa95995315e	no	10
Warnings:					
Information:					
23	Fee Worksheet (SB06)	fee-info.pdf	36765 f1a48ecc9d8f5fc22d3a1d7d704ff0bb24f29f42	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	24980870		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	David	N.	Berglund	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Indian Trail	NC	US

Mailing Address of Inventor:

Address 1	4005 City Lights Drive
Address 2	
City	Indian Trail
State/Province	NC
Postal Code	28079
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Kyle		Baker	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Waxhaw	NC	US

Mailing Address of Inventor:

Address 1	7622 Caspian Drive
Address 2	
City	Waxhaw
State/Province	NC
Postal Code	28173
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Robert		Bisesti	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

City	Charlotte	State/Province	NC	Country of Residence	US

Mailing Address of Inventor:

Address 1	119 Queensgate Lane		
Address 2			
City	Charlotte	**State/Province**	NC
Postal Code	28214	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	88320		
Email Address	trentkirk@invue.com	Add Email	Remove Email
Email Address	laurenmartin@invue.com	Add Email	Remove Email

Application Information:

Title of the Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM		
Attorney Docket Number	P1232D/US/E	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	88320		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	**Continuity Type**	**Prior Application Number**	**Filing or 371(c) Date (YYYY-MM-DD)**
	Continuation of	15/725951	2017-10-05

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/725951	Continuation of	15/649127	2017-07-13	9805564	2017-10-31

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/649127	Continuation of	15/593640	2017-05-12	9747765	2017-08-29

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/593640	Division of	15/474338	2017-03-30	9761101	2017-09-12

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15/474338	Continuation of	PCT/US2016/056239	2016-10-10
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2016/056239	Claims benefit of provisional	62/240171	2015-10-12
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2016/056239	Claims benefit of provisional	62/297215	2016-02-19

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	InVue Security Products Inc.		
Mailing Address Information For Applicant:			
Address 1	9201 Baybrook Lane		
Address 2			
City	Charlotte	**State/Province**	NC
Country	US	Postal Code	28277
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Trent A. Kirk/			Date (YYYY-MM-DD)	2018-03-20
First Name	Trent	Last Name	Kirk	Registration Number	54,223

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P1232D/US/E
	Application Number	
Title of Invention	RECOILER FOR A MERCHANDISE SECURITY SYSTEM	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.