UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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VANGUARD PRODUCTS GROUP, INC., D/B/A VANGUARD PROTEX GLOBAL,

Petitioner

v.

INVUE SECURITY PRODUCTS INC.,

Patent Owner

_____

Case IPR2020-00069
U.S. PATENT NO. 10,043,358

_____

DECLARATION OF JOHN "JACK" FIGH, JR.

Exhibit: VPG-1012

TABLE OF CONTENTS

I, John "Jack" Figh, Jr., hereby declare as follows:

I. INTRODUCTION

1. I have personal knowledge of the facts set forth in this Declaration. I am competent to testify as to all matters stated, and I am not under any legal disability that would in any way preclude me from testifying.

2. I understand that I am providing my opinion on behalf of Vanguard Products Group, Inc. d/b/a Vanguard Protex Global ("Petitioner") as a technical expert for the above-captioned *inter partes* review ("IPR"). I understand that the petition for IPR involves U.S. Pat. No. 10,043,358 ("the '358 Patent") (VPG-1001), which is entitled to a priority date of February 19, 2016.

3. In preparing this Declaration, I considered the viewpoint of a person having ordinary skill in the art ("POSA") at the alleged time of invention, which I understand to be February 19, 2016. With that viewpoint, I have reviewed the '358 Patent and considered each of the documents cited herein in light of the general knowledge of POSA at the alleged time of invention. In formulating my opinion, I relied upon my personal knowledge, experience, and education in the relevant art.

4. In my opinion, and based on the foregoing, claims 1-3, 16-20, 23, 28, and 29 of the '358 Patent are obvious in view of the cited prior art references.

II. MY BACKGROUND AND QUALIFICATIONS

5. The details of my education, professional experience, and issued patents are provided in my Curriculum Vitae (VPG-1013).

6. I have received a Bachelor of Science degree in Electrical Engineering from Auburn University in 1984.

7. Upon graduating with my Electrical Engineering degree in 1984, I began my professional engineering career as a design engineer at EPOS Corporation in Auburn, Alabama, a company specializing in point-of-sale ("POS") terminals.

8. From 1986 to 1987, I moved to Marina del Rey, California, where I continued my professional career as a Product Engineer at Amitron, Inc., a company which specializes in printed circuit boards ("PCBs").

9. In 1987, I moved to New York City. For the next fourteen years—from 1987 to 2001—I held the position of Director of Engineering at HMG Worldwide Corporation/Intermark Corporation. During my tenure there, my research and development work led to three patented inventions, which are provided below.

10. In January 2002, I joined Vanguard Products Group, Inc. ("VPG"), where I am currently employed. Over the years, I have held multiple leadership positions—including Director of Engineering, Director of Product Development, and Director of Sales Operations. My responsibilities at VPG focused primarily on analysis, research, and development of point-of-purchase anti-theft security devices. My inventions have resulted in eighteen issued U.S. patents.

11. The following is a list of issued U.S. patents for some of my inventions, most of which pertain to point-of-purchase anti-theft security devices for protecting an item of merchandise:

U.S. Pat. No.	**Issued**	**Title**
10,378,248	Aug. 13, 2019	Anti-theft device with adjustable locking arms for securing an article of merchandise
10,323,440	June 18, 2019	Anti-theft device having an interlocking assembly for securing an article of merchandise
10,140,825	Nov. 27, 2018	Anti-theft device for monitoring a universal serial bus Type C connector
10,074,250	Nov. 27, 2018	Anti-theft device for monitoring connection between a male plug and a female receptacle
10,032,349	July 24, 2018	Anti-theft device for monitoring a universal serial bus Type C connector

9,830,788	Nov. 28, 2017	Anti-theft device for monitoring a universal serial bus Type C connector
9,472,068	Oct. 18, 2016	Anti-theft device for monitoring connection between a male plug and a female receptacle
9,353,552	May 31, 2016	Anti-theft device for merchandise displays
9,194,160	Nov. 24, 2015	Security device with a magnet-based release mechanism
9,105,166	Aug. 11, 2015	Adjustable anti-theft bracket for displaying electronic gadgets
8,816,853	Aug. 26, 2014	Self-shunting security device for detecting the absence or presence of a removable auxiliary alarm assembly
8,749,194	June 10, 2014	Inductive charging retail display device
8,696,377	April 15, 2014	Communication connector with analog coupling circuit
8,517,748	Aug. 27, 2013	Communication connector with analog coupling circuit
8,345,398	Jan. 1, 2013	Integrated variable output power supply protection circuit
8,094,019	Jan. 10, 2012	Self-shunting security device
7,768,397	Aug. 3, 2010	Cable assembly for securing hinged products
7,639,133	Dec. 29, 2009	Security device for hinged products

7,242,299	July 10, 2007	Sensors and methods for detecting attachment to a surface
6,956,479	Oct. 18, 2005	Sensors and methods for detecting attachment to a sensor
5,463,209	Oct. 31, 1995	Point-of-sale product information dissemination arrangement and method
5,392,025	Feb. 21, 1995	Electronic security system for display cabinets
4,827,220	May 2, 1989	Method and apparatus for testing batteries

III. MATERIALS CONSIDERED IN FORMULATING MY OPINION

12. In the preparation of this declaration, I reviewed the following:

a. U.S. Patent No. 9,747,765 ("the '358 Patent") (VPG-1001)

b. U.S. Provisional App. No. 62/240,171 (VPG-1002)

c. Prosecution History of the '358 Patent (VPG-1003)

d. U.S. Publication No. 2015/0235533 ("Grant") (VPG-1004)

e. U.S. Patent No. 8,395,907 ("Marszalek") (VPG-1005)

f. U.S. Patent Pub. No. 2013/0168527 ("Wheeler") (VPG-1006)

g. International Publication No. WO2011/045058 ("Brenner") (VPG-1007)

h. U.S. Patent No. 5,912,619 ("Vogt") (VPG-1008)

i. U.S. Patent Pub. No. 2011/0254661 ("Fawcett") (VPG-1009)

j. U.S. Patent Pub. No. 2014/0335730 ("the '730 Publication") (VPG-1010)

k. The American Heritage Dictionary (VPG-1011)

l. Communications Standard Dictionary (VPG-1014)

IV. PERSON HAVING ORDINARY SKILL IN THE ART

13. I understand that a person of ordinary skill in the art ("POSA") is a person presumed to be aware of pertinent art prior to February 19, 2016, has ordinary creativity, and thinks in accordance with conventional wisdom in the art. A POSA would have had 4-5 years of experience working with anti-theft devices and have at least a bachelor's degree in mechanical and/or electrical engineering. Moreover, a POSA would have had knowledge of known systems, devices, and techniques used in the field, such as those described in the '358 Patent and the prior art references.

V. RELEVANT LEGAL STANDARDS

14. I understand that an obviousness analysis includes comparing a claim to the prior art to determine whether the claim limitations are obvious in view of the prior art and the general knowledge of a POSA. I understand that the objective reach of the claim must be determined in deciding if the claim is obvious. Moreover, I understand that a system is obvious if it is simply an arrangement of known elements with said known elements performing as expected and the arrangement yielding nothing more than what a POSA would expect.

15. I further understand that obviousness can be established by combining or modifying the teaching of one or more prior art references. Furthermore, I understand that there must be a reasonable motivation to combine the teachings of said references and there must be a reasonable expectation of success of arriving at the claimed invention. I also understand that the motivation to combine can originate from a variety of sources, not just the prior art or the specific problem the patentee was trying to solve.

VI. THE '358 Patent

A. Overview

16. The '358 Patent, which issued on October 31, 2017, claims priority to two provisional patent applications—App. No. 62/240,171 ("the First Provisional") filed on October 12, 2015, and App. No. 62/297,215 ("the Second Provisional") filed on February 19, 2016. VPG-1001. However, the First Provisional does not disclose an auxiliary port—a limitation that is present in every claim of the '358 Patent. Accordingly, the '358 Patent is not entitled to the priority date of the First Provisional, and instead has a priority date of the filing of the Second Provisional—February 19, 2016.

17. The '358 Patent discloses a merchandise security system for "displaying and protecting an article of merchandise from theft." VPG-1001 at Abstract. The merchandise security system includes: (1) a sensor securable to an article of merchandise; (2) a base that removably supports the sensor; (3) a cable to connect the sensor to the base; (4) a lock mechanism to lock the sensor to the base; and (5) an auxiliary port disposed within the base that is configured to connect an auxiliary device to the base. *Id.* at 2:14-22.

18. In use, the sensor electrically connects to the article of merchandise, and to the base via the cable. *Id.* at 3:16-19. Each of the base and sensor includes a complementary electrical contact, such that the base can transfer power to the article

of merchandise when the sensor rests on the base and the electrical contacts are in communication with each other. *Id.* at 3:21-24, 3:34-36. To secure the article of merchandise and the auxiliary device against theft, a security signal is transmitted through the cable and the auxiliary port; as such, the system can detect security events, such as the cutting of the cable, the disconnection of the cable from either the sensor or the base, and the disconnection of an auxiliary connector from the auxiliary port. *Id*. at 9:39-43. I believe that Figure 1, reproduced below, provides an overview of the system:

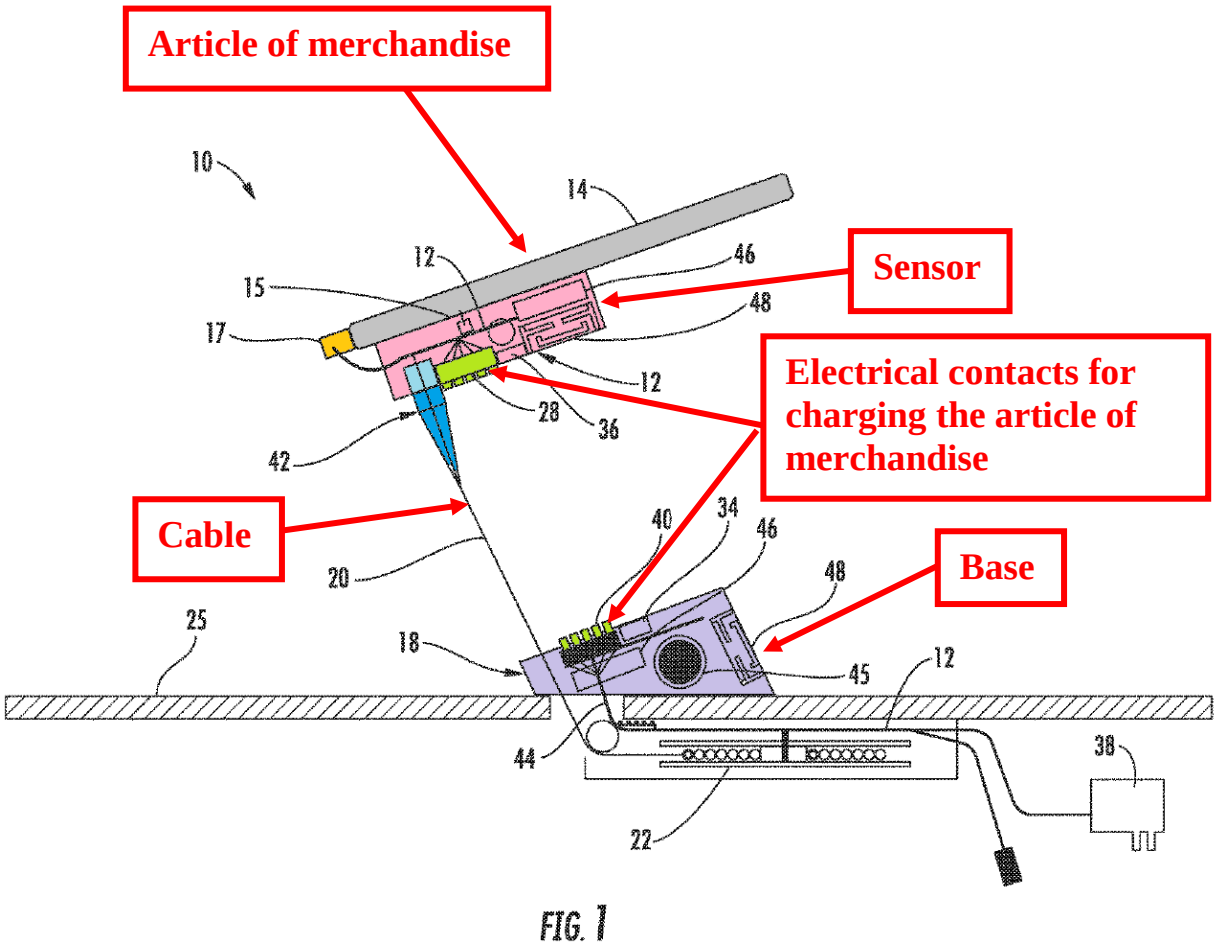
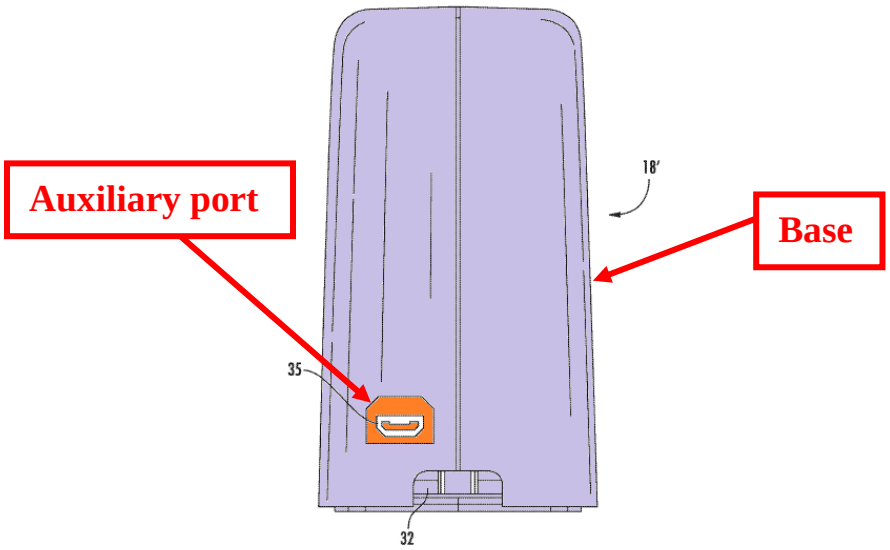


FIG. 1

VPG-1001, Figure 1 (annotated)

In addition, the auxiliary port is shown in Figure 9 below:



VPG-1001, Figure 9 (annotated)

I believe that the security system claimed in the '358 Patent is nothing more than an obvious combination of well-known components performing their intended functions in a predictable and expected manner.

B. Claim Construction

19. I have been informed that the claims of the '358 Patent are "construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the

patent." 37 C.F.R. § 42.100(b). As such, I believe that the following construction for the terms "auxiliary device of the article of merchandise," "auxiliary port," and "operably connected," and "optical transceiver" should be applied.

1. "auxiliary device of the article of merchandise"

20. The '358 Patent does not define the term "auxiliary device;" however, the '358 Patent provides "a stylus, speaker, keyboard, Bluetooth device, etc." as examples of auxiliary devices. *See* VPG-1001 at 5:44-46. The auxiliary devices as described in the '358 Patent are complementary to the article of merchandise, since the devices are disclosed as being "configured to operate with the article of merchandise." *Id.* at 10:34-38. Moreover, the ordinary meaning of the term "auxiliary" is "giving assistance or support;" as applied to an electronic device, an auxiliary device that is complementary to the article of merchandise provides a supporting function to the article. VPG-1011 at 57. Accordingly, I believe that the term "auxiliary device of the article of merchandise" should be construed as "*an electronic device complementary to the article of merchandise*."

2. "auxiliary port"

21. The '358 Patent does not define the term "auxiliary port;" however, the auxiliary port is described as being used "for connecting to corresponding auxiliary devices for the item of merchandise." VPG-1001 at 5:37-39. The auxiliary port is further described as enabling the base to "electrically connect to an auxiliary device." *Id*. at 42-45. Accordingly, the term "auxiliary port" should be construed as "*an electrical port for connecting an auxiliary device*."

3. "operably connected"

22. The '358 Patent uses the term "operably connected" throughout the specification and claims, referring to the engagement of two components; however, the '358 Patent does not define the expression. Operable connections described in the '358 Patent include: "a recoiler *operably* coupled to the sensor," "a cable configured to be *operably* connected to the sensor and the base," "auxiliary port … configured to *operably* connect to an auxiliary device," "[a] cable may be *operably* engaged with the sensor," "a cable … *operably* engaged with a recoiler," and "an input connector *operably* connected to the auxiliary device," *Id.* at Abstract, 2:17-21, 3:8-9, 3:25-27, 9:37-38 (emphasis added).

23. Each of the operable connection examples enable the security system to perform its intended function: monitoring each listed connection to detect a security event associated therewith, such as "cutting of the cable, removal of the cable from the sensor or the base, and removal of the input connector from the auxiliary port." *Id.* at 9:40-43. Moreover, the ordinary meaning of the term "operable" is "capable of or suitable for use;" as such, an "operable connection" is a connection that enables the security system to operate according to its intended function by monitoring the connection and detecting a security event associated therewith. VPG-1011 at 588.

24. Accordingly, the term "operably connected" should be construed as "connected in a manner that enables the security system to detect security events associated with the connection."

4. <u>"optical transceiver"</u>

25. The '358 Patent does not define the term "optical transceiver," but states that optical transceivers "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." VPG-1001 at 6:28-31. The Communications Standard Dictionary states that the term "optical transceiver" is a synonym of the

term "fiber optic transceiver," defining the term as an "optic receiver-transmitter" including "a photodetector that receives optical signals and converts them to electrical signals" (*i.e.*, an "optical receiver") and "a light source, such as a laser, that converts electrical signals to optical signals" (*i.e.*, an "optical transmitter"), which are "housed in a single unit with appropriate electrical and optical connectors." VPG-1014 at 676-77, 674, 347.

26. Accordingly, I believe, based on the specification of the '358 Patent and the definition above, that the term "optical transceiver" should be construed as "an optical receiver and an optical transmitter housed in a single unit with appropriate electrical and optical connectors." Such a construction is consistent with the '358 Patent language, as well as the industry definition of the term.

C. Prosecution History

27. During the prosecution of the '358 Patent, the USPTO did not consider any of Grant, Brenner, Marszalek, Wheeler, Johnston, Fawcett, Vogt, and the '730 Publication, and none of the references were cited in any Office Actions. VPG-1003.

28. It is my opinion that all of the claim limitations in the '358 Patent were known in the art prior to the filing date of the '358 Patent. I believe the '358 Patent

claims nothing more than an obvious combination of conventional components with each component performing its known function.

VII. STATE OF THE ART AND SUMMARY OF REFERENCES

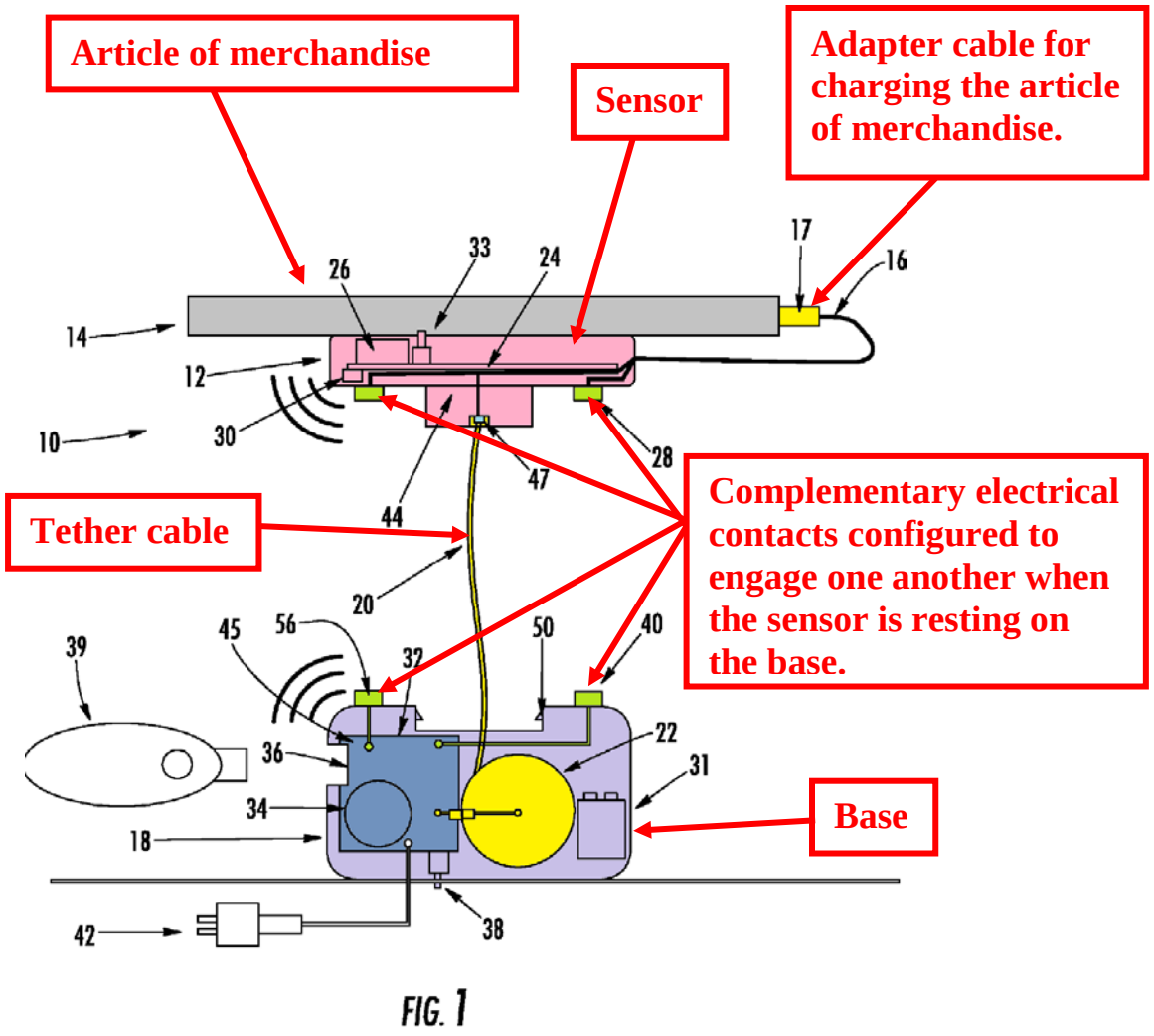
29. In my opinion, the references asserted against the '358 Patent and discussed herein clearly show that the limitations claimed in the '358 Patent were well known in the prior art before February 19, 2016. To the extent that a particular feature is not explicitly described in one of the asserted references, it is my opinion that such a feature would have been obvious to a POSA.

A. Grant

30. U.S. Patent Pub. No. 2015/0235533 ("Grant") was published on August 20, 2015. I have been informed that Grant is prior art against the '358 Patent because it was published prior to the earliest effective date of the '358 Patent.

31. Grant is "directed to security systems for securing an item of merchandise from theft," including "a sensor configured to be coupled to an article of merchandise and a base configured to removably support the sensor and the item of merchandise thereon." VPG-1004 at [0006]. The article of merchandise connects to the sensor via an adapter cable, enabling the transfer of electrical power from the

sensor to the article of merchandise. *Id*. at [0017]. Each of the sensor and the base have complementary electrical contacts that engage when the sensor rests on the base, such that the base can provide electrical power to the article of merchandise via the sensor. *Id*. The sensor operably connects to the base by way of a tether cable that "includes at least one conductor for defining a sense loop," used to detect various security events, such as "the cable being cut, shorted, and/or disconnected." *Id.* at [0007], [0017]. Grant's security system also includes a lock mechanism to lock the sensor to the base, preventing the sensor from being lifted from the base when the lock mechanism is engaged. *Id.* at [0036]. Grant's system is shown in Figure 1:



VPG-1004, Figure 1 (annotated)

Grant is used as base prior art reference in Grounds 1 and 2 of the Petition.

B. Marszalek

32. U.S. Patent No. 8,395,907 ("Marszalek") issued on March 12, 2013. I have been informed that Marszalek is prior art against the '358 Patent because it

issued and was thereby publicly disclosed prior to the earliest effective date of the '358 Patent.

33. Marszalek "relates to a multi-sensor alarm apparatus, a system, and/or a method for securing articles," including a primary sensor (referred to as a "head unit") attachable to a first article of merchandise. VPG-1005 at 1:7-9, 3:13-14. A base assembly supports the sensor, with a primary tether connecting the sensor to the base. *Id.* at 3:10-13.

34. In addition, the system "may have a *peripheral tether* and/or a peripheral sensor that may secure a *second* article, such as, for example, a portable electronic device to the base." *Id*. at 1:21-24 (emphasis added). The base includes a dedicated port that is configured to receive a connector of the peripheral tether. *Id*. at 11:32-36. As such, the system is configured "to monitor the integrity of any combination of the components," including the integrity of the peripheral tether, as shown in Figures 1 and 6 below. *Id*. at 3:36-40.

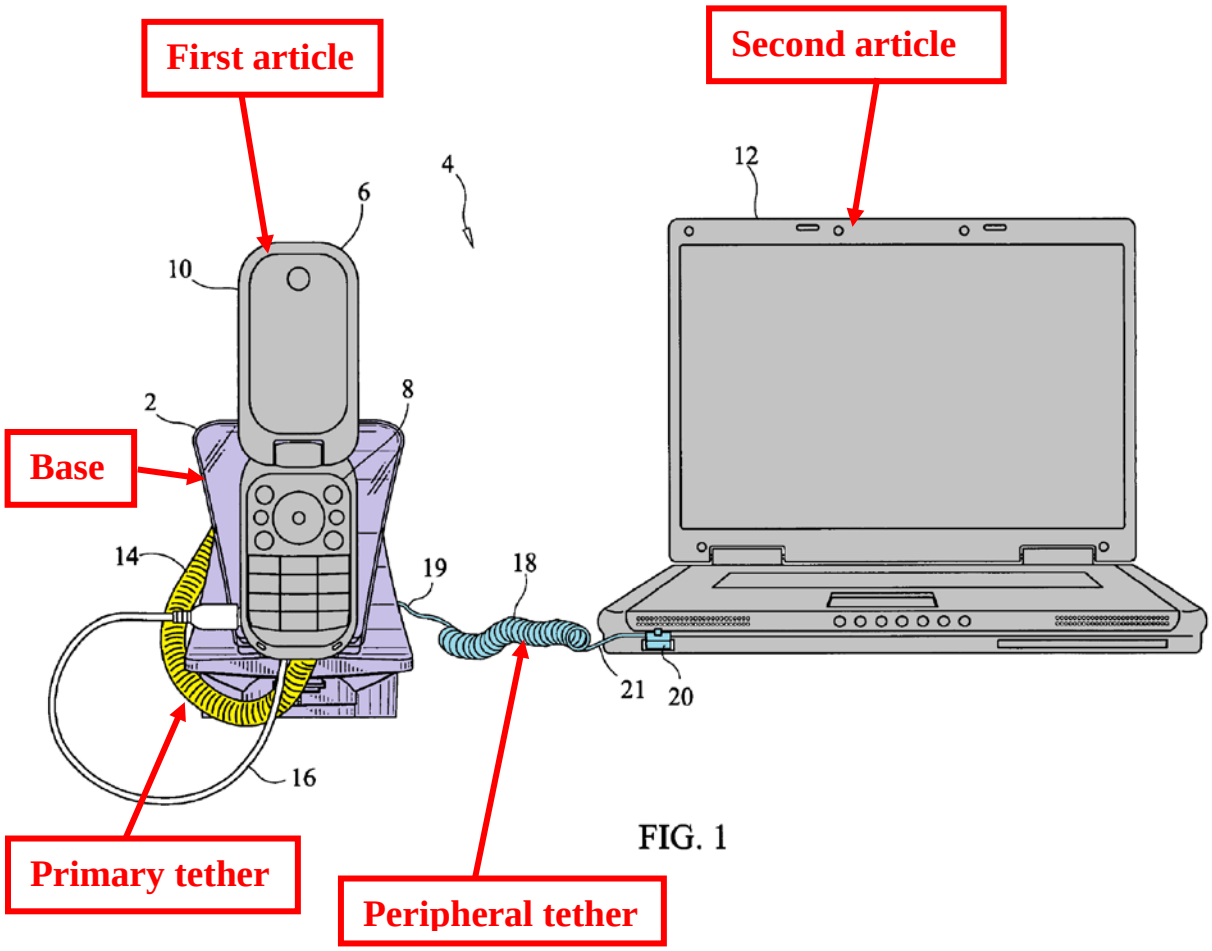
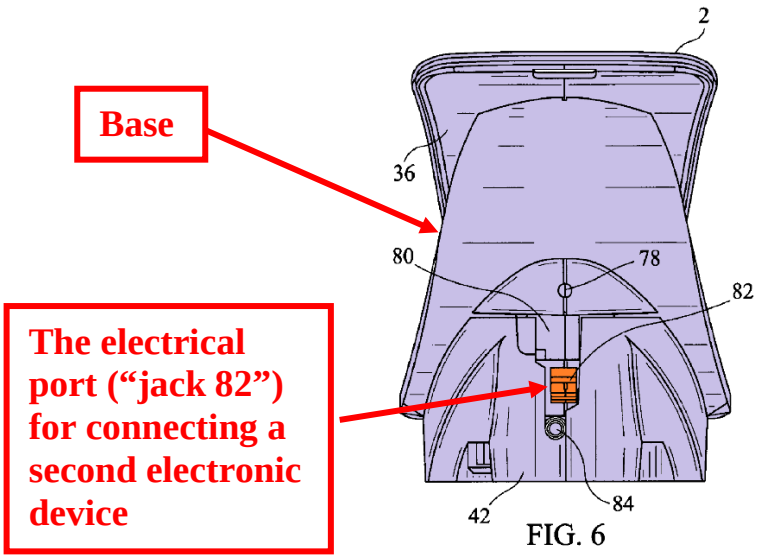


FIG. 1

VPG-1005, Figure 1 (annotated)



VPG-1005, Figure 6 (annotated)

Marszalek is cited as a secondary reference in combination with Grant in Grounds 1 and 2, and a secondary reference in combination with Brenner in Grounds 3, 4, and 5, showing that security systems including a base having an auxiliary port to connect to and secure a second electronic device were known prior to the '358 Patent.

C. Wheeler

35. U.S. Patent Pub. No. WO 2013/0168527 ("Wheeler") was published on July 4, 2013. I have been informed that Wheeler is prior art against the '358 Patent because it was published prior to the priority date of the '358 Patent.

36. Wheeler "relates to security/alarm systems that protect against theft in retail environments," teaching a security system for securing multiple "complementary products." VPG-1006 at [0001], [0049]. The system includes a primary tether ("power/security cord 34") that secures the primary article of merchandise, as well as additional tether cables ("other cords 40/42") to secure *complementary* electronic devices—*i.e.*, auxiliary devices. *Id*. For example, Wheeler teaches an example wherein the primary article of merchandise is a computer tablet, disclosing that "[i]t may be desirable to support the tablet with another device such as, for example, a keyboard/docking station." *Id*. Wheeler's multi-tether system for securing primary articles of merchandise and complementary electronic devices is shown in Figure 6:

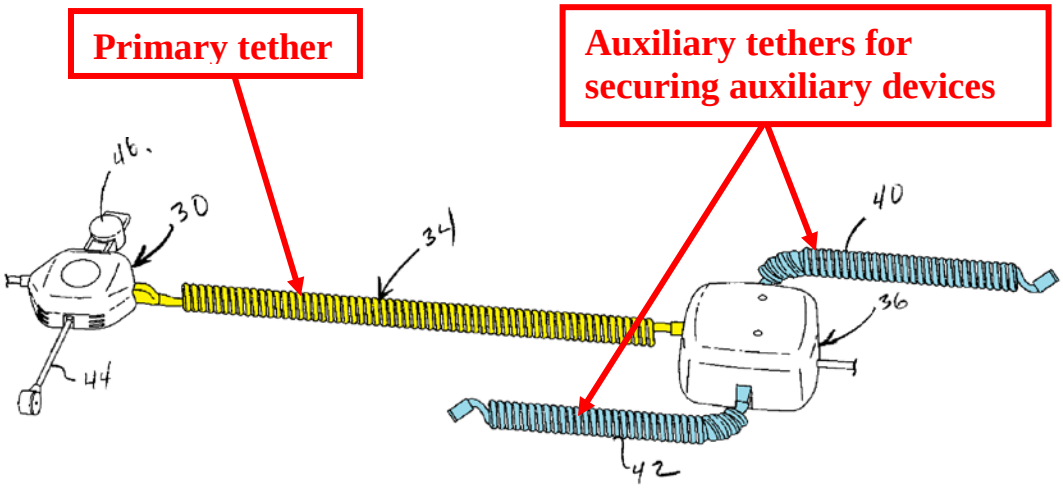


Fig. 6

VPG-1006, Figure 6 (annotated)

Wheeler is cited as a secondary prior art reference in combination with Grant and Marszalek in Grounds 1 and 2, and as a secondary prior art reference in combination with Brenner and Marszalek in Grounds 3, 4, and 5, to show that security systems used to display both an article of merchandise and an auxiliary device were known prior to the '358 Patent.

D. Motivation for combining Grant, Marszalek, and Wheeler

i. A POSA would have been motivated to improve Grant's security system to address a known market need

37. Before February 19, 2016, there was a known market need for "a system and/or a method for securing *two or more articles* in a self-contained, all-in-one configuration." VPG-1005 at 2:31-33 (emphasis added). While Grant's security system includes many advantageous features, the system has a major limitation, in that it is configured to only secure a *single* article of merchandise. VPG-1004 at [0005] (disclosing that "[e]mbodiments of the present invention are directed to security systems for securing *an* item of merchandise") (emphasis added). A POSA would have been motivated to improve Grant's security system to be capable of

securing two or more articles of merchandise, thereby addressing the market need stated above. Such a motivation would have led to Marszalek and Wheeler.

ii. Marszalek teaches a security system configured to secure multiple articles of merchandise

38. Marszalek "relates to a multi-sensor alarm apparatus, a system and/or a method that may prevent and/or deter a theft and/or a removal of *one or more* articles from a display stand," as established in Part VII(B), *supra*. VPG-1005 at 1:9-12 (emphasis added). As such, in addition to a primary tether used to secure a first article of merchandise, "[t]he system may have a peripheral tether and/or a peripheral sensor that may secure a *second* article, such as, for example, a portable electronic device." *Id.* at 1:21-24. Accordingly, the base includes an auxiliary electrical port ("jack 82") that can receive a connector of the peripheral tether. *Id.* at 11:32-35. The security system monitors the peripheral tether connection, thereby protecting against the unauthorized removal of the second article of merchandise. *See id.* at 14:41-44.

iii. Wheeler teaches a security system configured to secure an article of merchandise and an auxiliary device of the article of merchandise

39. Wheeler teaches a security system including multiple tethers used to secure multiple electronic device from unauthorized removal, as established in Part

VII(C), *supra*. VPG-1006 at [0049]. In the system, a primary tether is used to secure an article of merchandise, and Wheeler teaches that a peripheral tether can be used to secure an auxiliary device that is complementary to the article of merchandise. *Id.* (disclosing that "it is envisioned that the other cords 40, 42 could be used as secondary security sensors that support *complementary products* on the display. For example, … *[i]t may be desirable to support the tablet with another device such as, for example, a keyboard/docking station*") (emphasis added).

iv. A POSA would have been motivated to combine Grant with Marszalek and Wheeler, and this combination would yield an improved security system in which known components would perform their intended functions in an expected manner

40. I have been informed that "[m]otivation to combine may be found explicitly or implicitly in market forces; design incentives; the interrelated teachings of multiple patents; any need or problem known in the field of endeavor at the time of invention and addressed by the patent; and the background knowledge, creativity, and common sense of the person of ordinary skill." *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013) (internal citations and quotations omitted). As such, a POSA would have been motivated to improve Grant's security system to be

capable of securing multiple articles of merchandise, such as by combining the teachings of Grant and Marszalek. Such an improvement could have been accomplished by modifying Grant's base to include an electrical port as taught in Marszalek, enabling Grant's system to utilize a peripheral tether cable (as taught in Marszalek) to secure a second electronic device. The modification would not have required any undue experimentation and would produce an improved security system in which known components would perform their intended functions in an expected manner. For example, Grant itself states that "it will be apparent to those skilled in the art that various modifications [to the security system] can be made without departing from the spirit and scope of the invention." VPG-1004 at [0043].

41. Moreover, a POSA would have been motivated to adapt the combined Grant and Marszalek security system to secure an article of merchandise and a complementary auxiliary device, as taught in Wheeler. *See* VPG-1006 at [0049] (teaching that "[i]t may be desirable to support the tablet with another device such as, for example, a keyboard"). Such an improvement also would have been straightforward, would not have required any undue experimentation, and would produce an expected result—a security system configured to secure both an article of merchandise and an auxiliary device associated therewith. For example,

Marszalek teaches that the peripheral cable can be used to secure "*any* articles sold and/or displayed in an environment offering any article, product and/or other merchandise as known to one having ordinary skill in the art." VPG-1005 at 8:37-39 (emphasis added).

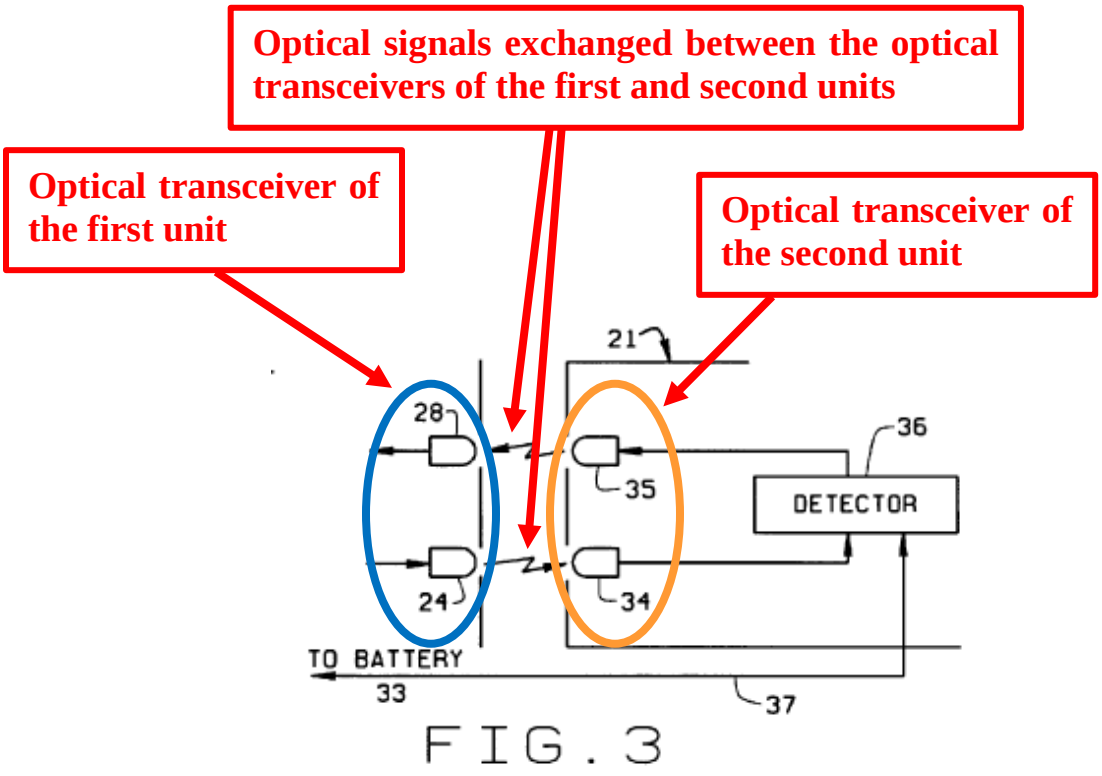
42. Accordingly, a POSA would have been motivated to combine Grant, Marszalek, and Wheeler to achieve an improved security system that addressed a known market need for a security system capable of simultaneously securing both an article of merchandise and its auxiliary device.

E. Vogt

43. U.S. Patent No. 5,912,619 ("Vogt") was issued on June 15, 1999. I have been informed that Vogt is prior art against the '358 Patent because it was published prior to the priority date of the '358 Patent.

44. Vogt teaches a security system including a sensing technique to monitor the connection between two conjoined units using optical signals that are transmitted back-and-forth between the units. VPG-1008 at 1:14-21, Abstract. Each of the units includes an optical transceiver (i.e., transmitting optical transducers and receiving

optical transducers, which are both transceivers), each being configured to exchange optical security signals with one another, as shown in Figure 3. *Id.*



VPG-1008, Figure 3 (annotated)

45. The signal exchange is successful if the units remain operational and connected to one another, and an alarm is triggered if one unit fails to receive an expected signal, since such an event indicates that the units have separated or the system has been otherwise compromised. *Id.*; *see also id.* at Figure 9B (depicting

two conjoined units used to monitor a connection securing an object—for example, a boat).

46. Vogt is used in the Petition to show that it was known prior to the '358 Patent to monitor optical signals communicated between two proximally-placed optical transceivers to detect whether a cable has been cut or disconnected.

F. Motivation for combining Grant and Vogt

47. One of Grant's key functionalities is the ability to detect security event, such as cutting or disconnecting, associated with the tether cable. VPG-1004 at [0017]. Grant discloses "[v]arious sensing techniques may be employed for determining whether the cable 20 has been cut or removed from the sensor 12 in an unauthorized manner." *Id.* Some non-limiting interchangeable sensing techniques taught in Grant include: a sense loop defined by electrical conductors within the cable; a sense loop defined in a single fiber optic conductor; a conductor connected to a resistor at the end of the tether cable; a pressure switch at the sensor; and inductive coils disposed within base, the sensor, and the tether. *Id.* at [0023], [0032] – [0035], [0043].

48. A POSA would understand that Grant's sensing examples are non-limiting and that the security system could be improved by employing a different sensing technique. As such, a POSA would have been motivated to look at other cable-connection-integrity monitoring systems used to see if the cable has been cut or disconnected, which would lead to Vogt. One of Vogt's core objectives is a "security system having an enhanced monitoring capability and which provides users the absolute highest level of assurances," stating that "security of the system of the invention is virtually assured." VPG-1014 at 2:54-56, 8:14-15. As such, a POSA would have been motivated to integrate Vogt's sensing technique in Grant's tether cable.

49. Such an integration would have been straightforward, since Vogt's units are self-sufficient and can be internally powered, such as via a battery, or externally powered, such as via another power source. VPG-1008 at 6:26-30; 5:44-49. For example, the unit integrated into the end of the cable could be powered by the base via electrical conductors disposed within the cable (as taught in Grant), and the unit integrated into the sensor could be powered by the battery of the article of merchandise (as taught in Grant). VPG-1004 at [0032], [0035]. Such an implementation would have simply required using Vogt's units 20 and 21 instead of

the indicative coils integrated into Grant's cable and sensor with. *See id.* at [0035]. Moreover, if the unit disposed within the cable is powered via conductors within the cable, cutting of the cable or removal of the cable from the base would depower the unit; as such, the optical signal exchange between the two units would fail, thereby indicating that a security event has occurred. Similarly, if the cable disconnected from the sensor, a security event would be indicated as the two units would be unable to communicate with one another.

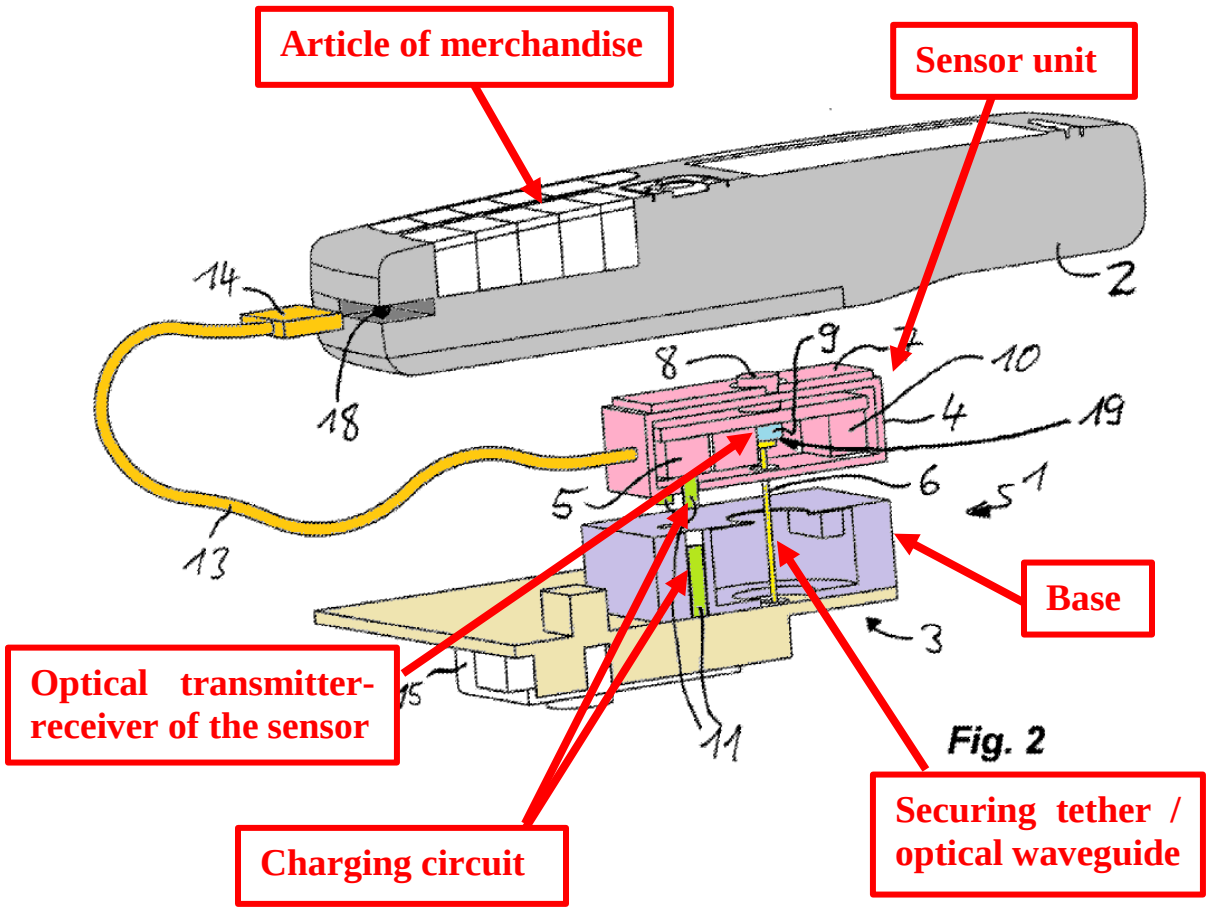
50. Accordingly, the combination of Grant and Vogt would have been within the skill of one in the art, would not have required any undue experimentation, and would have produced a predictable and expected result—an improved security system with a sensor and a cable equipped with an optical transceiver to exchange security signals with one another, such that a failure of a unit to receive an expected security signal indicates a security event, such as the cable being cut or disconnected. A POSA would thereby have been motivated to integrate Vogt's optical sensing technique into Grant's security system with a reasonable expectation that the combination would yield a functional security system operable for its intended purpose.

G. Brenner

51. International Pub. No. 2011/045058 ("Brenner") is a published patent application having a publication date of April 21, 2011. I have been informed that Brenner is prior art against the '358 Patent because it was publicly disclosed prior to the earliest effective date of the '358 Patent.

52. Brenner "relates to an apparatus for securing objects, more particularly exhibited goods, against unauthorized taking," teaching an anti-theft device including a sensor attached to the item of merchandise being protected. VPG-1007 at 1. The device includes a base that removably supports the sensor, with the sensor being connected to the base via a securing tether. *Id.* The sensor and base include mating electrical connectors, such that power can be transferred from the sensor to the item of merchandise when the sensor rests on the base. *Id.* at 3-4. Brenner teaches that the base and sensor are "designed for bidirectional data transfer" in an embodiment. *Id.* at 7. As such, the base can house an optical transmitter and an optical receiver, with the sensor also housing an optical transmitter and an optical receiver. *Id.* The securing tether connecting the sensor and the base includes an optical waveguide, thereby enabling optical security signals to be transmitted between the sensor unit and the base unit. *Id*. In addition, the securing tether "can be

wound under tensile stress" in a winding device. *Id*. at 5-6, 11. Brenner's device is depicted in Figure 2 below:



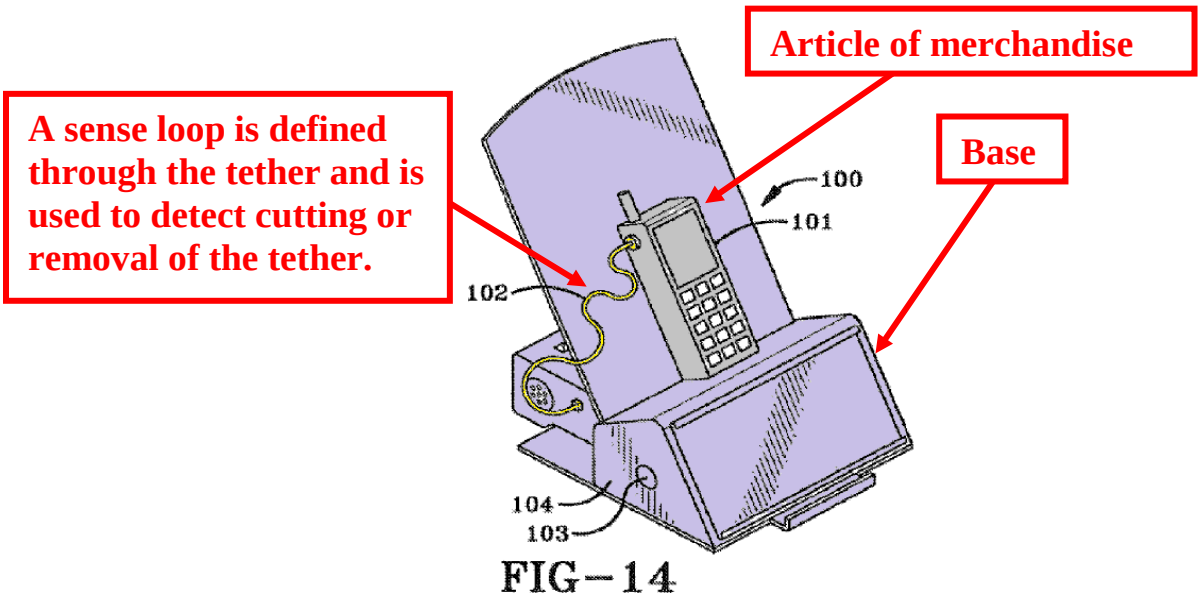
VPG-1007, Figure 2 (annotated)

Brenner is used as the primary prior art reference in Grounds 3, 4 and 5 of the Petition.

H. Fawcett

53. U.S. Patent Pub. No. 2011/0254661 ("Fawcett") is a published patent application having a publication date of October 20, 2011. I have been informed that Fawcett is prior art against the '358 Patent because it was published prior to the effective date of the '358 Patent.

54. Fawcett teaches a security technique in which a "sense loop" is defined through a tether cable to detect security events associated with the cable, such as the cable being cut, pulled loose from the base or the sensor, or removed from its connection jack within the base. VPG-1009 at [0060]. Fawcett teaches that "sense loops extending between the [base] … and the item of merchandise may be formed of an electrical conductor or fiber optic conductor located within an outer mechanical attachment cable." *Id*. at [0023]. Fawcett is used in the Petition to show that it would have been obvious to define one or more "sense loops" through the optical waveguide that connects the sensor to the base, and through an auxiliary port connecting the base to the auxiliary device. As such, the security system would be capable of detecting the cutting of the tether, the removal of the tether from the sensor or the base, and the removal of the peripheral tether connector from the auxiliary port, as shown in Figure 14 below. *Id.* at [0060].



VPG-1009, Figure 14 (annotated)

I. Motivation for combining Brenner, Marszalek, Wheeler and Fawcett

55. I have been informed that "[m]otivation to combine may be found explicitly or implicitly in market forces; design incentives; the interrelated teachings of multiple patents; any need or problem known in the field of endeavor at the time of invention and addressed by the patent; and the background knowledge, creativity, and common sense of the person of ordinary skill." *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013) (internal citations and quotations omitted).

56. A POSA would have been motivated to combine Brenner and Marszalek, such that an improved security system would be capable of securing multiple articles of merchandise, satisfying a market need acknowledged in Marszalek. Such an improvement could have been accomplished by disposing Marszalek's electrical port within in the base of Brenner's security device, thereby enabling the security device to utilize a peripheral tether cable (as taught in Marszalek) to secure a second electronic device. This modification would not have required any undue experimentation and would produce an improved security system in which known components would perform their intended functions in an expected manner to meet a known market need. See VPG-1005 at 2:29-33 (disclosing that "a need exists for a multi-sensor alarm apparatus, a system and/or a method for securing *two or more articles* in a self-contained, all-in-one configuration") (emphasis added).

57. Moreover, a POSA would have been motivated to adapt the security system to simultaneously secure both an article of merchandise and a complementary auxiliary device, as taught in Wheeler. *See* VPG-1005 at [0049] (teaching that "[i]t may be desirable to support the tablet with another device such as, for example, a keyboard"). This improvement also would have been

straightforward, would not have required any undue experimentation, and would produce an expected result—a security system that is configured to secure both an article of merchandise and an associated auxiliary device. For example, Marszalek teaches that a peripheral cable can be used to secure "*any* articles sold and/or displayed in an environment offering any article, product and/or other merchandise as known to one having ordinary skill in the art." VPG-1005 at 8:37-39 (emphasis added).

58. Furthermore, a POSA would have been motivated to improve the security system by including the sense loop as disclosed in Fawcett, since Fawcett teaches "sense loops extending between the alarm module … and the item of merchandise may be formed of … [a] *fiber optic conductor* located within an outer mechanical attachment cable," and since Brenner teaches that the sensor and the base are connected using an *optical waveguide* within a securing tether, with the base and the sensor having optical transmitter-receiver pairs that send optical signals to one another across the optical waveguide. VPG-1009 at [0023] (emphasis added); VPG-1007 at 7.

59. Configuring the sensor to transmit optical security signals through the optical waveguide to the base at predetermined time intervals would have been

obvious; in such a configuration, a compromise of the sense loop (such as by cutting the cable or disconnecting the cable from the sensor) would indicate that a security event occurred, as the base does not receive the security signal. Such a modification would have been straightforward, would not have required any additional hardware components, and would have been a matter of routine programming modification of the sensor and the base circuitries.

60. Accordingly, a POSA would have been motivated to combine Brenner, Marszalek, Wheeler, and Fawcett to achieve an improved security system that addressed a known market need—a security system that secures both an article of merchandise and its auxiliary device—and the POSA would have a reasonable expectation that the achieved security system would be functional for its intended purpose.

J. '730 Publication

61. U.S. Patent Pub. No. 2014/0335730 ("the '730 Publication") is a published patent application having a publication date of November 13, 2014. I have been informed that the '730 Publication is prior art against the '358 Patent because it was published prior to the effective date of the '358 Patent.

62. The '730 Publication teaches a security cable having one end that is "operably engaged with an alarm device," and the opposite end having a connector operably configured to couple to an article of merchandise. VPG-1010 at [0020]. A plurality of electrical conductors within the cable are configured to transmit security signals between the connector and the alarm device. *Id.* The '730 Publication importantly discloses that the connector may include an integrated optical sensor that monitors the connector's attachment to the article of merchandise. *Id*. at [0030]. The '730 Publication teaches that "[t]he sensor may be engaged, integrated, molded, or otherwise coupled to the connector," and the cable is depicted in Figure 1 below. *Id*.

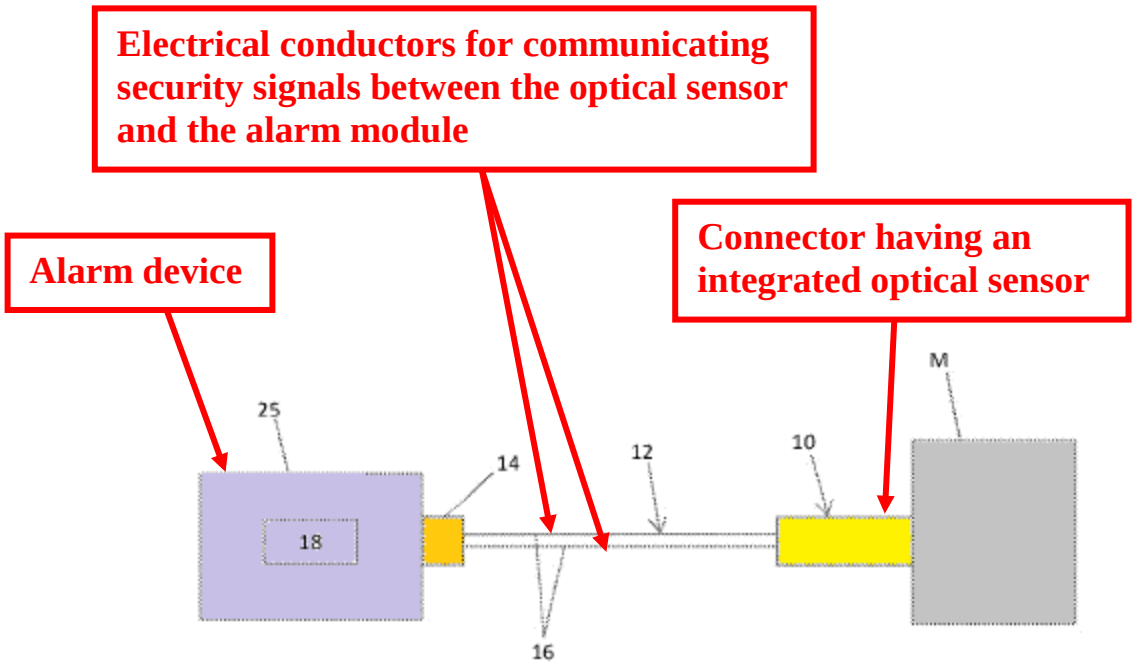


FIGURE 1

VPG-1010, Figure 1 (annotated)

The '730 Publication is cited in the Petition to establish that security cables having optical sensors were known prior to the '358 Patent, and that it would have been obvious to improve Brenner's security system of Brenner by integrating the optical transceiver of the base into a connector of the tether cable.

K. Motivation for combining Brenner, Marszalek, Wheeler, Fawcett, Vogt, and the '730 Publication

63. Brenner's system *relies on an optical waveguide* disposed within the securing tether to transmit optical signals between the optical transceivers of the sensor unit and the base unit. VPG-1007 at 7. A POSA would have recognized that,

as such, Brenner may suffer from reliability issues because the securing tether can be "*a spiral cable*" or "*can be wound under tensile stress*" in a winding device. *Id*. at 5-6, 11. When an optical waveguide is subjected to bending or winding, it is prone to at least two types of signal loss: "curvature loss" and "microbend loss," as illustrated in Figured L-8 and L-9 below. VPG-1014 at 196, 576, and 536.

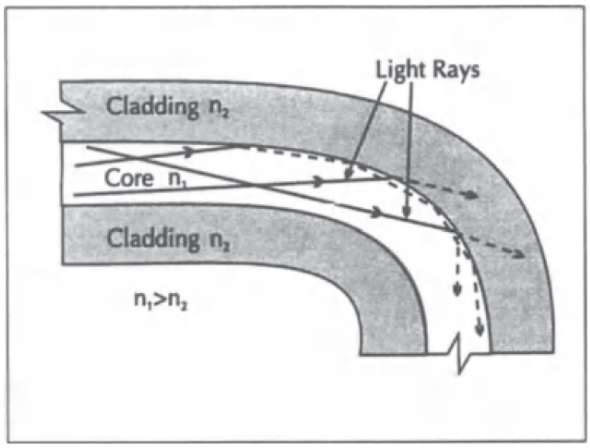


Figure L-8. A curvature **loss** that occurs in light rays propagating in an optical fiber, so that at the bend (a) many of the rays strike the core-cladding interface surface at angles less than the critical angle and (b) the surface waves, i.e., evanescent waves and leaky waves, at the outside curve of the bend cannot travel faster than the speed of light and therefore become uncoupled with modes inside the core and radiate away.

VPG-1014 at 536, Figure L-8 (emphasis in original)

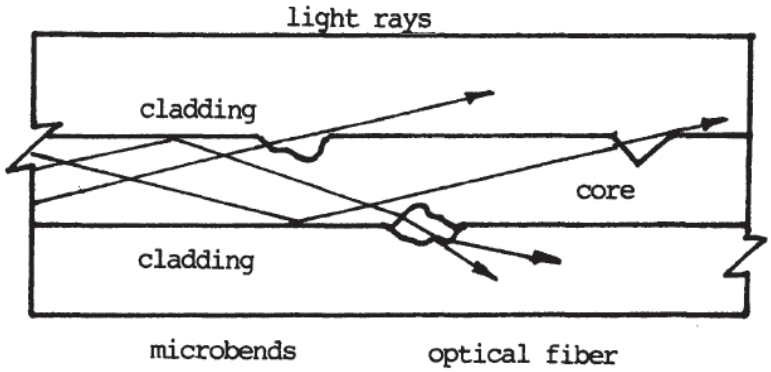


Figure L-9. A microbend **loss** that occurs in light rays propagating in an optical fiber. The loss occurs because, at the microbends, some rays encounter a core-cladding interface surface such that the incidence angle is less than the critical angle at that microscopic point of incidence.

VPG-1014 at 536, Figure L-9 (emphasis in original)

64. Accordingly, a POSA would have recognized that Brenner's security device is prone to signal loss reliability issues, and would have been motivated to look for a solution that enables the optical transceiver of the sensor unit to communicate with the base unit without relying on an optical waveguide in the securing tether, leading to the '730 Publication, which discloses a security system including an optical sensor integrated into a connector of the cable, such that electrical conductors of the cable communicate signals between the optical sensor and the alarming device. VPG-1010 at [0020]. Accordingly, a POSA would have recognized that the optical waveguide could be removed from the system, with the

first optical transceiver being relocated from the base into the proximal end (i.e., the end of the securing tether coupled to the sensor unit) of the securing tether, such that the first optical transceiver instead communicates directly with the second optical transceiver housed within the sensor. Standard electrical conductors obviate the need for an optical waveguide, since the conductors do not suffer signal loss when bent or wound, would be used to power the optical transceiver of the cable, and would be used to communicate signals between the sensor and the base, without signal loss. Accordingly, a POSA would have been motivated to improve Brenner's security device of Brenner in view of the '730 Publication.

65. The improved system of Brenner would be more reliable while retaining Brenner's security features and the principles of operation, including a sensor unit that is configured to emit optical signals that are responsive to detecting a security event—such as release of the push-button switch—and the base unit being capable of triggering an alarm responsive to receiving a notification of the detected security event. This modification would have been straightforward and would produce an expected result—a security system in which the optical transceivers of the base and the sensor are configured to communicate signals directly with one another.

VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1-3, 16-18, and 29 are obvious over the combination of Grant, Marszalek, and Wheeler

1. Claim 1

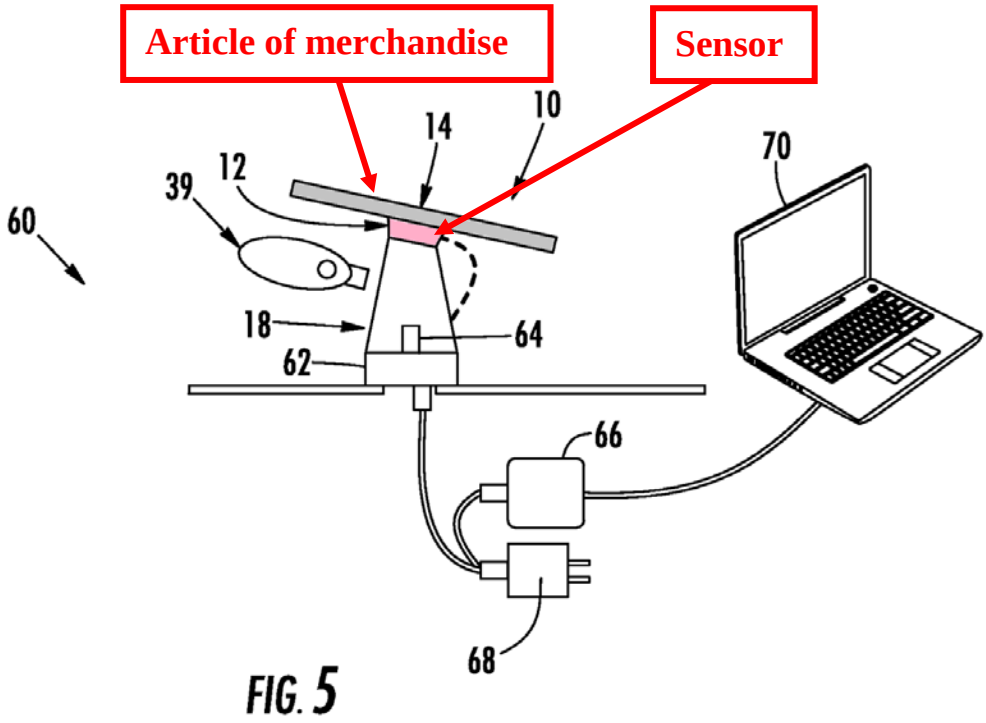
a. "A merchandise security system for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft"

66. Grant teaches "security systems for securing an item of merchandise from theft or unauthorized removal." VPG-1004 at [0002]. As established in Part VII(D)(iv), *supra*, a POSA would have motivation to combine Grant with Marszalek and Wheeler, such that an improved merchandise security system is capable of simultaneously securing both an article of merchandise and a complementary auxiliary device. Accordingly, the combination of Grant, Marszalek, and Wheeler teaches the preamble of claim 1.

b. "a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor"

67. Grant teaches "a sensor 12 configured to be secured to an item of merchandise 14," and that "[t]he sensor 12 may 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," as shown in Figure 5 below. VPG-1004 at [0017].

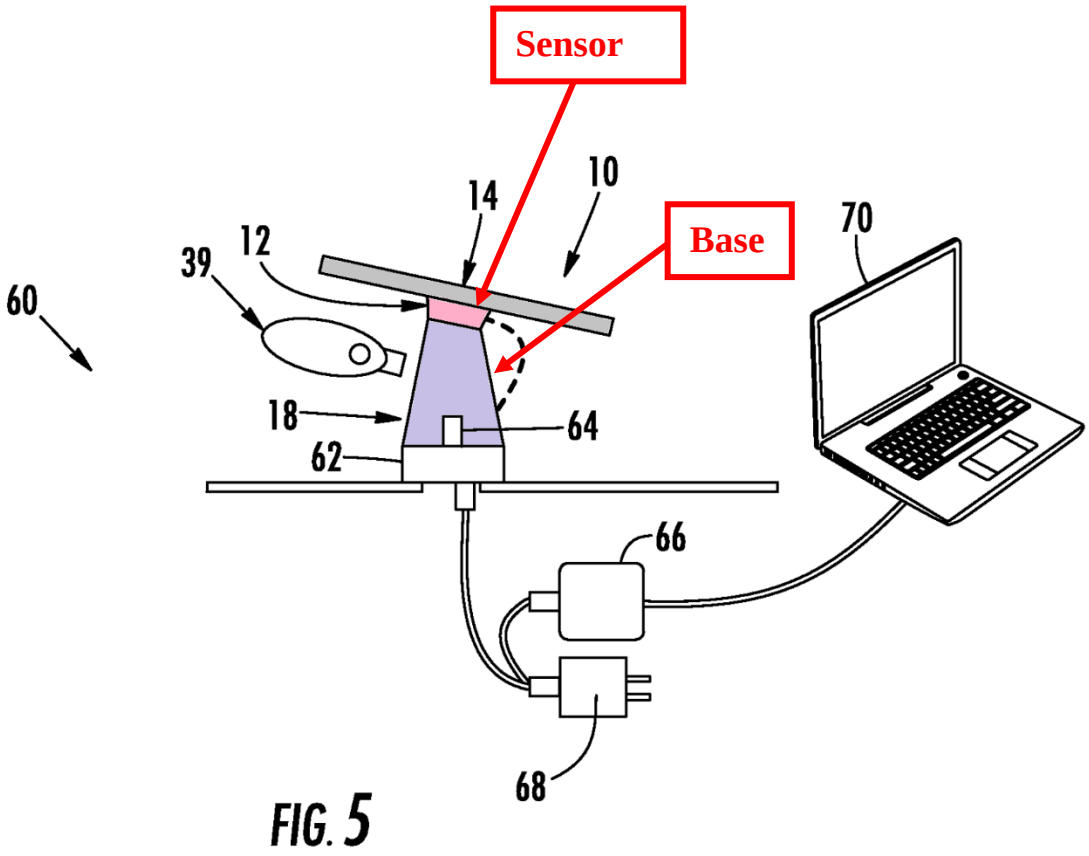


VPG-1004, Figure 5 (annotated)

Accordingly, Grant teaches the limitation "a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor."

c. "a base that removably supports the sensor and the article of merchandise thereon"

68. Grant teaches that "[t]he 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*," as shown in Figure 5 below. VPG-1004 at [0017].



VPG-1004, Figure 5 (annotated)

Accordingly, Grant teaches the limitation "a base that removably supports the sensor and the article of merchandise thereon."

d. "wherein the base further comprises an auxiliary port that operably connects to the auxiliary device"

69. A POSA would have been motivated to attain an improved security system configured to secure both an article of merchandise *and* an auxiliary device that is complementary to the article of merchandise, such as by combining the teachings of Grant with those of Marszalek and Wheeler, as established in Part VII(D), *supra*. Specifically, Marszalek in view of Wheeler teaches the use of a peripheral tether cable to secure an auxiliary device, and Marszalek teaches that the base includes an electrical port ("jack 82") that is configured to receive a connector of the peripheral tether, as shown in Figures 1 and 6 below. *See* VPG-1005 at 3:27-30. (disclosing that "[t]he system may have a peripheral tether and/or a peripheral sensor that may secure a second article, such as, for example, a portable electronic device to the base"), 11:32-35 (disclosing that "[t]he first end 19 of the peripheral tether cable 18 may have a network plug, such as, for example, an RJ-45 plug that may be received by a jack 82").

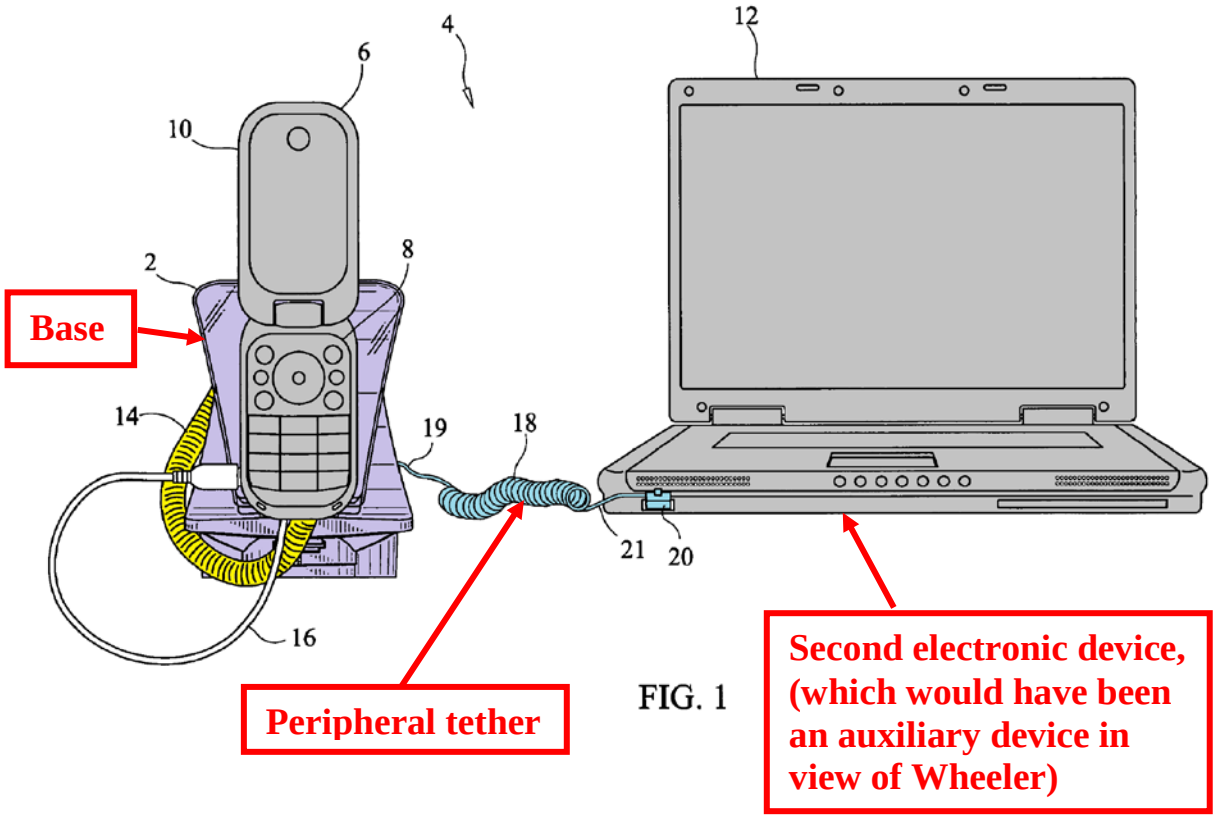


FIG. 1

VPG-1005, Figure 1 (annotated)

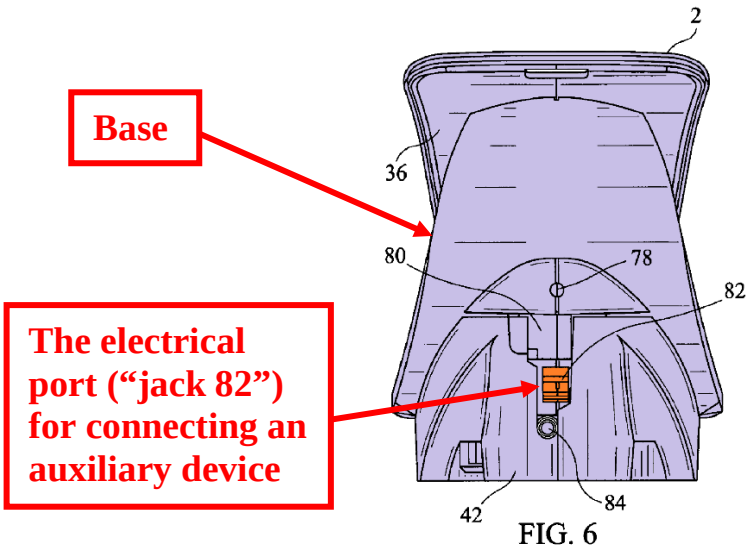


FIG. 6

VPG-1005, Figure 6 (annotated)

70. It would have been obvious to modify Grant's base to integrate Marszalek's electrical port therein, as established in Part VII(D)(iv), *supra*. The resulting security system would include the electrical port that is configured to receive the peripheral cable to secure an auxiliary device to the base. Since an "auxiliary port" is a port for connecting an auxiliary device (*see* Part VI(B)(2), *supra*), the combination of Grant, Marszalek, and Wheeler teaches "an auxiliary port disposed within the base and configured to receive an input connector" of the peripheral tether cable.

71. Marszalek also teaches "[t]he peripheral tether cable 18, the peripheral sensor 20 and/or the network plug … capable of mechanically and/or *electronically securing* the article 12." VPG-1005 at 11:39-43 (emphasis added). Marszalek in view of Wheeler teaches that the peripheral tether secures to the base at one end and the auxiliary device at the other end. *Id.* at 11:32-42. Marszalek's system monitors the integrity of each of the tethers and their connections to each component. *Id.* at 3:34-40; *see also id.* at 1:61-64 (disclosing that to "monitor an integrity of the tether," the security system is configured to detect "if the tether is cut, removed and/or tampered with"). As established in Part VI(B)(3), *supra*, such a connection,

wherein the integrity can be monitored by the security system, is an "*operable connection*." Accordingly, Marszalek, in view of Wheeler, teaches a peripheral tether cable that is "operably connected to the auxiliary device."

72. Accordingly, the combination of Grant, Marszalek, and Wheeler teaches the limitation "an auxiliary port disposed within the base and configured to receive an input connector operably connected to the auxiliary device."

e. "a cable operably connected to the sensor and the base"

73. The term "operably connected" should be construed to mean "connected in a manner that enables the security system to detect security events associated with the connection," as established in Part VII(B)(3), *supra*. Grant's security system "includes a cable connected to the sensor at one end and connected to the base at an opposite end, wherein the cable includes at least one conductor for defining a sense loop," and that 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." VPG-1004 at [0007], [0017]. As such, Grant teaches that the cable is configured to *operably connect* to the sensor and the base.

74. In addition, Grant uses the term "operably" when describing the connections between the cable and the sensor, and between the cable and the base.

See id. at [0034], [0023], [0033]. Specifically regarding the connection between the cable and the sensor, Grant teaches that "[t]he sensor 12 may include an additional pressure switch 47 that is configured to *operably* engage an end of the cable 20." *Id.* at [0034] (emphasis added). Moreover, regarding the connection between the cable and the base, Grant teaches that "[t]he base 18 may include a recoiler 22" and that "an end of the cable 20 [is] *operably* engaged with the recoiler." *Id.* at [0023], [0033] (emphasis added). The cable operably connected to the base and the sensor is shown in Figure 1 below:

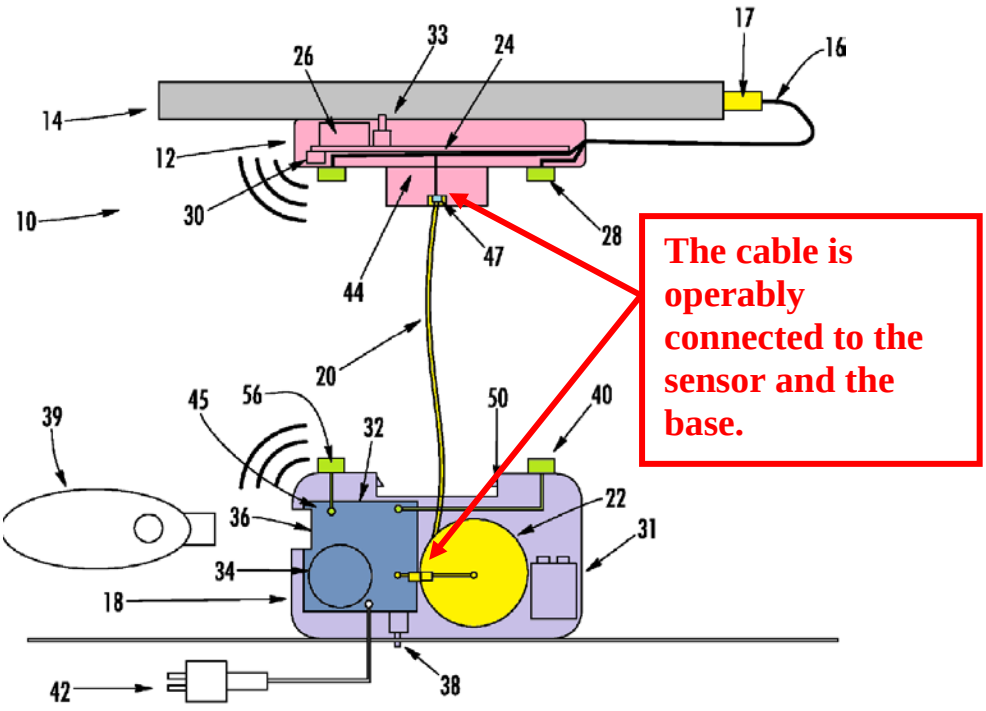


FIG. 1

VPG-1004, Figure 1 (annotated)

Accordingly, Grant teaches the limitation "a cable configured to be operably connected to the sensor and the base."

f. "wherein the base transfers power to the auxiliary port for powering the auxiliary device"

75. Grant teaches that "[t]he base includes a charging circuit for providing power to … the item of merchandise." VPG-1003 at Abstract. As such, Grant discloses that the base transfers power to the article of merchandise.

76. In addition, Marszalek in view of Wheeler also teaches that the base transfers power to a peripheral sensor that is attached to an auxiliary device. VPG-1005 at 11:13-20 (disclosing that "the peripheral tether cable 18 may have a peripheral sensor 20 that may be attached to the article 12" and also disclosing that "[t]he peripheral tether cable 18 may communicate power and/or data between the main body 36 [of the base assembly] and the peripheral sensor 20"). Grant teaches that an adapter cable can be used to transfer power from a sensor to an attached electronic device. *See* VPG-1004 at claim 14 (disclosing "an adapter cable electrically connecting the sensor to the item of merchandise"). Accordingly, it would have been obvious to electrically connect the peripheral sensor to the auxiliary

device via an adapter cable to enable power transfer from the base to the auxiliary device.

77. A POSA would have been motivated to enable the charging of the auxiliary device by the base because many electronic devices require power connections to enable user interaction, as disclosed in Marszalek. VPG-1005 (disclosing that "[m]any samples require power connections and/or data connections to allow an operational interaction between the consumer and the samples"). Such an improvement would not have required any undue experimentation and would predictably and expectedly yield an improved security system in which the base is configured to transfer power both the article of merchandise and to its auxiliary device, such that prospective customers can interact with both devices.

78. Accordingly, the limitation "wherein the base transfers power to the auxiliary port for powering the auxiliary device" is rendered obvious by the combination of Grant, Marszalek, and Wheeler.

g. <u>wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base."</u>

79. Grant teaches a tether cable that operably connects to both a sensor and a base, as established in Part VIII(A)(1)(e), *supra*. Grant also teaches that "the cable

20 may include one or more electrical conductors for transmitting electrical, *security*, and/or communication *signals*." VPG-1004 at [0031] (emphasis added). The electrical conductors define "a sense loop," that "may be used to detect various *security events* associated with the cable 20, such as *the cable being cut, shorted, and/or disconnected*." *Id.* at [0017] (emphasis added); *see also id.* at [0007]. Accordingly, Grant teaches a security system wherein a security signal is transmitted through the cable to detect security events, such as the cutting of the cable and the removal of the cable from either the sensor or the base.

80. Moreover, the security system resulting from the combination of Grant, Marszalek, and Wheeler would include an auxiliary port disposed within the base to receive an input connector of a peripheral tether cable used to secure an auxiliary device, as established in Part VIII(A)(1)(f), *supra*. A POSA would have been motivated to utilize Grant's "sense loop" technique to secure both the article of merchandise and the auxiliary device, protecting both devices against theft attempts. Accordingly, a POSA would have been motivated to configure the system such that a security signal is also transmitted through the auxiliary port, thereby being configured to detect the unauthorized removal of the input connector of the peripheral tether cable from the auxiliary port.

81. Such an improvement would have been straightforward, would not have required any undue experimentation, and would produce a predictable and expected result—a security system that secures both the article of merchandise *and* the auxiliary device against unauthorized removal. Supporting this conclusion, Grant itself teaches that "it will be apparent to those skilled in the art that various modifications [to the security system] can be made without departing from the spirit and scope of the invention." VPG-1004 at [0043].

82. Accordingly, the combination of Grant, Marszalek, and Wheeler teaches the limitation "wherein a security signal is transmitted through the auxiliary port that is used to detect removal of the auxiliary device from the base."

h. <u>CONCLUSION: Claim 1 is obvious over the combination of Grant, Marszalek, and Wheeler</u>

83. Every feature claimed in claim 1 of the '358 Patent was well known prior to the effective date of the '358 Patent and taught by the combination of Grant, Marszalek, and Wheeler. As such, claim 1 of the '358 Patent claims nothing more than an obvious combination of well-known components and technologies performing their intended functions in an expected and predictable manner. I have been informed that the governing law states: "when a patent 'simply arranges old

elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR Int'l Co.*, 550 U.S. at 417 (citation omitted). Accordingly, it is my belief that claim 1 of the '358 Patent is obvious and should be invalidated.

2. Claim 2

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

84. In the security device achieved by combining Grant, Marszalek, and Wheeler, the electrical port of Marszalek ("jack 82") is the "auxiliary port" and the peripheral tether of Marszalek is operably connected to the auxiliary device. Marszalek teaches that "[t]he first end 19 of the peripheral tether cable 18 may have a *network plug*, such as, for example, an RJ-45 plug that may be received by a jack 82." VPG-1005 at 11:32-35 (emphasis added). Accordingly, the combination of the cited prior art teaches the limitation "wherein the auxiliary port is configured to receive an input connector operably connected to the auxiliary device," rendering claim 2 obvious.

3. Claim 3

a. "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."

85. The combination of Grant, Marszalek, and Wheeler teaches that "a security signal is configured to be transmitted through the cable and the auxiliary port for detecting … removal of the auxiliary device from the base," as established in Part VIII(A)(1)(g), *supra*. Marszalek's peripheral tether is operably connected to the auxiliary device and includes an input connector ("a network plug") configured to be received within the auxiliary port. VPG-1005 at 11:32-35. In addition, Grant teaches that a security signal can be transmitted through the cable. VPG-1004 at [0031] (disclosing that "the cable 20 may include one or more electrical conductors for transmitting electrical, *security*, and/or communication *signals*") (emphasis added). Accordingly, the removal of the input connector from the auxiliary port would be detectable via a security signal transmitted through the cable and the auxiliary port, and the combination Grant, Marszalek, and Wheeler teaches the limitation "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," rendering claim 3 obvious.

4. Claim 16

a. "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."

86. Grant teaches that the tether cable is connected to a recoiler, and that, "[a]s such, the cable 20 may be extended from the base 18 when the sensor 12 and the item of merchandise 14 are lifted from the base, and the cable may be retracted into the base when the sensor and the item of merchandise are returned to the base," as shown in Figure 1 below. VPG-1004 at [0017], [0023].

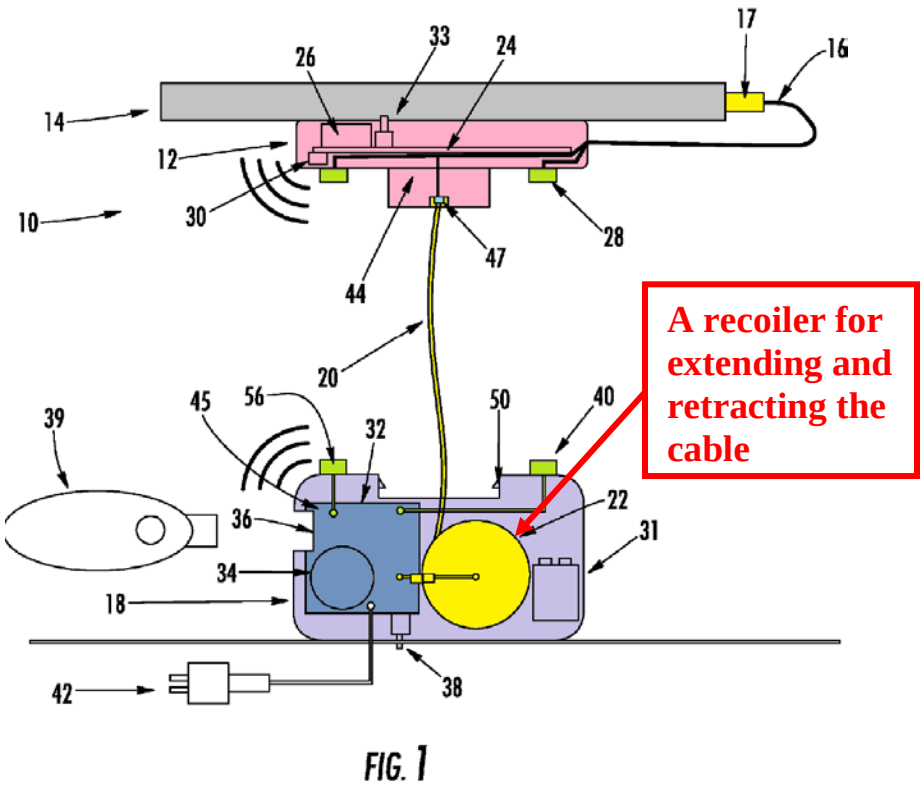


FIG. 1

VPG-1004, Figure 1 (annotated)

87. A POSA would understand that, to unwind the tether when the sensor is lifted from the base and to wind the tether when the sensor is placed on the base, the recoiler includes a rotatable reel. *See* VPG-1004 at [00020] (disclosing that "[i]t is common practice for the products to be tethered via a *reeled* power cord") (emphasis added). Accordingly, the combination of Grant, Marszalek, and Wheeler teaches the limitation "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."

5. Claim 17

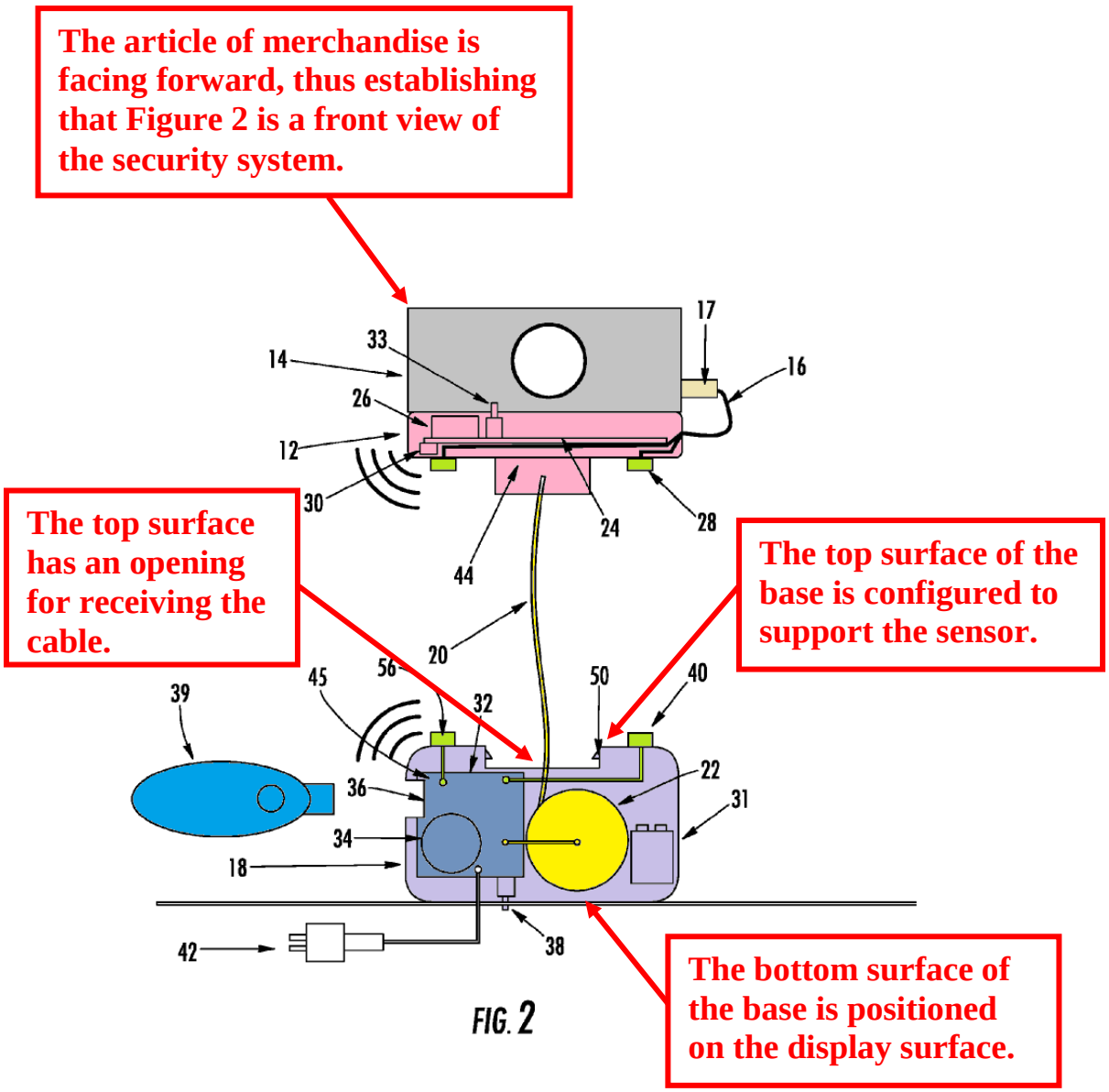
a. "The merchandise security system of claim 16, further comprising a lock mechanism configured to lock the sensor to the base in a locked position when the sensor is seated on the base to thereby prevent the rotatable member from rotating."

88. Grant teaches that a "lock mechanism 50 may be disposed within the base 18 for locking the base to the sensor 12 to prevent the sensor and item of merchandise 14 from being lifted from the base," with the lock mechanism being lockable and unlockable via a key. VPG-1004 at [0036]. A POSA would have understood that if the lock mechanism is in an unlocked position, the sensor can be removed from the base. *See id.* at [0017] (disclosing "a base 18 that is configured to *removably* support the sensor 12 and the item of merchandise 14 thereon") (emphasis added). Accordingly, Grant teaches the limitation "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," rendering claim 6 obvious.

6. Claim 18

a. "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."

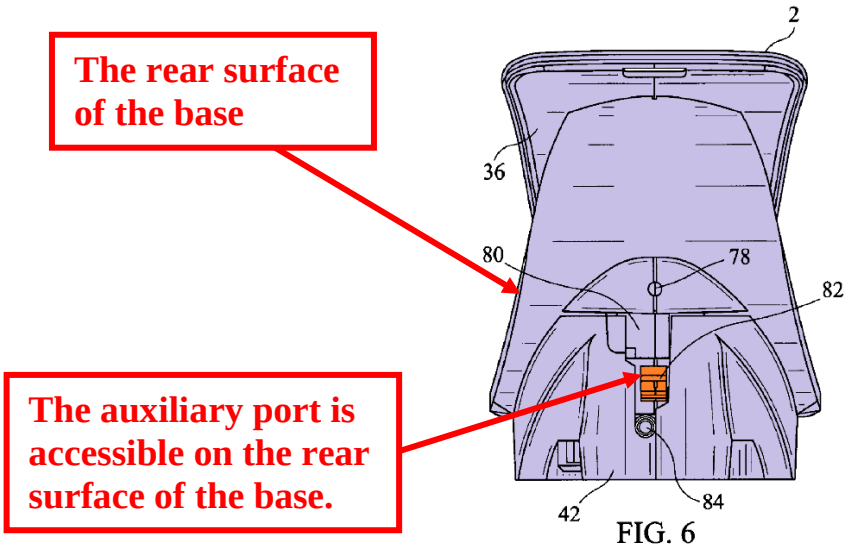
89. A front view of Grant is shown in Figure 2, as evidenced by the article of merchandise facing forward in the figure. VPG-1004 at Figure 2. Figure 2 also depicts that a top surface of the base supports the sensor and a bottom surface of the base is positioned on a display surface, and that the top surface has an opening for receiving the cable. *Id.*



VPG-1004 at Figure 2 (annotated)

90. Moreover, Marszalek in view of Wheeler teaches that the auxiliary port is accessible on a rear surface of the base, as shown in Figure 6 of Marszalek below,

which provides a rear plan view of the base and depicts the auxiliary port ("jack 82") being accessible on the rear surface of the base. VPG-1005 at Figure 6, 7:27-29.



VPG-1005, Figure 6 (annotated)

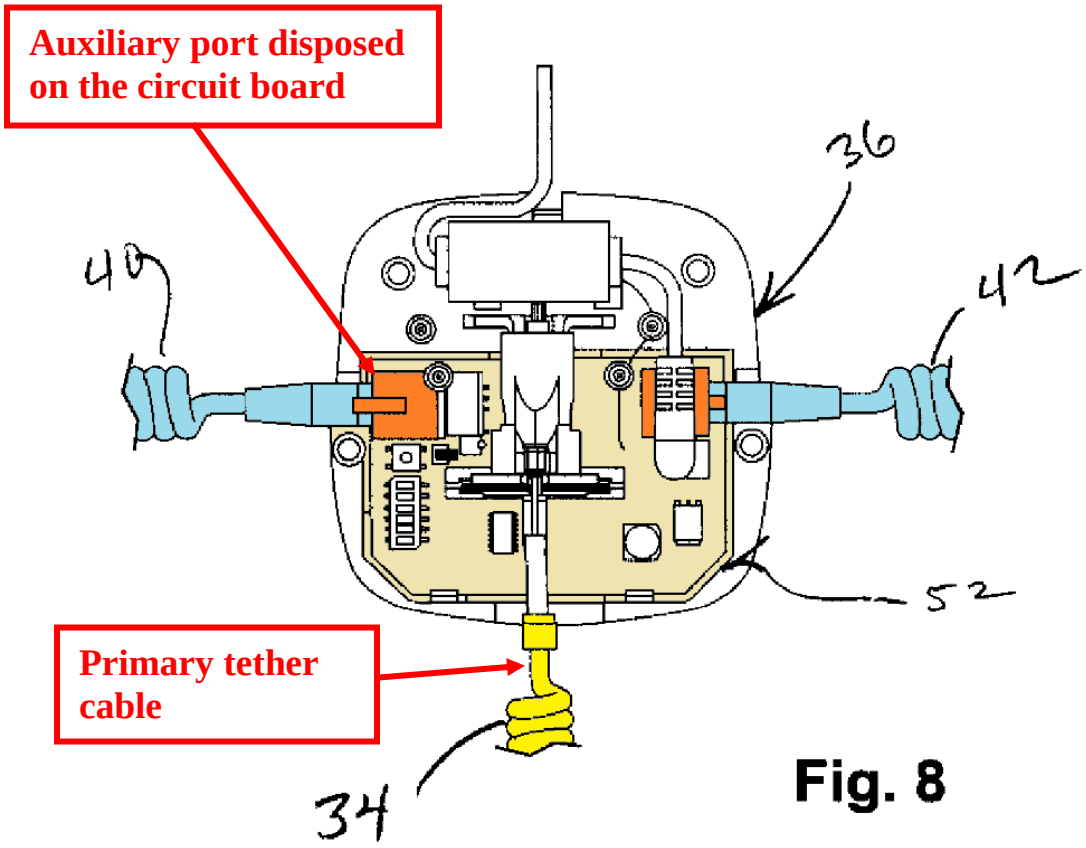
91. Accordingly, Grant teaches that a top surface of the base supports the sensor, a bottom surface of the base is positioned on a display surface, and a side surface of the base includes accessibility to a lock mechanism. Further, Marszalek teaches that an auxiliary port is accessible on a rear surface of the base. Thus, the combination of Grant, Marszalek, and Wheeler teaches the limitation "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," rendering claim 18 obvious.

7. Claim 29

a. "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."

92. Grant teaches that "the base 18 may include a *PCB 32*, circuitry, or the like that is *in electrical communication with the cable 20*." VPG-1004 at [0023] (emphasis added). In addition, Wheeler teaches that auxiliary ports for receiving connectors of the auxiliary tethers are disposed on the same printed circuit board that receives the primary tether via an electrical connection, as shown in Figure 8 below. VPG-1006 at [0051], Figure 8.



VPG-1006, Figure 8 (annotated)

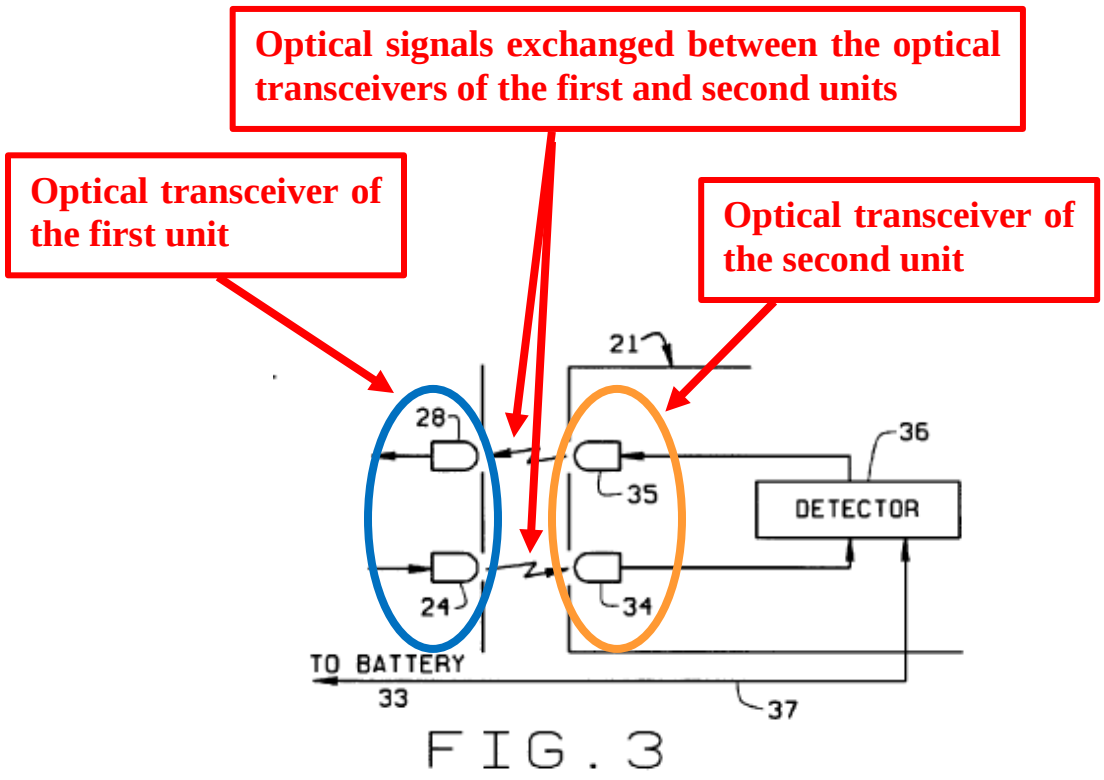
Accordingly, claim 29 is rendered obvious, as the combined prior art reference teach the limitation "a printed circuit board disposed within the base and electrically connected to the cable with a plurality of electrical wires, wherein the auxiliary port is disposed on the printed circuit board."

B. Ground 2: Claims 19, 20, 23, and 28 are obvious over the combination of Grant, Marszalek, Wheeler, and Vogt

1. Claim 19

   a. "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."

93. Vogt teaches a security system to monitor the integrity of a connection between two units, with each unit including an optical transceiver that is configured to communicate optical signals to the other unit, as depicted in Figure 3 below. VPG-1008 at Abstract.



VPG-1008, Figure 3 (annotated)

Integrating one of Vogt's units into the end of the tether cable and another unit into the sensor would have been obvious to monitor the integrity of the connection between the tether cable and sensor, as established in Part VII(F), *supra*. Each of the two units has an optical transceiver, and both optical transceivers communicate optical security signals to one another. Upon integration of the units into the cable and the sensor, the optical transceivers would communicate optical signals back-and-forth, and a failure of one of the units to receive the expected security signal would indicate a security event, such as the removal of the cable from the sensor. As such, the combination of Grant and Vogt teaches the limitation "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," rendering claim 19 obvious.

2. Claim 20

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

94. As established in Part VIII(B)(1), *supra*, Vogt teaches a security system to monitor the integrity of a connection between two units, with each unit including

an optical transceiver that is configured to communicate optical signals to the other unit. VPG-1008 at Abstract. Further, it would have been obvious to integrate one of Vogt's units into the end of the tether cable and another unit into the sensor would have been obvious to monitor the integrity of the connection between the tether cable and sensor, as established in Part VII(F), *supra*. As a result, each of the cable and the sensor would comprise an optical transceiver. Accordingly, the combination of Grant and Vogt teaches the limitation "wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor," rendering claim 20 obvious. VPG-1008 at Abstract.

3. Claim 23

    a. "The merchandise security system of claim 20, wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable."

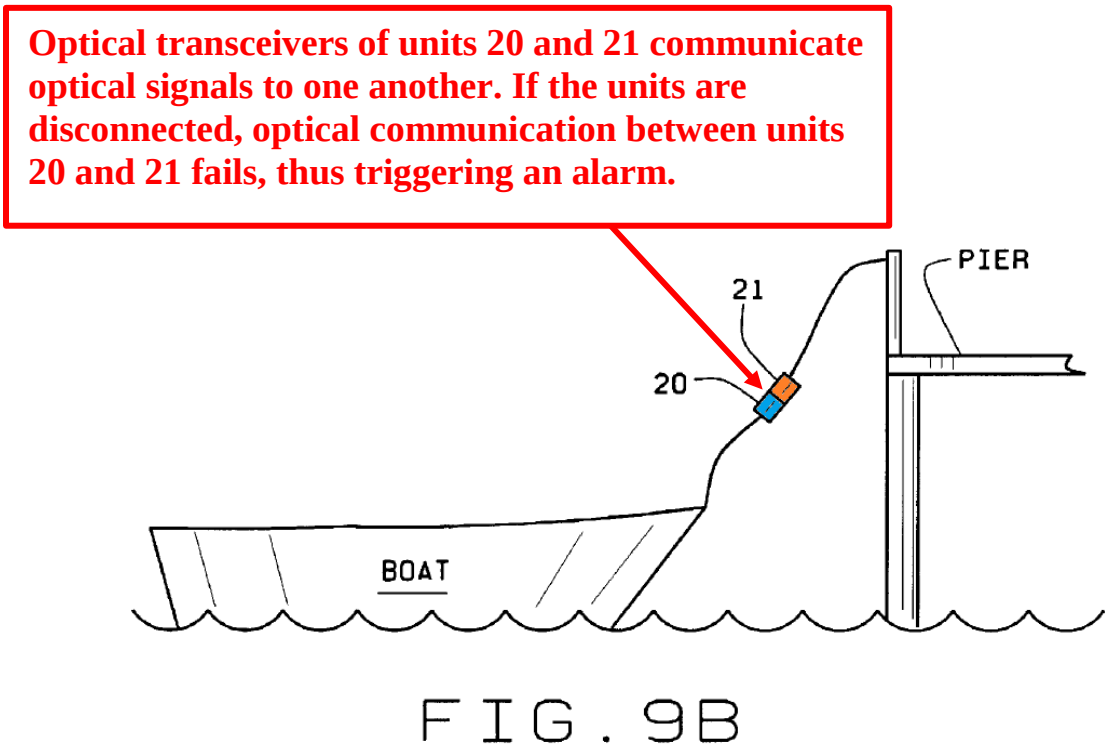
95. It would have been obvious to combine Grant and Vogt by integrating one of Vogt's two units into the tether cable while integrating the other unit into the sensor, as established in Part VII(F), *supra*. The transceiver of the sensor would then be configured to communicate optical signals with the transceiver of the cable. *See* VPG-1008 at Abstract. Accordingly, the combination of Grant and Vogt teaches the

limitation "wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable," rendering claim 23 obvious.

4. Claim 28

a. "The merchandise security system of claim 23, 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."

96. As established in Part VII(F), *supra*, it would have been obvious to integrate Vogt's first unit having a first optical transceiver into the end of the cable and integrate Vogt's second unit having a second transceiver into the sensor. Vogt teaches that the optical communication between the two units would fail (and trigger an alarm condition) in the event that the units become separated or one of the units becomes depowered (which would happen if the cable supplying power to the unit were cut). *See* VPG-1008 at Abstract (disclosing that "[f]ailure of the first unit to … receive the return signals … indicates either the units are no longer in close proximity; or, someone is trying to compromise the security system. Either condition constitutes an alarm condition for which an alarm is produced"). Vogt's security technique can be used to monitor a cable connection, as depicted in Figure 9B, which is reproduced and annotated below:



VPG-1008; Figure 9B (annotated)

Accordingly, the combination of Grant and Vogt teaches the limitation "the merchandise security system of claim 23, 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," rendering claim 28 obvious.

C. Ground 3: Claims 1-3, 16, and 18 are obvious over the combination of Brenner, Marszalek, Wheeler, and Fawcett

1. Claim 1

a. "A merchandise security system for displaying and protecting an article of merchandise and an auxiliary device of the article of merchandise from theft"

97. Brenner teaches "an apparatus for securing objects, more particularly exhibited goods, against unauthorized taking." VPG-1007 at 1. Combining Brenner with Marszalek and Wheeler to achieve an improved merchandise security system would have been obvious in order to secure both an article of merchandise and a complementary auxiliary device, as established in Part VII(I), *supra*. Accordingly, Brenner in view of Marszalek and Wheeler teaches the preamble of claim 1.

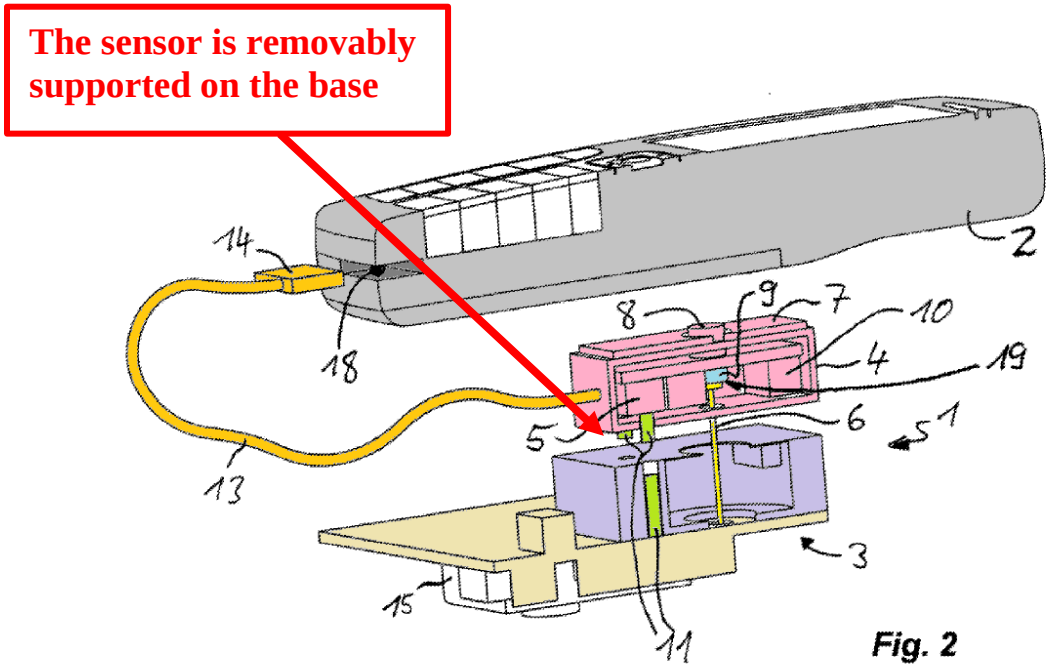
b. "a sensor that is secured to the article of merchandise and that detects removal of the article of merchandise from the sensor"

98. Brenner teaches that "[t]he sensor unit for securing the object is connected to the object." VPG-1007 at 2. Therefore, Brenner teaches "a sensor configured to be secured to the article of merchandise."

c. "a base that removably supports the sensor and the article of merchandise thereon"

99. Brenner discloses a base that removably supports a sensor, as shown in Figure 2. *See* VPG-1007 at Figure 2 (which depicts the sensor being lifted from the base) *see also id*. at 11 (disclosing that "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").



VPG-1007, Figure 2 (annotated)

Accordingly, Brenner teaches the limitation "a base that removably supports the sensor and the article of merchandise thereon."

d. "wherein the base further comprises an auxiliary port that operably connects to the auxiliary device"

100. A POSA would have been motivated to attain an improved security system configured to secure both an article of merchandise *and* an auxiliary device that is complementary to the article of merchandise, such as by combining the

teachings of Brenner with those of Marszalek and Wheeler, as established in Part VII(I), *supra*. Specifically, Marszalek in view of Wheeler teaches the use of a peripheral tether cable to secure an auxiliary device, and Marszalek teaches that the base includes an electrical port ("jack 82") that is configured to receive a connector of the peripheral tether, as shown in Figures 1 and 6 below. *See* VPG-1005 at 3:27-30. (disclosing that "[t]he system may have a peripheral tether and/or a peripheral sensor that may secure a second article, such as, for example, a portable electronic device to the base"), 11:32-35 (disclosing that "[t]he first end 19 of the peripheral tether cable 18 may have a network plug, such as, for example, an RJ-45 plug that may be received by a jack 82").

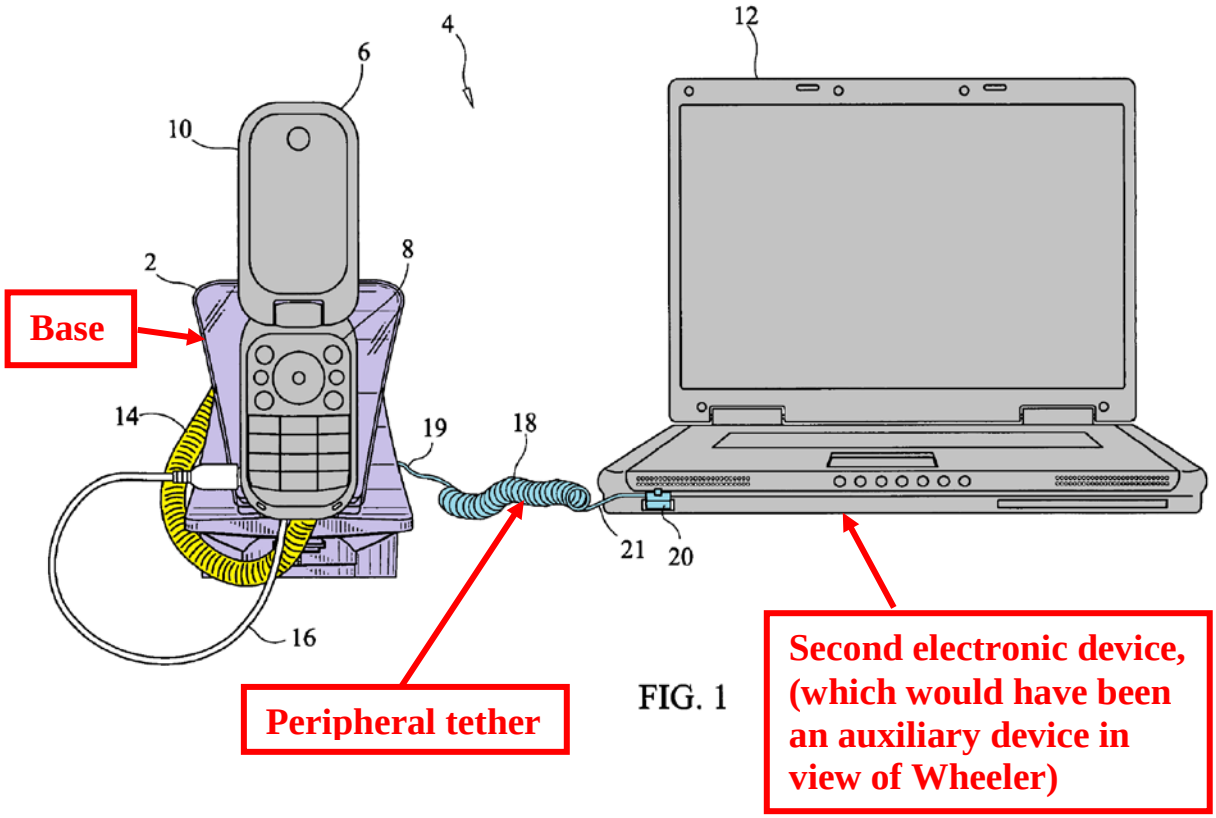


FIG. 1

VPG-1005, Figure 1 (annotated)

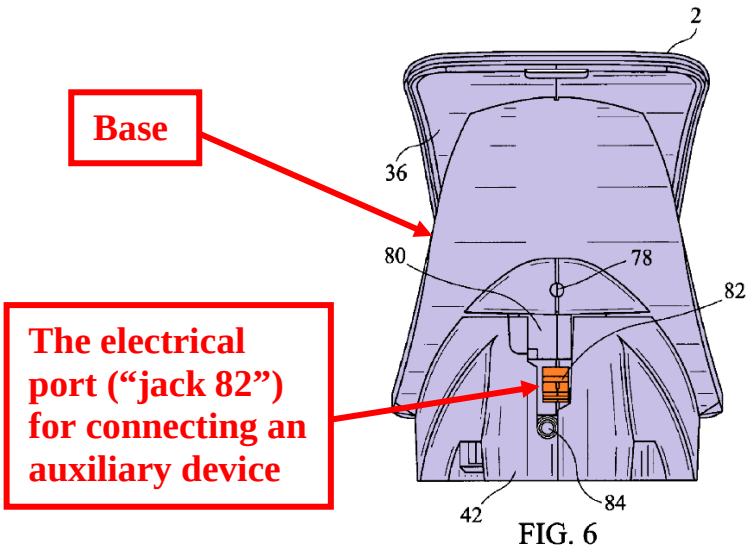


FIG. 6

VPG-1005, Figure 6 (annotated)

101. It would have been obvious to modify Brenner's base to integrate Marszalek's electrical port therein, as established in Part VII(I), *supra*. The resulting security system would include the electrical port that is configured to receive the peripheral cable to secure an auxiliary device to the base. Since an "auxiliary port" is a port for connecting an auxiliary device (*see* Part VI(B)(2), *supra*), the combination of Brenner, Marszalek, and Wheeler teaches "an auxiliary port disposed within the base and configured to receive an input connector" of the peripheral tether cable.

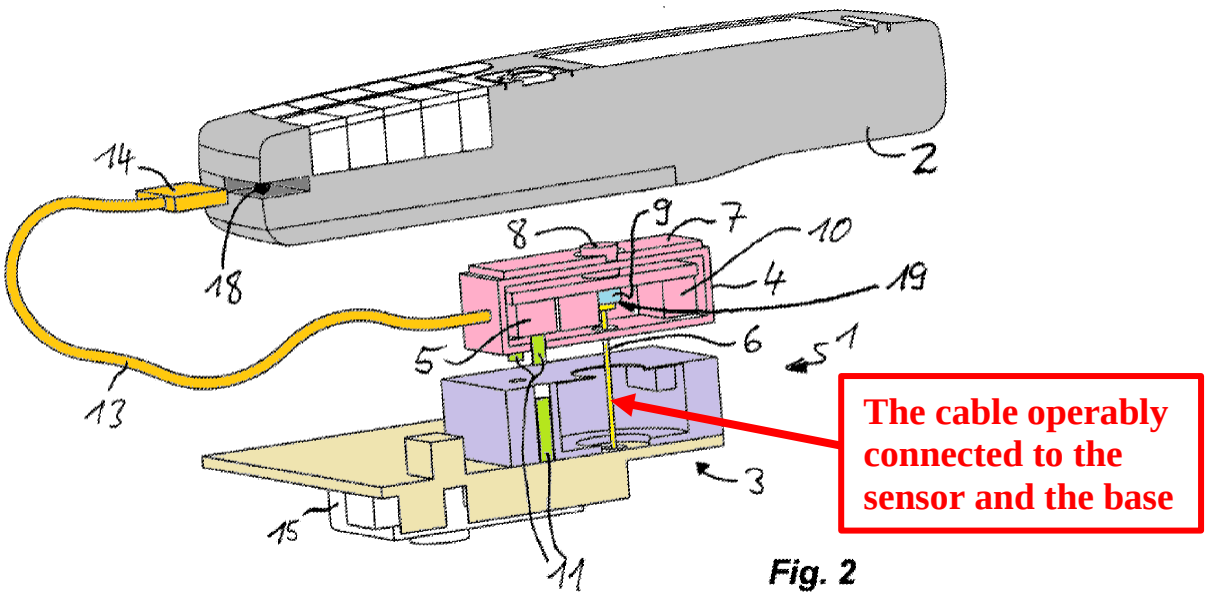
102. Marszalek also teaches "[t]he peripheral tether cable 18, the peripheral sensor 20 and/or the network plug … capable of mechanically and/or *electronically securing* the article 12." VPG-1005 at 11:39-43 (emphasis added). Marszalek in view of Wheeler teaches that the peripheral tether secures to the base at one end and the auxiliary device at the other end. *Id.* at 11:32-42. Marszalek's system monitors the integrity of each of the tethers and their connections to each component. *Id.* at 3:34-40; *see also id.* at 1:61-64 (disclosing that to "monitor an integrity of the tether," the security system is configured to detect "if the tether is cut, removed and/or tampered with"). As established in Part VI(B)(3), *supra*, such a connection,

wherein the integrity can be monitored by the security system, is an "*operable connection*." Accordingly, Marszalek, in view of Wheeler, teaches a peripheral tether cable that is "operably connected to the auxiliary device."

103. Accordingly, the combination of Brenner, Marszalek, and Wheeler teaches the limitation "wherein the base further comprises an auxiliary port that operably connects to the auxiliary device."

e. "a cable operably connected to the sensor and the base"

104. Brenner teaches that the security system includes "a base unit and a sensor unit, which are connected to each other by means of a securing tether," and that "the securing tether has an optical waveguide, that the sensor unit has an optical transmitter and the base unit has an optical receiver." VPG-1007 at 1-2.



VPG-1007, Figure 2 (annotated)

105. As established in Part VII(H), *supra*, it would have been obvious to define a sense loop through the optical waveguide, as taught in Fawcett. VPG-1009 at [0023]. Such a sense loop could be established by programming the sensor to transmit optical security signals to the base at predetermined time intervals via the optical waveguide within the tether, such that the base would interpret the failure to receive the expected security signal as a security event. Such a sense loop would enable the security system to monitor the integrity of the connections of the tether cable to both the base and the sensor. *See* VPG-1009 at [0060]. As established in Part VI(B)(3), *supra*, a connection that is monitored by the security system is an

operable connection. Accordingly, Brenner in view of Fawcett teaches the limitation "a cable operably connected to the sensor and the base."

f. "wherein the base transfers power to the auxiliary port for powering the auxiliary device"

106. Marszalek in view of Wheeler teaches that the base is also configured to transfer power to a peripheral sensor that is attached to an auxiliary device. VPG-1005 at 11:13-20 (disclosing that "the peripheral tether cable 18 may have a peripheral sensor 20 that may be attached to the article 12" and also disclosing that "[t]he peripheral tether cable 18 may communicate power and/or data between the main body 36 [of the base assembly] and the peripheral sensor 20"). Brenner teaches that power can be transferred from a sensor to an electronic device attached to the sensor via an adapter cable ("connecting line 13"). VPG-1007 at claim 10. Accordingly, it would have been obvious to electrically connect the peripheral sensor to the auxiliary device via an adapter cable to enable power transfer from the base to the auxiliary device.

107. A POSA would have been motivated to enable the charging of the auxiliary device by the base because many electronic devices require power connections to enable user interaction, as disclosed in Marszalek. VPG-1005

(disclosing that "[m]any samples require power connections and/or data connections to allow an operational interaction between the consumer and the samples"). Such an improvement would not have required any undue experimentation and would predictably and expectedly yield an improved security system in which the base is configured to transfer power both the article of merchandise and to its auxiliary device, such that prospective customers can interact with both devices.

108. Accordingly, the limitation "wherein the base is configured to transfer power to the article of merchandise and the auxiliary device" is taught by the combination of Brenner, Marszalek, and Wheeler.

g. "wherein a security signal is transmitted through the auxiliary port for that is used to detect removal the cable being cut, shorted, or disconnected and removal of the auxiliary device from the base."

109. Moreover, Fawcett teaches that a sense loop "may be formed of an electrical conductor … located within an outer mechanical cable." VPG-1009 at [0023]. A POSA would have been motivated to use Fawcett's "sense loop" technique to secure both the article of merchandise and the auxiliary device against possible theft attempts. As such, a POSA would have been motivated to configure the security system to transmit a security signal through the auxiliary port to detect

the unauthorized removal of the input connector of the peripheral tether cable from the auxiliary port.

110. Such improvements would have been straightforward, would not have required any undue experimentation, and would have produced a predictable and expected result—a security system to secure against unauthorized removal of both the article of merchandise and the auxiliary device. Accordingly, the combination of the cited prior art teaches the limitation "wherein a security signal is configured to be transmitted through the cable and the auxiliary port for detecting the cable being cut, shorted, or disconnected and removal of the auxiliary device from the base."

h. CONCLUSION: Claim 1 is obvious over the combination of Brenner, Marszalek, Wheeler, and Fawcett

111. Every feature claimed in claim 1 of the '358 Patent was well known prior to the effective date of the '358 Patent and taught by the combination of Brenner, Marszalek, Wheeler, and Fawcett. As such, claim 1 of the '358 Patent claims nothing more than an obvious combination of well-known components and technologies performing their intended functions in an expected and predictable manner. I have been informed that the governing law states: "when a patent 'simply arranges old elements with each performing the same function it had been known to

perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR Int'l Co.*, 550 U.S. at 417 (citation omitted). Accordingly, it is my belief that claim 1 of the '358 Patent is obvious and should be invalidated.

2. Claim 2

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

112. A POSA would have been motivated to combine Brenner, Marszalek, and Wheeler to achieve an improved security system that secures both an article of merchandise *and* a complementary auxiliary device, as established in Part VII(I), *supra*. Marszalek in view of Wheeler also teaches that a peripheral tether cable can secure an auxiliary device. *See* VPG-1005 at 3:27-30 (disclosing that "[t]he system may have a peripheral tether and/or a peripheral sensor that may secure a second article, such as, for example, a portable electronic device to the base"). Marszalek's base has an electrical port ("jack 82") that is configured to receive a connector of the peripheral tether. *Id.* at 11:32-35 (disclosing that "[t]he first end 19 of the peripheral tether cable 18 may have a network plug, such as, for example, an RJ-45 plug that

may be received by a jack 82"). As such, the combination of Brenner, Marszalek, and Wheeler teaches the limitation "wherein the auxiliary port is configured to receive an input connector operably connected to the auxiliary device," rendering claim 2 obvious.

3. Claim 3

a. "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."

113. The combination of Brenner, Marszalek, and Wheeler teaches that "a security signal is configured to be transmitted through the cable and the auxiliary port for detecting … removal of the auxiliary device from the base," as established in Part VIII(C)(1)(g), *supra*. Marszalek's peripheral tether is operably connected to the auxiliary device and includes an input connector ("a network plug") configured to be received within the auxiliary port. VPG-1005 at 11:32-35. Accordingly, the removal of the input connector from the auxiliary port would be detectable via a security signal transmitted through the cable and the auxiliary port, and the combination Brenner, Marszalek, and Wheeler teaches the limitation "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," rendering claim 3 obvious.

4. Claim 16

a. "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."

114. Brenner teaches "[a] winding device … by means of which the securing tether can be wound under tensile stress," explaining that when an article of merchandise is lifted from the base, "the securing tether 6 can be pulled out of the winding device 15 against the tensile force," as shown in Figure 4. VPG-1007 at 11.

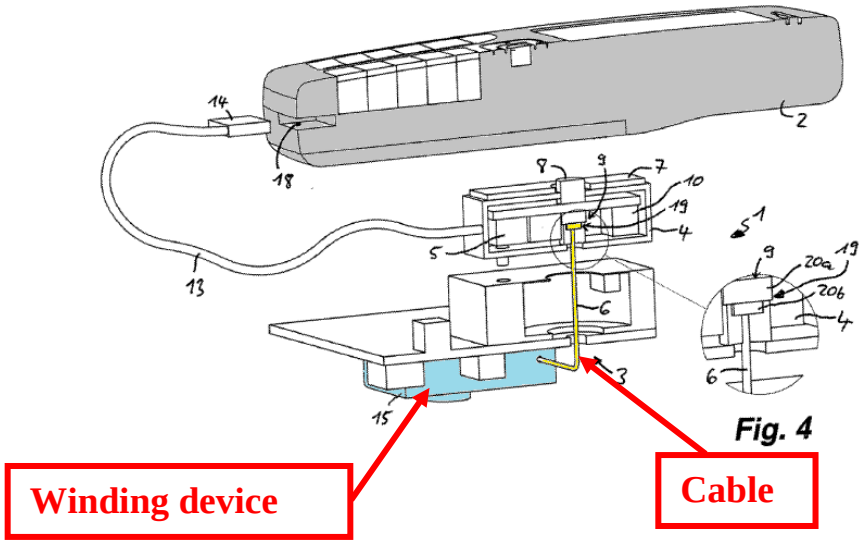


Fig. 4

VPG-1007, Figure 4 (annotated)

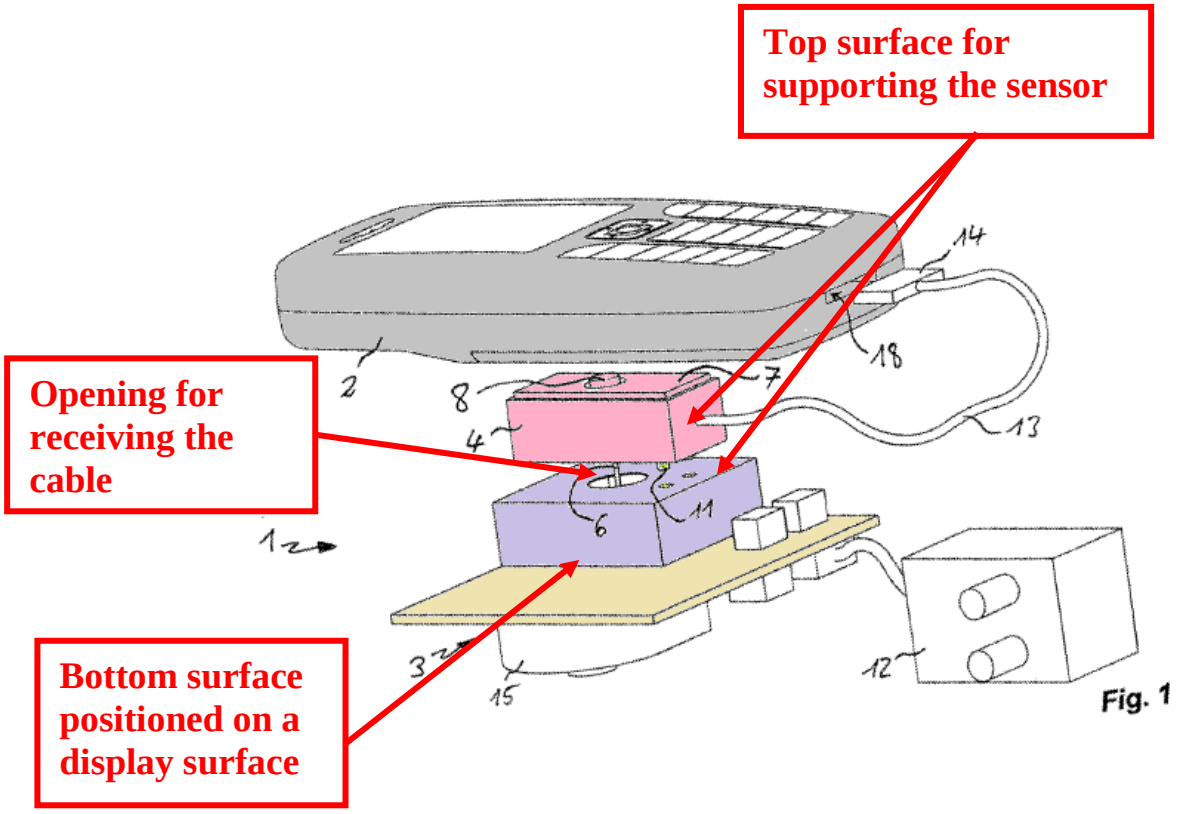
115. A POSA would understand that Brenner's winding device includes a reel that rotates inside the winding device to unwind the tether (when the sensor is lifted from the base) and retract the tether (by rotating in the opposite direction when the sensor is placed back on the base) under the tensile stress. *See also* VPG-1004 at [0020] (disclosing that "[i]t is common practice for the products to be tethered via a *reeled* power cord") (emphasis added). Accordingly, the combination of the cited prior art teaches the limitation "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," rendering claim 16 obvious.

5. Claim 18

a. "The merchandise security system of claim 1, further comprising a recoiler comprising a rotatable member, 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."

116. Brenner teaches that the base has a top surface configured to be unwound from and wound on the rotatable member as support the sensor and having

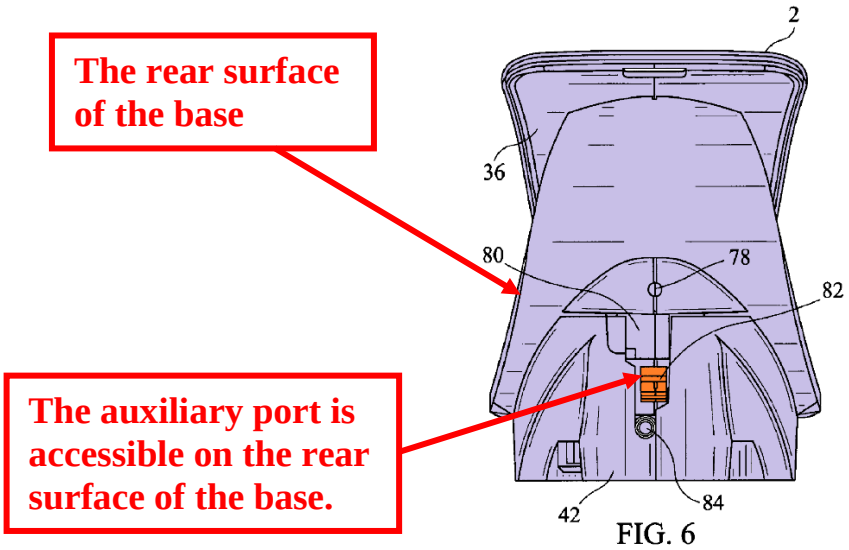
an opening for receiving the cable is extended and retracted, a bottom surface positioned on a display surface, a side surface, and a rear surface, as shown in Figure 1 below.



VPG-1007, Figure 1 (annotated)

117. Moreover, Marszalek in view of Wheeler teaches that the auxiliary port is accessible on a rear surface of the base. VPG-1005 at Figure 6. Figure 6 of Marszalek, depicts a rear plan view of the base, showing that the auxiliary port ("jack 82") is accessible on the rear surface of the base. *See* VPG-1005 at 7:27-29, Figure

6. A POSA would have been motivated to follow Marszalek's teachings of by placing the auxiliary port on the rear surface of the base, increasing the difficulty for a thief attempting to reach around the base to disconnect the peripheral tether without raising suspicion.



VPG-1005, Figure 6 (annotated)

118. Accordingly, the cited prior art teaches the limitation "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," rendering claim 19 obvious.

D. Ground 4: Claims 19, 20, 23, and 28 are obvious over the combination of Brenner, Marszalek, Wheeler, Fawcett, and the '730 Publication

1. Claim 19

    a. "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."

119. Brenner teaches that a first optical transceiver in the base and a second optical transceiver in the sensor are configured for bidirectional optical communication therebetween. VPG-1007 at 7. Improving Brenner's system by relocating the optical transceiver from the base into the connector of the securing tether coupled to the sensor is obvious, as established in Part VII(K), *supra*. For example, it would have been obvious to implement Vogt's security technique to monitor the integrity of the connection between the securing tether and the sensor in Brenner's security system. Since Brenner in view of the '730 Publication teaches that each of the cable connector and the sensor includes an optical transceiver, adapting the transceivers to communicate security signals to one another, as taught in Vogt, would have been straightforward and would produce an expected and

predictable result—an improved security system in which the optical transceivers of the tether and the sensor communicate optical signals to one another (*i.e.*, bidirectional optical communication) to detect a security event, such as cutting or removal of the tether cable. Accordingly, the relocated optical transceiver could communicate directly with the optical transceiver of the sensor. Therefore, Brenner in view of the '730 Publication and Vogt teaches the limitation "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," rendering claim 19 obvious.

2. Claim 20

a. "The merchandise security system of claim 19, wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor."

120. Brenner teaches that the sensor may include an optical transceiver that is configured to communicate optical signals with the optical transceiver of the base. VPG-1007 at 7. As explained above, improving Brenner's security device by relocating the first optical transceiver from the base into the cable would have been obvious in light of the '730 Publication. In this improved security system, the optical

transceiver of the sensor would be configured to communicate with the optical transceiver of the cable. Accordingly, the combination of Brenner and the '730 Publication teaches the limitation "wherein an end of the cable comprises an optical transceiver for communicating optical signals with the sensor," rendering claim 20 obvious.

3. Claim 23

    a. "The merchandise security system of claim 20, wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable."

121. Brenner in view of the '730 Publication teaches that the optical transceiver of the sensor is capable of bidirectional optical communication with the optical transceiver of the cable, as established in Part VIII(D)(1), *supra*. Accordingly, the combined prior art teaches the limitation "wherein the sensor comprises an optical transceiver for communicating optical signals with the optical transceiver of the cable."

4. Claim 28

    a. "The merchandise security system of claim 23, 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."

122. As established in Part VIII(D)(1), *supra*, the combination of Brenner, the '730 Publication, and Vogt teaches a security system including one optical transceiver integrated into the tether cable and another optical transceiver housed within the sensor. As such, the two optical transceivers monitor the integrity of a connection between the two components housing the optical transceivers, with an alarm being triggered if the connection is interrupted (*e.g.*, the cutting or removal of the cable). Accordingly, the combined prior art teaches the limitation "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," rendering claim 28 obvious.

IX. CONCLUSION

123. For the reasons set for above, it is my opinion that claims 1-3, 16-20, 23, 28, and 29 of the '358 Patent are obvious in view of the prior art references disclosed herein.

124. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I further understand that I may be

subject to cross-examination. If cross-examination is required, I will make myself available within the United States during the period designated for cross-examination.

125. I hereby declare that all statements made in this declaration are of my own knowledge and are true, and that all statements made on information and belief are believed to be true; that these statements were made with the knowledge that willfully 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.

Respectfully submitted,

Date: October 18, 2019

John Figh Digitally signed by John Figh
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John "Jack" Figh, Jr.