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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	04/21/2009	7522951	GB 020258	9089

24737 7590 04/01/2009
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 443 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

Paul A Gough, Smallfield, UNITED KINGDOM;
Mathew J Bickerton, Redhill, UNITED KINGDOM;



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	06/23/2005	Paul A Gough	GB 020258	9089

24737 7590 03/12/2009
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

COHEN, LEE S

ART UNIT	PAPER NUMBER
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3739

MAIL DATE	DELIVERY MODE
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03/12/2009

PAPER

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

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

**UNITED STATES DEPARTMENT OF COMMERCE****U.S. Patent and Trademark Office**

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10540594	6/23/05	GOUGH ET AL.	GB 020258

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

Lee S.. Cohen

ART UNIT	PAPER
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3739	20090311
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DATE MAILED:

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

Commissioner for Patents

Response to Rule 312 Communication	Application No.	Applicant(s)
	10/540,594	GOUGH ET AL.
	Examiner	Art Unit
	Lee S. Cohen	3739

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

1. ☒ The amendment filed on 09 March 2009 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☒ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

/Lee S. Cohen/
Primary Examiner, Art Unit 3739

OK TO ENTER: /LC/

**CUSTOMER NO.: 24737
EXPEDITED PROCEDURE**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Examiner: L. COHEN
P. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
September 17, 2008)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRX 2 00089	)	March 9, 2009

RULE 312 AMENDMENT

Mail Stop: AF
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Amendments to the claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 5.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

24737

7590

12/09/2008

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	06/23/2005	Paul A Gough	GB 020258	9089

TITLE OF INVENTION: ELECTRODE ARRANGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/09/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
COHEN, LEE S	3739	600-388000

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

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Yan Glickberg

2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE

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

KONINKLIJKE PHILIPS ELECTRONICS N.V. EINDHOVEN, THE NETHERLANDS

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

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

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

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

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 141270 (enclose an extra copy of this form).

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

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Yan Glickberg/

Typed or printed name Yan Glickberg

Date March 9, 2009

Registration No. 51,742

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		10540594		
Filing Date:		23-Jun-2005		
Title of Invention:		ELECTRODE ARRANGEMENT		
First Named Inventor/Applicant Name:		Paul A Gough		
Filer:		Yan Glickberg/Natale Manzo		
Attorney Docket Number:		GB 020258		
Filed as Large Entity				
U.S. National Stage under 35 USC 371 Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1810

Electronic Acknowledgement Receipt

EFS ID:	4928757
Application Number:	10540594
International Application Number:	
Confirmation Number:	9089
Title of Invention:	ELECTRODE ARRANGEMENT
First Named Inventor/Applicant Name:	Paul A Gough
Customer Number:	24737
Filer:	Yan Glickberg/Natale Manzo
Filer Authorized By:	Yan Glickberg
Attorney Docket Number:	GB 020258
Receipt Date:	09-MAR-2009
Filing Date:	23-JUN-2005
Time Stamp:	15:16:55
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1810
RAM confirmation Number	703
Deposit Account	141270
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		PHGB020258US_312.pdf	348273 1475f2b001548384b4fb64388f0e65da681c8829	yes	5
Multipart Description/PDF files in .zip description					
	Document Description		Start	End	
	Amendment after Notice of Allowance (Rule 312)		1	1	
	Claims		2	4	
	Applicant Arguments/Remarks Made in an Amendment		5	5	
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	GB020258US_ISSUEFEE_TRANS_DUE_03-09-09.pdf	1725437 ae2b7563e6f74facf2be93927ec5e107ba29d2f9	no	1
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	32004 907d04fa1bae3e376f916384be0764e5944d8762	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2105714		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

**CUSTOMER NO.: 24737
EXPEDITED PROCEDURE**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Examiner: L. COHEN
P. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
September 17, 2008)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRX 2 00089	)	March 9, 2009

RULE 312 AMENDMENT

Mail Stop: AF
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Amendments to the claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 5.

Amendment to the Claims:

1. (Cancelled)

2. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said at least one portion of material is located directly on said first surface.

3. (Cancelled)

4. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said material is mechanically flexible.

5. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said material is silicone rubber loaded with conductive material.

6-9. (Cancelled)

10. (Previously Presented) An electrode arrangement comprising:

an electrically conductive fabric having a first surface for application to skin of a mammal; and

5 at least one portion of material which is substantially impermeable to moisture, said material being located on said first surface,

wherein said electrically conductive fabric is integral with a garment.

11-12. (Cancelled)

13. (Currently Amended) A garment comprising:

a wearable article of clothing; and

a fabric electrode arrangement exhibiting a first surface for application to skin of a mammal wearing the article of clothing, the fabric electrode arrangement

5 being disposed on an inner surface of the article of clothing with the first surface facing inward, said fabric electrode arrangement including:

at least one portion of material which is substantially impermeable to moisture, said moisture impermeable material being located on said first surface; and

10 an electrically conductive, moisture permeable fabric portion located on the first surface around the substantially moisture impermeable portion of material.

14. (Cancelled)

15. (Previously Presented) An electrode arrangement comprising:

an electrically conductive fabric portion with a first surface which contacts a wearer's skin directly;

5 a moisture impermeable, electrically conductive layer affixed to the first surface of the electrically conductive fabric to contact the wearer's skin directly, such that said layer promotes perspiration which reduces skin-to-electrode contact resistance and such that the electrically conductive fabric absorbs and dissipates perspiration while permitting the skin to breathe to promote user comfort.

16. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer contacts the skin directly with only perspiration functioning to reduce the skin-to-electrode contact resistance.

17. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer and the electrically conductive fabric are both flexible.

18. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer includes silicone rubber filled with a conductive material.

19. (Previously Presented) The electrode arrangement in accordance with claim 18 wherein the conductive material includes one of carbon and silver.

20. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the electrically conductive fabric is knitted or woven.

21. (Previously Presented) The electrode arrangement in accordance with claim 20 wherein the electrically conductive fabric is knitted or woven from electrically conductive fibers and non-conductive fibers.

22. (Previously Presented) A wearable article comprising:
a garment made of non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15,
positioned on the garment to contact the wearer's skin.

23. (Previously Presented) A textile article comprising:
a non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15, in
which the electrically conductive fabric portion is supported by the non-electrically
5 conductive fabric and positioned to contact the wearer's skin.

24. (Previously Presented) The garment in accordance with claim 13 wherein the moisture impermeable portion is electrically conductive and flexible.

25. (Previously Presented) The garment in accordance with claim 24 wherein the fabric electrode arrangement is free of electrically conductive gel with only perspiration induced by the moisture impermeable portion acting as a sole skin-to-electrode contact resistance reducing agent.

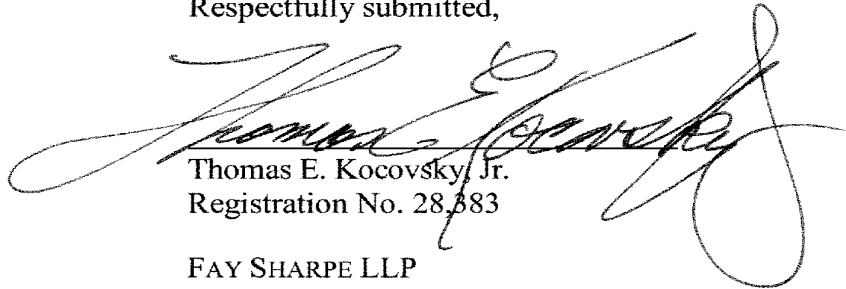
REMARKS

This amendment is to correct a minor wording inconsistency between lines 3 and 4 of claim 13. Specifically, line 3 of claim 13 introduced a "fabric electrode arrangement", which is mirrored in line 6. However, line 4 referred back to merely "the fabric electrode". This amendment is to cure this wording inconsistency by adding the word "arrangement" to line 4.

It is submitted that this amendment goes only to matters of form and does not change the scope of the claims. It is further submitted that this amendment may be properly entered pursuant to Order 3311.

An early indication of the entry of this amendment is requested.

Respectfully submitted,



Thomas E. Kocovsky, Jr.
Registration No. 28,383

FAY SHARPE LLP
The Halle Building, 5th Floor
1228 Euclid Avenue
Cleveland, OH 44115-1843
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E-Mail: tkocovsky@faysharpe.com

Direct All Correspondence to:
Yan Glickberg, Reg. No. 51,742
US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001
(440) 483-3455 (tel)
(440) 483-2452 (fax)



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NOTICE OF ALLOWANCE AND FEE(S) DUE

24737 7590 12/09/2008

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EXAMINER

COHEN, LEE S

ART UNIT

PAPER NUMBER

3739

DATE MAILED: 12/09/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	06/23/2005	Paul A Gough	GB 020258	9089
TITLE OF INVENTION: ELECTRODE ARRANGEMENT				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/09/2009

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

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

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

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IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	06/23/2005	Paul A Gough	GB 020258	9089

TITLE OF INVENTION: ELECTRODE ARRANGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/09/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
COHEN, LEE S	3739	600-388000

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

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

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

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

(A) NAME OF ASSIGNEE

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

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

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

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

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

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,594	06/23/2005	Paul A Gough	GB 020258	9089

24737 7590 12/09/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

COHEN, LEE S

ART UNIT

PAPER NUMBER

3739

DATE MAILED: 12/09/2008

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

The Patent Term Adjustment to date is 447 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 447 day(s).

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

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

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

Notice of Allowability	Application No.	Applicant(s)	
	10/540,594	GOUGH ET AL.	
	Examiner	Art Unit	
	Lee S. Cohen	3739	

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

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

1. ☒ This communication is responsive to applicant's communication filed 11/17/08.
2. ☒ The allowed claim(s) is/are 2,4,5,10,13 and 15-25.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The prior art fails to disclose an electrode arrangement including a conductive fabric on which is located a substantially impermeable material that induces perspiration to enable superior signal detection.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee S. Cohen whose telephone number is 571-272-4763. The examiner can normally be reached on Monday-Friday, 7:00-3:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3739

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Lee S. Cohen
Primary Examiner
Art Unit 3739

/Lee S. Cohen/
Primary Examiner, Art Unit 3739
November 19, 2008

<i>Issue Classification</i> 	Application/Control No. 10540594	Applicant(s)/Patent Under Reexamination GOUGH ET AL.
	Examiner Lee S Cohen	Art Unit 3739

[illegible][illegible]

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	16	
/Lee S Cohen/ Primary Examiner.Art Unit 3739	11/19/08	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Search Notes 	Application/Control No. 10540594	Applicant(s)/Patent Under Reexamination GOUGH ET AL.
	Examiner Lee S Cohen	Art Unit 3739

SEARCHED			
Class	Subclass	Date	Examiner
Updated	as above	4/11/08	LSC
Updated	as above	9/4/08	LSC
600	388, 395	11/19/08	LSC

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	4/15/08	LSC
EAST	9/4/08	LSC
EAST	11/19/08	LSC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
	Interference Search History Printout	11/19/08	LSC

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EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	146	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND impermeable	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/11/19 16:56
L2	53	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND waterproof	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/11/19 16:57
L3	89	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND perspiration	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/11/19 16:57
L4	0	((conductive adj fabric) AND electrode AND impermeable).CLM.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/11/19 16:59
L5	38	(fabric AND electrode AND impermeable).CLM.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/11/19 16:59

11/ 19/ 08 5:01:25 PM

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BIB DATA SHEET

CONFIRMATION NO. 9089

SERIAL NUMBER 10/540,594	FILING or 371(c) DATE 06/23/2005 RULE	CLASS 712	GROUP ART UNIT 3739	ATTORNEY DOCKET NO. GB 020258		
APPLICANTS Paul A Gough, Smallfield, UNITED KINGDOM; Mathew J Bickerton, Redhill, UNITED KINGDOM; ** CONTINUING DATA ***** This application is a 371 of PCT/IB03/05963 12/11/2003 ** FOREIGN APPLICATIONS ***** UNITED KINGDOM 02303618 12/27/2002 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **						
Foreign Priority claimed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 35 USC 119(a-d) conditions met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Verified and Acknowledged <u>/LEE S COHEN/</u> Examiner's Signature		<input type="checkbox"/> Met after Allowance <u> </u> Initials	STATE OR COUNTRY UNITED KINGDOM	SHEETS DRAWINGS 3	TOTAL CLAIMS 14	INDEPENDENT CLAIMS 3
ADDRESS PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510 UNITED STATES						
TITLE Electrode arrangement						
FILING FEE RECEIVED 900	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

**CUSTOMER NO.: 24737
EXPEDITED PROCEDURE**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Examiner: L. COHEN
P. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
September 17, 2008)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRX 2 00089	)	November 17, 2008

AMENDMENT D
(AFTER FINAL)

Mail Stop: AF
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is responsive to the *Final* Office Action of September 17, 2008.

Amendments to the claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 5.

**CUSTOMER NO.: 24737
EXPEDITED PROCEDURE**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Examiner: L. COHEN
P. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
September 17, 2008)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRX 2 00089	)	November 17, 2008

AMENDMENT D
(AFTER FINAL)

Mail Stop: AF
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is responsive to the *Final* Office Action of September 17, 2008.

Amendments to the claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 5.

Amendment to the Claims:

1. (Cancelled)

2. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said at least one portion of material is located directly on said first surface.

3. (Cancelled)

4. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said material is mechanically flexible.

5. (Previously Presented) The electrode arrangement in accordance with claim 10 wherein said material is silicone rubber loaded with conductive material.

6-9. (Cancelled)

10. (Currently Amended) An electrode arrangement comprising:

an electrically conductive fabric having a first surface for application to skin of a mammal; and

5 at least one portion of material which is substantially impermeable to moisture, said material being located on said first surface,

wherein said ~~electrode~~ electrically conductive fabric is integral with a garment.

11-12. (Cancelled)

13. (Previously Presented) A garment comprising:
a wearable article of clothing; and
a fabric electrode arrangement exhibiting a first surface for application to skin of a mammal wearing the article of clothing, the fabric electrode being

5 disposed on an inner surface of the article of clothing with the first surface facing inward, said fabric electrode arrangement including:

at least one portion of material which is substantially impermeable to moisture, said moisture impermeable material being located on said first surface; and
an electrically conductive, moisture permeable fabric portion located
10 on the first surface around the substantially moisture impermeable portion of material.

14. (Cancelled)

15. (Previously Presented) An electrode arrangement comprising:

an electrically conductive fabric portion with a first surface which contacts a wearer's skin directly;

5 a moisture impermeable, electrically conductive layer affixed to the first surface of the electrically conductive fabric to contact the wearer's skin directly, such that said layer promotes perspiration which reduces skin-to-electrode contact resistance and such that the electrically conductive fabric absorbs and dissipates perspiration while permitting the skin to breathe to promote user comfort.

16. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer contacts the skin directly with only perspiration functioning to reduce the skin-to-electrode contact resistance.

17. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer and the electrically conductive fabric are both flexible.

18. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer includes silicone rubber filled with a conductive material.

19. (Previously Presented) The electrode arrangement in accordance with claim 18 wherein the conductive material includes one of carbon and silver.

20. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the electrically conductive fabric is knitted or woven.

21. (Previously Presented) The electrode arrangement in accordance with claim 20 wherein the electrically conductive fabric is knitted or woven from electrically conductive fibers and non-conductive fibers.

22. (Previously Presented) A wearable article comprising:
a garment made of non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15,
positioned on the garment to contact the wearer's skin.

23. (Previously Presented) A textile article comprising:
a non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15, in
which the electrically conductive fabric portion is supported by the non-electrically
5 conductive fabric and positioned to contact the wearer's skin.

24. (Previously Presented) The garment in accordance with claim 13 wherein the moisture impermeable portion is electrically conductive and flexible.

25. (Previously Presented) The garment in accordance with claim 24 wherein the fabric electrode arrangement is free of electrically conductive gel with only perspiration induced by the moisture impermeable portion acting as a sole skin-to-electrode contact resistance reducing agent.

REMARKS

This amendment is responsive to the *Final* Office Action of September 17, 2008. Reconsideration and allowance of claims 2, 4, 5, 10, 13, and 15-25 are requested.

The Office Action

Claims 2, 4, 5, and 10 stand rejected under 35 U.S.C. § 112, second paragraph, but were indicated as containing allowable subject matter if rewritten to overcome the 35 U.S.C. § 112 rejection.

Claims 13 and 15-25 stand allowed.

The Claims are Now in Condition for Allowance

Claim 10 has been amended as suggested by the Examiner in order to overcome the 35 U.S.C. § 112 rejection. Specifically, “electrode” in the last line has been replaced with “electrically conductive fabric” which finds antecedent basis in line 2.

It is submitted that with this amendment, claim 10 complies with the requirements of 35 U.S.C. § 112, and complies with the other statutory requirements. An early allowance of claims 2, 4, 5, and 10 is hereby requested.

The Present Amendment Should Be Entered

The present amendment should be entered as merely addressing a 35 U.S.C. § 112 issue. Moreover, claim 10 has been amended along the lines suggested by the Examiner.

Further, it is submitted that this amendment raises no issues that would require further search or consideration.

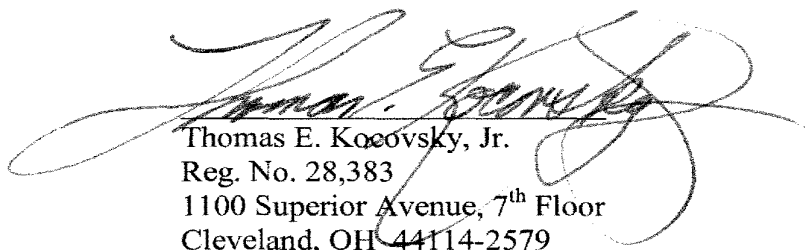
Finally, this amendment should be entered as placing the application in condition for allowance.

CONCLUSION

With this amendment, it is submitted that claims 2, 4, 5, 10, 13, and 15-25 distinguish patentably over the references of record and meet the other statutory requirements. An early allowance of all claims is requested.

Respectfully submitted,

FAY SHARPE LLP



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US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001
(440) 483-3455 (tel)
(440) 483-2452 (fax)

Electronic Acknowledgement Receipt

EFS ID:	4299638
Application Number:	10540594
International Application Number:	
Confirmation Number:	9089
Title of Invention:	Electrode arrangement
First Named Inventor/Applicant Name:	Paul A Gough
Customer Number:	24737
Filer:	Yan Glickberg/Elissa DeLuccy
Filer Authorized By:	Yan Glickberg
Attorney Docket Number:	GB 020258
Receipt Date:	17-NOV-2008
Filing Date:	23-JUN-2005
Time Stamp:	14:40:04
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		GB020258US_116Amd_2008_Nov_17.pdf	400970 ea35c7e0f39f4396bdc12db99e588560c3bbc8	yes	6

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment After Final	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	6
Warnings:			
Information:			
Total Files Size (in bytes):		400970	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 10/540,594		Filing Date 06/23/2005		<input type="checkbox"/> To be Mailed									
APPLICATION AS FILED – PART I																		
(Column 1)			(Column 2)			SMALL ENTITY <input type="checkbox"/>		OR		OTHER THAN SMALL ENTITY								
FOR		NUMBER FILED		NUMBER EXTRA		RATE (\$)		FEE (\$)		RATE (\$)								
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A		N/A		N/A				N/A								
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A		N/A		N/A				N/A								
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A		N/A		N/A				N/A								
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 =		*		X \$ =				X \$ =								
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =		*		X \$ =				X \$ =								
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).																
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))																		
* If the difference in column 1 is less than zero, enter "0" in column 2.																		
APPLICATION AS AMENDED – PART II											TOTAL							
(Column 1)			(Column 2)			(Column 3)			SMALL ENTITY		OR		OTHER THAN SMALL ENTITY					
AMENDMENT	11/17/2008		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)		RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))		* 16		Minus ** 20		= 0		X \$ =				OR X \$52=		0			
	Independent (37 CFR 1.16(h))		* 3		Minus *** 3		= 0		X \$ =				OR X \$220=		0			
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))																	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))																	
									TOTAL ADD'L FEE				OR		TOTAL ADD'L FEE		0	
(Column 1)			(Column 2)			(Column 3)			SMALL ENTITY		OR		OTHER THAN SMALL ENTITY					
AMENDMENT			CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)		RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))		*		Minus **		=		X \$ =				OR X \$ =					
	Independent (37 CFR 1.16(h))		*		Minus ***		=		X \$ =				OR X \$ =					
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))																	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))																	
									TOTAL ADD'L FEE				OR		TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>																		

Legal Instrument Examiner:
/DAWN BREWER/

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,594

06/23/2005

Paul A Gough

GB 020258

9089

24737

7590

09/17/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

COHEN, LEE S

ART UNIT

PAPER NUMBER

3739

MAIL DATE

DELIVERY MODE

09/17/2008

PAPER

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

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

Office Action Summary	Application No. 10/540,594	Applicant(s) GOUGH ET AL.	
	Examiner Lee S. Cohen	Art Unit 3739	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4,5,10,13 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 15-25 is/are allowed.
- 6) ☒ Claim(s) 2,4,5 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 4, 5, and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. Claim 10 is vague as the reference to "an electrode" per se in the last line lacks antecedent basis. The overall structure including the fabric impermeable portion and garment define the electrode arrangement. Therefore, the conductive fabric, not the electrode, should be integral with a garment. Claims 22 and 23 fail to positively position the electrode arrangements on the fabric so as to recite an operable device.

Allowable Subject Matter

Claims 13 and 15-25 are allowed.

Claims 2, 4, 5, and 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 3739

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee S. Cohen whose telephone number is 571-272-4763. The examiner can normally be reached on Monday-Friday, 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lee S. Cohen
Primary Examiner
Art Unit 3739

/Lee S. Cohen/

Application/Control Number: 10/540,594

Page 4

Art Unit: 3739

Primary Examiner, Art Unit 3739


September 4, 2008

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	143	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND impermeable	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/04 12:36
L2	91	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND perspiration	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/04 12:36
L3	52	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND waterproof	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/04 12:36

9/ 4/ 08 12:38:00 PM

C:\ Documents and Settings\ LCohen\ My Documents\ EAST\ Workspaces\ 123.wsp

Search Notes 	Application/Control No. 10540594	Applicant(s)/Patent Under Reexamination GOUGH ET AL.
	Examiner Lee S Cohen	Art Unit 3739

SEARCHED			
Class	Subclass	Date	Examiner
Updated	as above	4/11/08	LSC
Updated	as above	9/4/08	LSC

SEARCH NOTES			
Search Notes		Date	Examiner
EAST		4/15/08	LSC
EAST		9/4/08	LSC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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CUSTOMER NO.: 24737

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Examiner: Lee S. Cohen
)	
Paul A. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
April 22, 2008)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRX 2 00089	)	July 22, 2008

AMENDMENT C

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is responsive to the non-final Office Action of
April 22, 2008.

Amendments to the specification appear on page 2.

Amendments to the claims are reflected in the listing of claims which
begins on page 3.

Remarks begin on page 6.

Amendment to the Specification:

On page 6, please amend the paragraph beginning at line 19 and ending at line 24 as follows:

The electrically conductive electrode portion 12 is of knitted construction. More specifically the first embodiment is of plain knit structure using yarn comprising ~~tactel~~TM TACTELTM (a type of nylon) which is an electrical insulator and stainless steel which is an electrical conductor. The yarn is a staple yarn and comprises 20%-30% of the stainless steel. As illustrated in Figure 1, the yarn is knitted to extend in the direction denoted x.

Amendment to the Claims:

1. (Cancelled)

2. (Currently Amended) ~~An~~ The electrode arrangement in accordance with claim [1] 10 wherein said at least one portion of material is located directly on said first surface.

3. (Cancelled)

4. (Currently Amended) ~~An~~ The electrode arrangement in accordance with claim [1] 10 wherein said material is mechanically flexible.

5. (Currently Amended) ~~An~~ The electrode arrangement in accordance with claim [1] 10 wherein said material is silicone rubber loaded with conductive material.

6-9. (Cancelled)

10. (Currently Amended) An electrode arrangement ~~in accordance with claim 1~~ comprising:

an electrically conductive fabric having a first surface for application to skin of a mammal; and

5 at least one portion of material which is substantially impermeable to moisture, said material being located on said first surface,

wherein said electrode is integral with a garment.

11-12. (Cancelled)

13. (Previously Presented) A garment comprising:

a wearable article of clothing; and

a fabric electrode arrangement exhibiting a first surface for application to ~~the~~ skin of a mammal wearing the article of clothing, the fabric electrode being

5 disposed on an inner surface of the article of clothing with the first surface facing inward, said fabric electrode arrangement including:

at least one portion of material which is substantially impermeable to moisture, said moisture impermeable material being located on said first surface; and

10 an electrically conductive, moisture permeable fabric portion located on the first surface around the substantially moisture impermeable portion of material.

14. (Cancelled)

15. (Previously Presented) An electrode arrangement comprising:

an electrically conductive fabric portion with a first surface which contacts a wearer's skin directly;

5 a moisture impermeable, electrically conductive layer affixed to the first surface of the electrically conductive fabric to contact the wearer's skin directly, such that ~~the moisture impermeable~~said layer promotes perspiration which reduces skin-to-electrode contact resistance and such that the electrically conductive fabric absorbs and dissipates perspiration while permitting the skin to breathe to promote
10 user comfort.

16. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer contacts the skin directly with only perspiration functioning to reduce the skin-to-electrode contact resistance.

17. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer and the electrically conductive fabric are both flexible.

18. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer includes silicone rubber filled with a conductive material.

19. (Previously Presented) The electrode arrangement in accordance with claim 18 wherein the conductive material includes one of carbon and silver.

20. (Previously Presented) The electrode arrangement in accordance with claim 15 wherein the electrically conductive fabric is knitted or woven.

21. (Previously Presented) The electrode arrangement in accordance with claim 20 wherein the electrically conductive fabric is knitted or woven from electrically conductive fibers and non-conductive fibers.

22. (Currently Amended) A wearable article comprising:
a garment made of non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15,
positioned on the garment to contact the wearer's skin.

23. (Currently Amended) A textile article comprising:
a non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15, in
which the electrically conductive fabric portion is supported by the non-electrically
5 conductive fabric and positioned to contact the wearer's skin.

24. (Previously Presented) The garment in accordance with claim 13 wherein the moisture impermeable portion is electrically conductive and flexible.

25. (Previously Presented) The garment in accordance with claim 24 wherein the fabric electrode arrangement is free of electrically conductive gel with only perspiration induced by the moisture impermeable ~~portion~~layer acting as a sole skin-to-electrode contact resistance reducing agent.

REMARKS

This amendment is responsive to the Office Action of April 22, 2008. Reconsideration and allowance of claims 2, 4, 5, 10, 13, and 15-25 are requested.

The Office Action

Claims 1, 2, 4, 5, 22, and 23 stand rejected under 35 U.S.C. § 112, second paragraph.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102 as being anticipated by Kater (US 3,993,049).

Claims 4 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kater in view of Bogusiewicz (US 5,427,096).

Claims 13, 15-21, 24, and 25 stand allowed.

Claims 10, 22, and 23 were indicated as containing allowable subject matter.

Amendments to the Specification

The paragraph which begins at page 6, line 19 has been amended as suggested by the Examiner.

M.P.E.P. 608.01(a) suggests, but does not require section headings. Accordingly, the applicant respectfully declines to add such section headings.

The Claims are Now in Condition for Allowance

Claim 10 has been amended to include the subject matter of claim 1, which subject matter was revised to address the 35 U.S.C. § 112 rejection. With this amendment, it is submitted that claim 10 and claims 2, 4, and 5 dependent therefrom now distinguish patentably over the references of record.

The allowance of claims 13, 15-21, 24, and 25 is noted with appreciation.

Dependent claims 22 and 23 have been amended to address the 35 U.S.C. § 112 rejection.

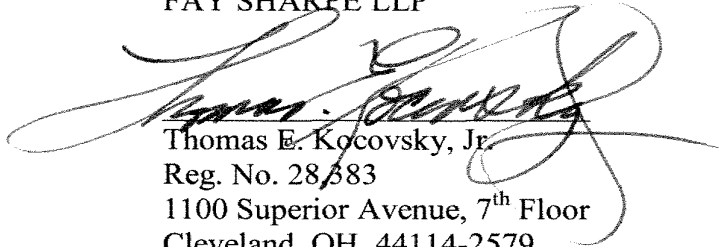
CONCLUSION

With this amendment, it is submitted that claims 2, 4, 5, 10, 13, and 15-25 now distinguish patentably and unobviously over the references of record. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

FAY SHARPE LLP



Thomas E. Kocovsky, Jr.
Reg. No. 28,583
1100 Superior Avenue, 7th Floor
Cleveland, OH 44114-2579
(216) 861-5582

Direct All Correspondence to:
Yan Glickberg, Reg. No. 51,742
US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001
(440) 483-3455 (tel)
(440) 483-2452 (fax)

Electronic Acknowledgement Receipt

EFS ID:	3659458
Application Number:	10540594
International Application Number:	
Confirmation Number:	9089
Title of Invention:	Electrode arrangement
First Named Inventor/Applicant Name:	Paul A Gough
Customer Number:	24737
Filer:	Mark S. Svat/Karen Forsyth
Filer Authorized By:	Mark S. Svat
Attorney Docket Number:	GB 020258
Receipt Date:	22-JUL-2008
Filing Date:	23-JUN-2005
Time Stamp:	17:48:16
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		PKRX200089_AMC_as_filed.pdf	379311	yes	8
			3566f9dd91c568c8b67fb651e9a52b303692a1e2		

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Amendment - After Non-Final Rejection	2	2
	Specification	3	3
	Claims	4	6
	Applicant Arguments/Remarks Made in an Amendment	7	8
Warnings:			
Information:			
Total Files Size (in bytes):		379311	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

AMENDMENT TRANSMITTAL LETTER

Attorney Docket No.: PHGB020258US
(PKRX 2 00089)

Ser. No.: 10/540,594	Filed: June 23, 2005	Examiner: Lee S. Cohen
Art Unit: 3739	Title: ELECTRODE ARRANGEMENT	
Confirmation No.: 9089		
Customer No.: 38107		

To the Commissioner for Patents:

Transmitted herewith is an **Amendment C** in the above-identified application. The fee has been calculated as shown below.

CLAIMS AS AMENDED						
	Claims remaining after amendment		Highest Number Previously Paid For	No. of Extra Claims Present	Rate	Additional Rate
Total Claims	16	Minus	20	0	X \$50	\$0.00
Indep. Claims	3	Minus	3	0	X \$210	\$0.00
TOTAL					=	\$0.00

- ☒ No additional fee is required.
- ☐ A check in the amount of \$ _____ is enclosed for the additional claims fee due.
- ☐ Applicants hereby petition the Commissioner under 37 C.F.R. § 1.136(a) and request a **month extension of time** to respond to the outstanding Office Action.
- ☒ Payment for the filing of this Amendment and any appropriate extension of time fees are authorized to be charged to a Credit Card via the EFS Web. **If the Credit Card is unable to be charged, please charge any and all fees or credit any overpayment to Deposit Account No. 06-0308. If there are any additional fees required by this communication, please charge same to Deposit Account No. 06-0308.**

Respectfully submitted,
Fay Sharpe LLP

22 July 2008
Date

Thomas E. Kocovsky, Jr.
Thomas E. Kocovsky, Jr.
Reg. No. 28,383
1100 Superior Avenue, Seventh Floor
Cleveland, OH 44114-2579
216/861-5582

CERTIFICATE OF MAILING OR TRANSMISSION

- I certify that this Amendment Transmittal Letter and accompanying document(s) are being
- ☐ deposited with the United States Postal Service as First Class mail under 37 C.F.R. 1.8, addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.
- ☒ transmitted via the EFS Web under 37 C.F.R. 1.8 on the date indicated below.

Date	<i>July 22, 2008</i>	Signature	<i>Karen M. Forsyth</i>
		Printed Name	Karen M. Forsyth

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 10/540,594		Filing Date 06/23/2005		<input type="checkbox"/> To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY <input type="checkbox"/> OR		OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=		X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY OR		OTHER THAN SMALL ENTITY	
AMENDMENT	07/22/2008	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X \$	=		X \$50=	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$	=		X \$210=	0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	0
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=		X \$	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=		X \$	=
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>										

Legal Instrument Examiner:
/STELLA LITTLE/

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

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,594

06/23/2005

Paul A Gough

GB 020258

9089

24737 7590 04/22/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

COHEN, LEE S

ART UNIT

PAPER NUMBER

3739

MAIL DATE

DELIVERY MODE

04/22/2008

PAPER

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

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

Office Action Summary	Application No. 10/540,594	Applicant(s) GOUGH ET AL.	
	Examiner Lee S. Cohen	Art Unit 3739	

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

Period for Reply

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

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,10,13 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13,15-21,24 and 25 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,10,22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/4/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The disclosure is objected to because of the following informalities: The trademark at page 6, line 21 is not capitalized.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3739

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 4, 5, 10, 22 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. Claim 1 lacks clarity in the absence of a transitional phrase which clearly sets forth a fabric electrode having a first surface as an element of the electrode arrangement. Further, absent such fabric being conductive, no structure is presented to effect an operable electrode. Claim 10 is vague as the reference to "an electrode" per se lacks antecedent basis. Claims 22 and 23 fail to positively position the electrode arrangements on the fabric so as to recite an operable device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kater (3,993,049). The reference discloses a fabric electrode arrangement including a fabric patch 36 which may be conductive (column 5, line 51 – column 6, line 21) and substantially impermeable member, base 24 of connector 12, on the surface of the patch.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kater (3,993,049) in view of Bogusiewicz et al (5,427,096). Kater discloses the basic electrode except for the material being silicone rubber with carbon. Such a material for connectors is well known as disclosed by Bogusiewicz et al at column 3, lines 39-65. Given this teaching, it would have been obvious to the skilled artisan to substitute such a connector Kater since the result would be predictable. The particular resistivity is deemed to be inherent in the material.

Response to Arguments

Applicant's arguments filed February 4, 2008 have been fully considered but they are not persuasive. Kater is still deemed to disclose the electrode arrangement as set forth in claims 1 and 2. The patch 36 is clearly disclosed to be a fabric as noted at column 4, lines 55-57, column 5, lines 61-62, and claim 4. Also, as shown in Figure 2, the skirt 24 is positioned for direct contact with the skin and is located on the surface of the fabric patch. In addition, as detailed supra, Bogusiewicz et al disclose the particular material of which the skirt 24 could have been made, and which inherently possesses some degree of flexibility.

Allowable Subject Matter

Claims 13, 15-21, 24, and 25 are allowed.

Claim 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 22 and 23 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee S. Cohen whose telephone number is 571-272-4763. The examiner can normally be reached on Monday-Friday, 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lee S. Cohen
Primary Examiner
Art Unit 3739

/Lee S. Cohen/
Primary Examiner, Art Unit 3739
April 12, 2008

Search Notes 	Application/Control No. 10540594	Applicant(s)/Patent Under Reexamination GOUGH ET AL.
	Examiner Lee S Cohen	Art Unit 3739

SEARCHED			
Class	Subclass	Date	Examiner
Updated	as above	4/11/08	LSC

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	4/15/08	LSC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	138	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND impermeable	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/04/15 14:13
L2	84	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND perspiration	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/04/15 14:13
L3	49	("600"/\$.ccls. OR "607"/\$.ccls.) AND electrode AND fabric AND waterproof	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/04/15 14:14

4/ 15/ 08 2:14:35 PM

C:\Documents and Settings\LCohen\My Documents\EAST\Workspaces\123.wsp

Form 1449/PTO		COMPLETE IF KNOWN			
INFORMATION DISCLOSURE STATEMENT BY APPLICANT(S) (Use as many sheets as necessary)		Application Number	10/540,594		
		Filing Date	June 23, 2005		
		First Named Inventor	GLOUGH, et al.		
		Art Unit	3739		
		Examiner Name	Lee S. Cohen		
Sheet 1 of 1		Attorney Docket No.	PHGB020258US/PKRZ 2 01283		
U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document No. Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	
	AA	US-4,580,572	04-08-1986	Granek et al.	
	AB	US-4,583,547	04-22-1986	Granek et al.	
	AC	US-4,729,377	03-08-1988	Granek et al.	
	AD	US-5,746,207	05-05-1998	McAdams et al.	
	AE	US-5,944,685	08-31-1999	Masahisa	
	AF	US-2004/0073104	04-15-2004	Brun del re et al.	
	AG	US-			
	AH	US-			
	AI	US-			
	AJ	US-			
	AK	US-			
	AL	US-			
FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Foreign Patent Document Country Code-Number Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T
	AM	WO 01 02052 A	01-11-2001	Demeyere et al.	
	AN	WO 02 065904 A	08-29-2002	Brun del Re et al.	
	AO	EP 0 128 103 A	12-12-1984	Bio Stimu Trend Corp.	
	AP				
OTHER -- NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published			T
	AQ	Translation of EP 0 128 103 A			
	AR	US 4,580,572 corresponds to EP 0 128 103			
	AS	US 4,583,547 corresponds to EP 0 128 103			
	AT	US 4,729,377 corresponds to EP 0 128 103			
	AU				

Ex. SS 1007, p. 63
 Smart Solutions

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /LC/

Examiner	/Lee Cohen/	Date	04/15/2008
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Examiner: Lee S. Cohen
)	
Paul A. GLOUGH, et al.)	
	)	Art Unit: 3739
Serial No.: 10/540,594)	
	)	Confirmation: 9089
Filed: June 23, 2005)	
)	
For: ELECTRODE)	
ARRANGEMENT)	
)	
Date of Last Office Action:)	
November 13, 2007)	
)	
Attorney Docket No.:	)	Cleveland, OH 44114
PHGB020258US / PKRZ 2 01283	)	February 1, 2008

AMENDMENT B

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is responsive to the non-final Office Action of November 13, 2007.

Amendments to the claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 5.

CERTIFICATE OF ELECTRONIC TRANSMISSION

I certify that this Amendment B and accompanying documents in connection with U.S. Serial No. 10/540,594 are being filed on the date indicated below by electronic transmission with the United States Patent and Trademark Office via the electronic filing system (EFS-Web).

February 4, 2008
Date

Patricia A. Heim
Patricia A. Heim

DEPOSIT ACCOUNT

The Patent Office is authorized to charge any fees associated with this filing to our deposit account no. **14-1270**

Douglas B. McKnight
Douglas B. McKnight, Reg. No. 50,447

Amendment to the Claims:

1. (Original) A fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

2. (Original) An electrode arrangement in accordance with claim 1 wherein said at least one portion of material is located directly on said first surface.

3. (Canceled)

4. (Previously Presented) An electrode arrangement in accordance with claim 1 wherein said material is mechanically flexible.

5. (Previously Presented) An electrode arrangement in accordance with claim 1 wherein said material is silicone rubber loaded with conductive material.

6-9. (Canceled)

10. (Previously Presented) An electrode arrangement in accordance with claim 1 wherein said electrode is integral with a garment.

11-12. (Canceled)

13. (Currently Amended) A garment comprising:

a wearable article of clothing; and

a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal wearing the article of clothing, wherein the fabric electrode being disposed on an inner surface of the article of clothing with the first surface facing inward, said fabric electrode arrangement ~~comprises~~ including:

at least one portion of material ~~being~~ which is substantially impermeable to moisture, said moisture impermeable material being located on said first surface; and

an electrically conductive, moisture permeable fabric portion located on the first surface around the moisture impermeable portion.

14. (Canceled)

15. (New) An electrode arrangement comprising:

an electrically conductive fabric portion with a first surface which contacts a wearer's skin directly;

a moisture impermeable, electrically conductive layer affixed to the first surface of the electrically conductive fabric to contact the wearer's skin directly, such that the moisture impermeable layer promotes perspiration which reduces skin-to-electrode contact resistance and such that the electrically conductive fabric absorbs and dissipates perspiration while permitting the skin to breathe to promote user comfort.

16. (New) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer contacts the skin directly with only perspiration functioning to reduce the skin-to-electrode contact resistance.

17. (New) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer and the electrically conductive fabric are both flexible.

18. (New) The electrode arrangement in accordance with claim 15 wherein the moisture impermeable, electrically conductive layer includes silicone rubber filled with a conductive material.

19. (New) The electrode arrangement in accordance with claim 18 wherein the conductive material includes one of carbon and silver.

20. (New) The electrode arrangement in accordance with claim 15 wherein the electrically conductive fabric is knitted or woven.

21. (New) The electrode arrangement in accordance with claim 20 wherein the electrically conductive fabric is knitted or woven from electrically conductive fibers and non-conductive fibers.

22. (New) A wearable article comprising:
a garment made of non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15.

23. (New) A textile article comprising:
a non-electrically conductive fabric; and
one or more electrode arrangements in accordance with claim 15.

24. (New) The garment in accordance with claim 13 wherein the moisture impermeable portion is electrically conductive and flexible.

25. (New) The garment in accordance with claim 24 wherein the fabric electrode arrangement is free of electrically conductive gel with only perspiration induced by the moisture impermeable layer acting as a sole skin-to-electrode contact resistance reducing agent.

REMARKS

This amendment is responsive to the Office Action of November 13, 2007. Reconsideration and allowance of claims 1, 2, 4, 5, 10, 13, and 15-26 are requested.

The Office Action

Claims 1-3, 9, 11, and 12 stand rejected under 35 U.S.C. § 102 as being anticipated by Kater (US 3,993,049) in view of Sem-Jacobsen (US 3,954,100).

Claims 4 and 8 stand rejected under 35 U.S.C. § 102 as being anticipated by Sem-Jacobsen.

Claims 4-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kater in view of Bogusiewicz (US 5,427,096).

Claims 10 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sem-Jacobsen in view of Reho (US 2004/0138546).

Omnibus claim 14 stands rejected under 35 U.S.C. § 112, second paragraph.

The Examiner objected to claims 11-13 as being substantially duplicative of claim 1.

Oath/Declaration

The applicants request waiver of the requirement for a new oath/declaration.

First, the applicants used the U.S. Department of Commerce – Patent and Trademark Office form for Combined Declaration for Patent Application and Power of Attorney.

Second, the inventors are not US Nationals and are not resident in the US.

37 C.F.R. § 1.97 Information Disclosure Statement

The applicants enclose a PTO-1449 officially listing the references cited in the PCT Search Report, which Search Report was previously provided to the U.S. Patent and Trademark Office and the Examiner by the International Bureau. An early indication that these references have been considered is requested.

The Prior Art

Kater is directed to a single use EKG electrode. A lower covering 20 is peeled off and an adhesive, conductive gel 26 adheres the electrode to the patient's skin. The gel functions as the skin-to-electrode electrical resistivity reducing agent and provides

an interface between the skirt 24 of the electrode and the metal or metalized screen 36. An EKG lead is snapped to the stud 22.

Bogusiewicz illustrates a similar EKG electrode in which a snap fastener 305 and eyelet 307 are attached to a circular disk whose lower surface is coated with a layer 350 of adhesive electrically conductive gel 350 which functions as an electrolyte between the clip and the patient's skin. An EKG lead is again snapped to the clip.

Sem-Jacobsen is directed to a flexible sensor pad that includes a non-conductive textile 18 on which a pair of metal cloth pads 20, 22 are mounted. Prior to use, the pads are covered with a removable protective sheet 24. The Sem-Jacobsen device is porous and breathable and includes no moisture impermeable electrode portion.

The Claims Distinguish Patentably Over the References of Record

Claim 1 calls for at least one portion of material which is substantially impermeable to moisture. In Sem-Jacobsen, electrodes 20 and 22 are both cloth hence permeable as is the textile backing sheet 18. Accordingly, claim 1 is not anticipated by Sem-Jacobsen.

Claim 1 is directed to a fabric electrode arrangement. Kater is not a fabric electrode. Rather, Kater is directed to a plastic patch 26 and a metal connector 22. The underside of the plastic patch 26 is filled with an adhesive-electrolyte material 28, i.e., a coupling gel. Because Kater does not describe a cloth electrode, it is submitted that claim 1 is not anticipated by Kater.

Claim 1 calls for the first surface to be for application to the skin of a mammal and claim 2 calls for the moisture impermeable portion to be located directly on the first surface. In Sem-Jacobsen, the electrode assembly is not applied to the patient's skin but rather is positioned below a layer of clothing. Accordingly, claim 2 is not anticipated by Sem-Jacobsen. It is also submitted that the adhesive-electrolyte material 28 of Kater whose purpose it is to improve the electrical connection between the connector and the skin, in use, is caused to cover the skirt 28 of the electrical connector forming the direct contact with skin. That is, because the skirt is displaced from the skin by a layer of an adhesive-electrolyte material, it is submitted that the metal connector 12 does not lie directly on the first surface.

Claim 4 calls for the non-porous material to be flexible. Sem-Jacobsen has no non-porous material portion. In Kater, the skirt 24 is not flexible. Bogusiewicz who uses a similar rigid snap fastener does not cure this shortcoming of Kater.

Claim 5 calls for the moisture impermeable material to be silicone rubber loaded with conductive material. In Bogusiewicz, the non-photosensitive, electrically conductive metal containing layer 240 is formed by paint brushing a male snap-fastener 203 with a silver-silver chloride ink. The layer 240 is coated with an adhesive electrolyte gel 250 which holds the layer 240 away from the skin contacting surface of the electrode. Accordingly, it is submitted that Bogusiewicz fails to cure the shortcomings of Kater.

Claim 10 calls for an electrode arrangement in which the electrode is integral in a garment. By contrast, the sensor pad of Sem-Jacobsen is specifically configured to be located on a body supporting surface such as a stretcher or airplane seat (column 4, line 65 – column 5, line 7). Because Sem-Jacobsen specifically teaches against incorporation of his sensor pad into a garment, it is submitted that claim 10 distinguishes patentably over the references of record.

Claim 13 has been amended to define the garment as including a wearable article of clothing and a fabric electrode arrangement. Further, the fabric electrode arrangement is defined as including at least one portion of the material which is substantially impermeable to moisture. The electrode arrangement of Sem-Jacobsen is constructed solely of fabric materials which breathe and are permeable to moisture for greater patient comfort. Moreover, claim 13 has been amended to distinguish more clearly over Sem-Jacobsen. Accordingly, it is submitted that claim 13 and claims 24 and 25 dependent therefrom distinguish patentably and unobviously over the references of record.

New claim 15 has been drafted to describe the present electrode arrangement with greater specificity and to distinguish clearly over the references of record. Accordingly, it is submitted that claim 15 and claims 16-23 dependent therefrom distinguish patentably and unobviously over the references of record.

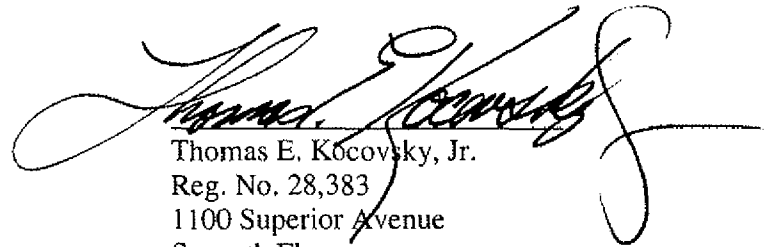
CONCLUSION

For the reasons set forth above, it is submitted that all claims distinguish patentably over the references of record and meet all statutory requirements. An early allowance of claims 1, 2, 4, 5, 10, 13, and 15-26 is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

Fay Sharpe LLP



Thomas E. Kocovsky, Jr.
Reg. No. 28,383
1100 Superior Avenue
Seventh Floor
Cleveland, OH 44114-2579
(216) 861-5582

Form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT(S) <i>(Use as many sheets as necessary)</i>	COMPLETE IF KNOWN	
	Application Number	10/540,594
	Filing Date	June 23, 2005
	First Named Inventor	GLOUGH, et al.
	Art Unit	3739
	Examiner Name	Lee S. Cohen
Sheet 1 of 1	Attorney Docket No.	PHGB020258US/PKRZ 2 01283

U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No.	Document No. Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	AA	US-4,580,572	04-08-1986	Granek et al.
	AB	US-4,583,547	04-22-1986	Granek et al.
	AC	US-4,729,377	03-08-1988	Granek et al.
	AD	US-5,746,207	05-05-1998	McAdams et al.
	AE	US-5,944,685	08-31-1999	Masahisa
	AF	US-2004/0073104	04-15-2004	Brun del re et al.
	AG	US-		
	AH	US-		
	AI	US-		
	AJ	US-		
	AK	US-		
	AL	US-		

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T
		Country Code-Number Kind Code (if known)			
	AM	WO 01 02052 A	01-11-2001	Demeyere et al.	
	AN	WO 02 065904 A	08-29-2002	Brun del Re et al.	
	AO	EP 0 128 103 A	12-12-1984	Bio Stimu Trend Corp.	
	AP				

OTHER -- NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published		T
	AQ	Translation of EP 0 128 103 A		
	AR	US 4,580,572 corresponds to EP 0 128 103		
	AS	US 4,583,547 corresponds to EP 0 128 103		
	AT	US 4,729,377 corresponds to EP 0 128 103		
	AU			

Examiner		Date	
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Electronic Patent Application Fee Transmittal				
Application Number:		10540594		
Filing Date:		23-Jun-2005		
Title of Invention:		Electrode arrangement		
First Named Inventor/Applicant Name:		Paul A Gough		
Filer:		Douglas B. McKnight/Patricia Heim		
Attorney Docket Number:		GB 020258		
Filed as Large Entity				
U.S. National Stage under 35 USC 371 Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	2806911
Application Number:	10540594
International Application Number:	
Confirmation Number:	9089
Title of Invention:	Electrode arrangement
First Named Inventor/Applicant Name:	Paul A Gough
Customer Number:	24737
Filer:	Douglas B. McKnight/Patricia Heim
Filer Authorized By:	Douglas B. McKnight
Attorney Docket Number:	GB 020258
Receipt Date:	04-FEB-2008
Filing Date:	23-JUN-2005
Time Stamp:	08:46:43
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	5316
Deposit Account	141270
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional fees required under 37 CFR 1.492 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		GB020258AmendmentB.pdf	214127 0dbbcbf6ebe1cd17a4cae449cc01c9c50b2e9804	yes	8
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment - After Non-Final Rejection		1	1	
	Claims		2	4	
	Applicant Arguments/Remarks Made in an Amendment		5	8	
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Filed	GB020258IDS.pdf	46034 85376a0ac3066f5804dcdf981746b5ce16de3a239	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	EP0128103.pdf	909756 9b3328645cb935804c8e2cfe61e00392827c21d7	no	18
Warnings:					
Information:					
4	Foreign Reference	WO0102052.pdf	706449 53caf8136257dfb4182d868944e4651b4b9a3452	no	30
Warnings:					
Information:					
5	Foreign Reference	WO02065904.pdf	1670996 5eb3c4be565f6fe901829e7931d2c9c78dce749d	no	56
Warnings:					
Information:					
6	Fee Worksheet (PTO-06)	fee-info.pdf	8170 24b75b7a16abbfcb8c4753bf89b4c0b4343ce7af	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	3555532
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 10/540,594		Filing Date 06/23/2005		<input type="checkbox"/> To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY <input type="checkbox"/> OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)		RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	OR	X \$ =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	OR	X \$ =		
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	02/04/2008									
	Total (37 CFR 1.16(i))	* 17	Minus	** 20	= 0	X \$ =	OR	X \$50 =	0	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X \$ =	OR	X \$210 =	0	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>										

Legal Instrument Examiner:
/THERESA LINDSAY/

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

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



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,594

06/23/2005

Paul A Gough

GB 020258

9089

24737 7590 11/13/2007
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

COHEN, LEE S

ART UNIT	PAPER NUMBER
----------	--------------

3739

MAIL DATE	DELIVERY MODE
-----------	---------------

11/13/2007

PAPER

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

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

Office Action Summary

Application No.

10/540,594

Applicant(s)

GOUGH ET AL.

Examiner

Lee S. Cohen

Art Unit

3739

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to **patentability** as defined in 37 CFR 1.56.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Double Patenting

Applicant is advised that should claim 1 be found allowable, claims 11-13 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Claims 11-13 effectively set forth the same structure as claim 1 since no additional structural details are recited. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 9, 11, and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kater (3,993,049). The reference discloses a fabric electrode arrangement including a fabric patch 36 which may be conductive (column 5, line 51 – column 6, line 21) and substantially impermeable member, base 24 of connector 12, on the surface of the patch.

Claims 1-4, 8, 9, 11, and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sem-Jacobsen (3,954,100). The reference discloses a fabric electrode arrangement including a fabric patch 18 (column 3, line 35+) and conductive, substantially impermeable members (22,24) on the surface of the patch. The actual material of the members 22,24 is metal that is impermeable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kater (3,993,049) in view of Bogusiewicz et al (5,427,096). Kater discloses the basic electrode except for the material being silicone rubber with carbon. Such a material for connectors is well known

Art Unit: 3739

as disclosed by Bogusiewicz et al at column 3, lines 39-65. Given this teaching, it would have been obvious to the skilled artisan to substitute such a connector Kater since the result would be predictable. The particular resistivity is deemed to be inherent in the material.

Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sem-Jacobsen (3,954,100) in view of Reho et al (2004/0138546). Sem-Jacobsen discloses the basic electrode but lacks the integration of it into a garment. Such a feature is disclosed by Reho et al in Figures 2 and 3. Given this teaching, it would have been obvious to the skilled artisan to integrate the electrode in a garment to facilitate placement on the body.


Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee S. Cohen whose telephone number is 571-272-4763. The examiner can normally be reached on Monday-Friday, 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Lee S. Cohen
Primary Examiner
Art Unit 3739

LSC
November 1, 2007

Notice of References Cited

Application/Control No.

10/540,594

Applicant(s)/Patent Under
Reexamination
GOUGH ET AL.

Examiner

Lee S. Cohen

Art Unit

3739

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-3,993,049	11-1976	Kater, John A. R.	600/391
*	B	US-3,954,100	05-1976	Sem-Jacobsen, Carl Wilhelm	600/393
*	C	US-5,427,096	06-1995	Bogusiewicz et al.	600/396
*	D	US-2004/0138546	07-2004	Reho et al.	600/382
*	E	US-2006/0183990	08-2006	Tolvanen, Pekka	600/386
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Search Notes

Application/Control No.

10/540,594

Examiner

Lee S. Cohen

Applicant(s)/Patent under
Reexamination

GOUGH ET AL.

Art Unit

3739

SEARCHED

Class	Subclass	Date	Examiner
600	372	10/29/2007	LSC

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST	10/29/2007	LSC

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	78	"600"/\$.ccls. AND fabric AND electrode AND impermeable	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/30 08:10
L2	50	"607"/\$.ccls. AND fabric AND electrode AND impermeable	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/30 08:09
L3	3	I1 AND I2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/30 08:09
L4	61	"600"/\$.ccls. AND fabric AND electrode AND perspiration	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/30 08:10
L5	0	("2004/0138546").URPN.	USPAT	OR	OFF	2007/10/30 08:16
L6	39	("1212541" | "2943628" | "3187745" | "3386445" | "3498291" | "3542010" | "3581736" | "3720209" | "3817252" | "3888240").PN. OR ("3954100").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/10/30 08:27
L7	61	("2842135" | "2869551" | "3386445" | "3387608" | "3476104" | "3530851" | "3566860").PN. OR ("3888240").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/10/30 08:50
L8	248	"600"/\$.ccls. AND electrode AND waterproof	US-PGPUB; USPAT; USOCR	OR	OFF	2007/10/30 08:58
L9	34	"4122843"	US-PGPUB; USPAT; USOCR	OR	OFF	2007/10/30 08:58

ITW
2183

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
PAUL A. GOUGH, ET. AL.

Serial No.: 10/540,594

Filed: June 23, 2005

Title: ELECTRODE ARRANGEMENT



Atty. Doc

GB 020258

Group Art Unit: 2183

Examiner:


Commissioner for Patents
Alexandria, VA 22313-1450

LETTER

Sir:

Applicant(s) calls to the attention of the Patent and Trademark Office a Search Report issued abroad in reference to a corresponding foreign application. A copy of the Search Report dated March 22, 2004 is attached. There is no accompanying Information Disclosure Statement being submitted.

Respectfully submitted,

By 
David Barnes, Reg. 47,407
Attorney
(914) 333-9693

Enclosure: Search Report

CERTIFICATE OF MAILING

It is hereby certified that this correspondence
is being deposited with the United States Postal Service
as first-class mail in an envelope addressed to:

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

On January 17, 2006
(Date of Mailing)

By Funett James
(Signature)

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB 03/05963

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61N1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61N A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 746 207 A (MCADAMS ERIC THOMAS ET AL) 5 May 1998 (1998-05-05) column 1, line 8 -column 2, line 38; figures	1,13
A	WO 01 02052 A (DEMEYERE EMMANUEL ;BEKAERT SA NV (BE); HEIRBAUT GUIDO (BE); STEENL) 11 January 2001 (2001-01-11) cited in the application page 10, line 1 -page 12, line 32; figures	1,13
A	US 5 944 685 A (MUROKI MASAHISA) 31 August 1999 (1999-08-31) column 1, line 22 -column 3, line 26; figures	1,13

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *B* document member of the same patent family

Date of the actual completion of the international search

12 March 2004

Date of mailing of the international search report

22/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Rakotondrajaona, C

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05963

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 128 103 A (BIO STIMU TREND CORP) 12 December 1984 (1984-12-12) page 5, line 2 -page 6, line 21; figures	1,13
A	WO 02 065904 A (CORDLESS ANTISTATIC RES INC ;BATKIN IZMAIL (CA); BRUN DEL RE RICCA) 29 August 2002 (2002-08-29) page 6, line 17 -page 12, line 2; figures	1,13



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U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/540,594	Paul A Gough	GB 020258

INTERNATIONAL APPLICATION NO.	
PCT/IB03/05963	
I.A. FILING DATE	PRIORITY DATE
12/11/2003	12/27/2002

24737
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

CONFIRMATION NO. 9089
371 ACCEPTANCE LETTER



Date Mailed: 10/04/2005

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is **ACCEPTED** for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

<u>06/23/2005</u>	<u>06/27/2005</u>
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363). Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Copy of the International Application filed on 06/23/2005
- Copy of the International Search Report filed on 06/23/2005
- Preliminary Amendments filed on 06/23/2005
- Oath or Declaration filed on 06/23/2005
- U.S. Basic National Fees filed on 06/23/2005
- Assignment filed on 06/23/2005
- Priority Documents filed on 06/23/2005
- Power of Attorney filed on 06/23/2005

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

PATRICIA A BOOKER

Telephone: (703) 308-9140 EXT 204

PART 3 - OFFICE COPY

FORM PCT/DO/EO/903 (371 Acceptance Notice)

1540594

JC20 Rec'd PCT/PTO 23 JUN 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

GOUGH

GB 020258

Serial No.

Group Art Unit

Filed: CONCURRENTLY

Ex.

ELECTRODE ARRANGEMENT

CERTIFICATE OF EXPRESS MAILING

☒ Express Mail Mailing Label No.

EV664852594-US

Date of Deposit:

6-23-05

I hereby certify that this paper and/or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Commissioner for Patents, PO Box, 1450, Alexandria, VA 22313-1450

Jeanne Rusciano

Typed Name

Jeanne Rusciano
Signature

10/540594

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

JC20 Rec'd PCT/PTO 23 JUN 2005
Atty. Docket

In re Application of

GOUGH

GB 020258

Serial No.

Group Art Unit

Filed: CONCURRENTLY

Ex.

ELECTRODE ARRANGEMENT

Commissioner for Patents
Alexandria, VA 22313-1450


AUTHORIZATION PURSUANT TO 37 CFR §1.136(a)(3)
AND TO CHARGE DEPOSIT ACCOUNT

Sir:

The Commissioner is hereby requested and authorized to treat any concurrent or future reply in this application requiring a petition for extension of time for its timely submission, as incorporating a petition for extension of time for the appropriate length of time.

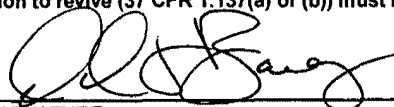
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Respectfully submitted,

By 
David Barnes, Reg. 47,407
Attorney
(914) 333-9693

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371		ATTORNEY'S DOCKET NUMBER GB 020258 U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <div style="font-size: 2em; font-weight: bold;">10/540594</div>
INTERNATIONAL APPLICATION NO. PCT/IB03/05963	INTERNATIONAL FILING DATE December 11, 2003	PRIORITY DATE CLAIMED December 27, 2002
TITLE OF INVENTION ELECTRODE ARRANGEMENT		
APPLICANT(S) FOR DO/EO/US Paul A. GOUGH; Matthew J. BRICKERTON		
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The following fees have been submitted				CALCULATIONS	PTO USE ONLY
21. <input checked="" type="checkbox"/> Basic national fee..... \$300				\$ 300.00	
22. <input checked="" type="checkbox"/> Examination fee If International preliminary examination report prepared by USPTO and all claims satisfy provisions of PCT Article 33(1)-(4)..... \$100 All other situations..... \$200				\$ 200.00	
23. <input checked="" type="checkbox"/> Search fee Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority..... \$100 International Search Report prepared and provided to the Office..... \$400 All other situations..... \$500				\$ 400.00	
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Surcharge of \$130.00 for furnishing the oath or declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(h)).				\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
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MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$360	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 0.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2.					
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SEND ALL CORRESPONDENCE TO:					
Corporate Patent Counsel Philips Electronics North America Corporation P.O. Box 3001 Briarcliff Manor, NY 10510			SIGNATURE  David Barnes NAME 47,407 REGISTRATION NUMBER		

1540594

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Corporate Patent Counsel
 Philips Electronics North America Corporation
 P.O. Box 3001
 Briarcliff Manor, NY 10510

 SIGNATURE
 David Barnes
 NAME
 47,407
 REGISTRATION NUMBER

DESCRIPTION

ELECTRODE ARRANGEMENT

5 The present invention relates to performance improvements in substantially fabric based electrodes.

 WO-A-01/02052 relates to a garment comprising at least two zones; one being formed of electrically insulative yarns and the other being formed of
10 one or more electrically conductive yarns. The zone comprising electrically conductive yarns is intended to function as an electrode surface for contacting the corpus. Therefore the zone comprising electrically conductive yarns is present on the inner side of the garment, which is to contact the corpus skin. WO-A-01/02052 states that an electro-conductive gel can be used between
15 the zone containing the electrically conductive yarns and the skin to assist the electrical contact between yarn and skin. It is not always desirable to introduce such gel between an electrode and the skin for a number of reasons, but in any case people are not always happy to apply a liquid or gel to a fabric based article.

20 Trials conducted with a textile based electrode (of which the electrode of WO-A-01/02052 is an example) fitted to a wearer have shown that the electrical resistance between the conductive portion of the textile based electrode and the skin of a wearer to which the electrode is applied is high enough to render detection of electrical signals corresponding to the wearers
25 heartbeat very difficult. These signals are of the type that can be used to generate an electrocardiogram. The difficulty in detecting these electrical signals is not helped when there is an upper limit on the percentage of electrically conductive material that can be present in the electrode conductive portion, either for reasons of limitations imposed by the manufacturing process
30 or because the feel or other physical property of the conductive portion would be adversely affected.

It is an object of the present invention to provide a substantially fabric based electrode arrangement with improved performance in comparison with a fabric based electrode not benefiting from the present invention.

5 In accordance with a first aspect of the present invention there is provided a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

10 Because the at least one portion of material is substantially impermeable to moisture, the act of placing that material on the wearers skin would restrict the amount by which the skin underneath is able to breath. During use of the electrode arrangement, the at least one portion of material is positioned on the wearers skin which promotes gathering of perspiration
15 between the skin and the portion of material by virtue of restricting the degree to which that skin is able to breath. A person secretes moisture from their skin naturally but moreover when a person takes exercise the exertion causes a person to perspire and the at least one portion of material traps perspiration between itself and the skin. The presence of the moisture or perspiration
20 reduces the electrical resistance present between the skin and portion of material and so in turn reduces the electrical resistance present between the skin and electrode arrangement. The reduction in electrical resistance allows more efficient detection of electrical signals that may be associated with the body of a wearer, such as electrical signals corresponding to the heartbeat of
25 the wearer, which may be used to produce an electrocardiogram. The increased efficiency of detection has the potential to allow more reliable measurement of the electrical signals under a wider variety of conditions therefore improving reliability of measurement, facilitating the measurement of signals in circumstances where it would otherwise not be possible to perform
30 successful measurement, or allowing use of less sensitive lower cost measuring apparatus.

In cases where the electrode arrangement is to be used in or in conjunction with fitness measuring equipment, sports training aids, exercise equipment or other such equipment where a user will undergo physical exertion, the electrode of the present invention will contribute to more efficient
5 detection of user signals, especially during the early stages of exertion. Tests have revealed that a basic knitted electrode of the type generally described by WO-A-01/02052 does not perform as well during early stages of user activity but performs much better once a user begins to perspire appreciably, thereby moistening the basic electrode and reducing the electrical resistance between
10 the basic electrode and the wearers skin. Therefore, in cases where the electrode arrangement is to be used for monitoring a patient who is not exercising, the electrode arrangement of the present invention provides detection of user signals when the basic knitted electrode of the type generally described by WO-A-01/02052 may not.

15 Furthermore, the applicants have found that fabric based electrodes can exhibit electrical noise when distorted as can occur during stretching or bending of the fabric electrode. In the case of the electrode of the present invention, the increased efficiency of detection of electrical signals made possible by promoting reduction of the resistance between the skin and
20 electrode arrangement helps to avoid or reduce the effects of such noise causing undesirable masking of the users electrical signals or otherwise interfering with the detection of such signals, which latter case can confuse signal processing apparatus.

Optionally, said at least one portion of material is located directly on
25 said first surface. Otherwise, one or more intermediate layers of further material may be present between the one portion and said first surface.

Optionally, said at least one portion of material can be bonded to said first surface. Bonding may be performed with or without the addition of further bonding material.

30 Preferably, the material is mechanically flexible. Thus, the at least one portion of material is able to flex in sympathy with the first surface of the electrode arrangement.

The said material may exhibit a resistivity of less than 500 ohms per square.

However, an important property is the electrical resistance across the thickness of the material, that is the dimension between the surface for
5 contacting the users skin and the surface for contacting the first surface of the fabric electrode. Ideally this resistance is as low as possible but a value of a few 10's of Ohms to a few hundred Ohms is tolerable. Typically the thickness is in the order of a few mm.

In one optional implementation, said material is silicone rubber loaded
10 with conductive material. The conductive material can be carbon black or silver powder.

In a preferred arrangement, the at least one portion or a plurality of such portions collectively occupy a proportion of between one fifth and one half inclusive of that area of the first surface intended to be applied to the skin.

15 In general it is desirable that the presence of the at least one portion of material or plurality of such portions does not detract from the inherent advantages of a fabric electrode; these include the electrode being flexible, mechanically elastic and allowing the wearers skin to breathe thereby contributing to user comfort. In respect of this last advantage, the at least one
20 portion of material reduces the ability of the skin to breath so the area of the first surface occupied by the portion or portions of material needs to be chosen to strike a good balance between providing an electrode arrangement which generally allows the skin to breath but which promotes gathering of perspiration in specific regions to reduce electrical contact resistance between
25 the skin and electrode.

The said electrode can be of a knitted construction or a woven construction. Thus by choice of appropriate materials the electrode can be made comfortable for a user to wear and also permits a fair degree of breathing of the skin covered by the electrode.

30 The said electrode can be integral with a garment which permits the garment and electrode to be mass produced in a cost-effective manner.

Furthermore an electrode that is integral with a garment also permits low profile or more elegant structures to be realised.

In accordance with second aspect of the invention there is provided a substantially textile article comprising the fabric electrode arrangement.

5 In accordance with a third aspect of the present invention there is provided a wearable article comprising the fabric electrode arrangement.

In accordance with a fourth aspect of the present invention there is provided a garment comprising a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode
10 arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

These and other aspects of the present invention appear in the appended claims to which the reader is now referred and which are incorporated herein by reference.

15

The present invention will now be described with reference to the Figures of the accompanying drawings in which:

Figure 1 shows a first embodiment of an electrode arrangement made in accordance with the present invention;

20 Figure 2 shows a schematic arrangement of an electrode arrangement of the present invention positioned on a wearer and electrical resistance measuring equipment;

Figure 3 shows plots of electrical resistance measured across two electrodes of an electrode arrangement placed in contact with a wearers skin;
25 and

Figures 4a-4c show further embodiments of an electrode arrangement made in accordance with the present invention.

It should be noted that the drawings are diagrammatic and not drawn to scale. Relative dimensions and proportions of parts of the figures have been
30 shown exaggerated or reduced in size for the sake of clarity and convenience in the drawings. The same reference signs are generally used to refer to corresponding or similar features in the different embodiments.

The first illustrated embodiment of a fabric electrode arrangement 10 is shown located on a textile article 11 (part shown), the electrode arrangement including an electrically conductive electrode portion 12 exhibiting a first surface 13 and a portion of material 14 located on the first surface 13. The first surface 13 and the material 14 are intended to contact the skin of a wearer during electrode use. The portion of material 14 is substantially impermeable to moisture and is electrically conductive. In this example the portion of material 14 is of silicon rubber loaded with carbon black. The portion of material 14 is 1.2mm thick, has a surface area of 0.035m^2 for presenting to the wearers skin during electrode use and exhibits an electrical resistance of 120 Ohms per square.

Ideally, the resistance measured across the thickness of the portion of the material 14 should be as low as possible but may be in the order of 10's of Ohms or lower, but ideally less than 200 Ohms or so. By thickness it is meant that dimension between the surface of portion 14 which contacts the wearers skin and the surface of portion 14 which contacts the first surface 13 of conductive electrode portion 12.

The electrically conductive electrode portion 12 is of knitted construction. More specifically the first embodiment is of plain knit structure using yarn comprising tactel™ (a type of nylon) which is an electrical insulator and stainless steel which is an electrical conductor. The yarn is a staple yarn and comprises 20%-30% of the stainless steel. As illustrated in Figure 1, the yarn is knitted to extend in the direction denoted x.

The electrical resistance of the conductive electrode portion 12 when measured lengthways over distance denoted d_1 in Figure 1 is in the region of 20 Ohms to 40 Ohms but in any case in the region of 10's of Ohms. Distance d_1 is 0.065m.

The need to reduce the electrical resistance between the users skin and the conductive electrode portion 12 could be met to some extent by increasing the percentage of conductive material in the electrode portion 12. This could be done by increasing the percentage of stainless steel in the yarn used to knit

the electrode or by introducing a further yarn having conductive qualities. However, manufacturing constraints can impose a limit on the amount of conductive material that can be included in the knit. Furthermore, as the amount of conductive material is increased the electrode portion 12 takes on a
5 feel that is progressively dissimilar to the textile article 11 that it is integrated with and becomes less flexible and less comfortable when worn against the users skin.

The electrically conductive electrode portion 12 may be sewn, glued or otherwise attached to the textile article 11. Alternatively the electrically
10 conductive electrode portion 12 may be an integral part of the textile article 11. In the latter case, where the textile article 11 is of knitted construction the electrode portion 12 may also be of knitted construction and formed during the same production process merely by appropriate selection of electrically conductive yarn during knitting of the article to define the electrode portion.
15 Intarsia and jacquard techniques may also be used, or the conductive yarn may be "laid in".

The portion of conductive moisture impermeable material 14 is attached to the electrode portion 12 by suitable electrically conductive adhesive but may be attached by other means such as heat bonding (partially melting the
20 impermeable material onto the electrode portion 12), ultrasonic welding, sewing or other means as will be appreciated by the person skilled in the art. In certain cases the conductive properties of material 14 may permit attachment by inductive welding.

Measurement of the electrode to skin electrical contact impedance was
25 conducted using the setup shown schematically in Figure 2. A garment in the form of a fabric band 11 is worn around the chest of the torso and is provided with an electrode arrangement having two conductive electrode portions 12 such that when the band is worn correctly, one electrode portion 12 is positioned on one front side of a wearers chest and the other electrode portion
30 12 is located on the other front side of the wearers chest. Each electrode portion 12 is provided with a portion of material 14 (not shown) that is impermeable to moisture and electrically conductive, as already described with

reference to Figure 1. The electrodes 12 are rectangular in shape each with a height of 0.02m and a width of 0.065m as viewed while the garment 11 is appropriately worn, for example as shown in Figure 2. The shortest spacing between the electrodes is 0.01m which is denoted in Figure 2 as d_2 . Each electrode portion 12 and moisture impermeable portion 14 is held in contact with the wearers skin by the band 11 during measurement.

A first one of the electrode portions 12 was connected to one measurement lead of an inductance, resistance and capacitance (LRC) meter while a second one of the electrode portions 12 was connected to another one measurement lead of the meter. A 120Hz measurement signal was applied to the electrode portions and the impedance across the two electrodes was measured. For the avoidance of doubt each electrode was physically separated from the another but both were placed in contact with a different portion of the wearers skin.

The resistance component of the measured impedance is shown in Figure 3; this measurement being total series resistance of a first electrode portion 12 in contact with the users skin and a second electrode portion 12 in contact with another part of the users skin. Assuming the major component of the impedance is present at the electrode-to-skin interfaces, and in comparison impedance within the body is low, an approximate indication of the electrode-to-skin impedance of one electrode can be reached by dividing the measured values by a factor of two.

Graph 30 shown in Figure 3 has a linear x axis of time in minutes and a logarithmic y axis of resistance in kilo ohms. The measurements were started once the electrodes had been attached to a wearer and the electrical resistance component of the measured impedance is shown by plot line 31. As can be seen initial measured resistance was in the order of 80k Ohms falling to around 25k Ohms after 5 minutes of continual wearing, approximately 15k Ohms after 10 minutes of wearing and levelling off at around 12k Ohms after 20 minutes of wearing. These measurements were taken with the wearer sitting down and the reduction of resistance over time is due to moisture

forming between material portion 14 and the wearers skin to reduce the electrical resistance at the component 14 and skin interface.

To form a comparison the same set-up of Figure 2 was used with knitted electrodes of the same type and dimensions but not having the component 14 of moisture impermeable conductive rubber. The electrical resistance component of the measured impedance is shown by plot line 32. In this case the measured resistance is much higher, in the order of 750k Ohms to 850k Ohms for the first 15 minutes of use for which measurements were available.

The reduced electrical resistance or impedance of the electrode arrangement 10 improves the process of detecting electrical signals from a wearers body. The improvement is realised because during early stages of wearing the electrode arrangement the formation of perspiration between the skin and the moisture impermeable material 14 reduces electrical resistance between the skin and material 14. The electrical resistance between the material 14 and knitted conductive electrode portion 12 is already low due to design of the electrode arrangement and so a path of relatively low electrical resistance is established between the skin and conductive electrode portion 12 via the material 14. The said path certainly has a lower electrical resistance in comparison with the electrical resistance of a comparable direct skin-to-electrically conductive textile portion 12 interface, especially when the wearers skin is dry. In fact, the nature of the knitted conductive electrode portion 12 is such that it tends to absorb and dissipate user perspiration while letting the users skin breathe. While these effects contribute to user comfort when wearing the electrode having a textile conductive electrode portion 12, they also raise the skin to electrode contact resistance, at least until a wearer has performed enough exercise to generate considerable perspiration to moisten the electrode portion 12. Thus, the portions of electrically conductive material 14 that are impermeable to moisture define regions of the electrode arrangement where a relatively low amount of perspiration serves to reduce electrode to skin electrical resistance.

Although electrical resistance between the users skin and fabric portion 12 is quite high, the electrical resistance within electrode conductive portion 12 is relatively low, that is in the region of 20 Ohms to 40 Ohms when measured along length denoted d_1 . Therefore, the combined effect of a conductive electrode portion 12 having a resistance of 10's of Ohms and an impermeable conductive portion 14 having a resistance across its thickness of a few 10's of Ohms provides an efficient arrangement for detecting electrical signals of a user. By making the moisture impermeable portion 14 thin, efficiency can be improved and / or materials having a higher bulk resistivity can still be used to form portion 14.

Although the arrangement of the first embodiment is described with the portion of electrically conductive moisture impermeable material 14 attached to the conductive electrode portion 12, the attachment does not need to be direct and there may be one or more layer of electrically conductive material between the material 14 and portion 12. Furthermore attachment of the moisture impermeable material 14 to portion 12 is not mandatory because mere appropriate location of material 14, such that during use material 14 electrically contacts portion 12, either directly or indirectly, is sufficient to allow operation in accordance with the present invention.

Figures 4a-4c show further embodiments of the present invention where the single circular portion of conductive moisture impermeable material 14 has been replaced by other arrangements of such material. In Figure 4a electrode portion 12 is provided with one or more substantially rectangular portions of conductive moisture impermeable material 14a. In Figure 4b electrode portion 12 is provided with two or more substantially circular portions of conductive moisture impermeable material 14b. In Figure 4c electrode portion 12 is provided with a plurality of circular portions 14c of conductive moisture impermeable material, each of the portions 14c being appreciably smaller in terms of the surface area they present to the users skin during use than the area presented by portion 14 of the first embodiment shown in Figure 1. However the or each portion 14 of electrically conductive moisture impermeable material needs to be of a shape and size adequate to encourage

the skin it covers to perspire; too small an area or too narrow the portion and perspiration will not be encouraged and trapped in the manner required to reduce electrode to skin resistance as described above.

While the present invention has been discussed with reference to a
5 knitted electrode structure this is not a limiting feature of the present invention which has use in textile based electrodes in general, whether the electrodes are of a knitted, woven, embroidered, or non-woven structure. Furthermore, although the present invention has been described in the context of detecting signals from the body of a wearer, the electrodes could also be used for
10 application of electrical current to a mammal.

In most cases the present arrangement will obviate the need for a user to actively wet an electrode component for correct operation. However, in some cases, depending on the user, it may be necessary to provide some supplementary moisture, for example by wetting the moisture impermeable
15 conductive portions 14. Even where such supplemental wetting is required, less moisture will be required to do this than would be the case when wetting fabric portion 12 and the moisture impermeable portions are less prone to drying out than fabric conductive portions 12 and so correct operation can be expected for a longer period than an arrangement without the impermeable
20 conductive portions 14.

From reading the present invention other modifications will be apparent to persons skilled in the art. Such modifications may include other features which are already known in the design, manufacture and use of fabric based electrodes, signal processing circuitry, garment construction and materials and
25 applications thereof and which may be used instead of or in addition to features already described herein.

CLAIMS

1. A fabric electrode arrangement (10) exhibiting a first surface (13) for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material (14) being substantially impermeable to moisture, said material being located on said first surface (13).

2. An electrode arrangement in accordance with claim 1 wherein said at least one portion of material (14) is located directly on said first surface (13).

3. An electrode arrangement in accordance with claim 1 or 2 wherein said at least one portion of material (14) is bonded to said first surface (13).

4. An electrode arrangement in accordance with claim 1, 2, or 3 wherein said at least one portion of material (14) is mechanically flexible.

5. An electrode arrangement in accordance with any one or more of claims 1 to 4 wherein said at least one portion of material (14) is silicone rubber loaded with conductive material.

6. An electrode arrangement in accordance with claim 5 wherein said conductive material is carbon black.

7. An electrode arrangement in accordance with any one or more of claims 1 to 6 wherein said at least one portion of material exhibits a resistivity of less than 10,000 ohms per square.

8. An electrode arrangement in accordance with any one or more of claims 1 to 7 wherein the at least one portion of material (14) or a plurality of such portions collectively occupy a proportion of between one fifth and one half inclusive of that area of the first surface (13) intended to be applied to the skin.

9. An electrode arrangement in accordance with any one or more of claims 1 to 8 wherein said arrangement has an electrode portion (12) that is of a knitted construction or a woven construction.

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10. An electrode arrangement in accordance with any one or more of claims 1 to 9 wherein said electrode arrangement is integral with a garment.

11. A substantially textile article comprising the fabric electrode arrangement of any one or more of claims 1 to 10.

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12. A wearable article comprising the fabric electrode arrangement of any one or more of claims 1 to 10.

13. A garment comprising a fabric electrode arrangement exhibiting a first surface (13) for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material (14) being substantially impermeable to moisture, said material being located on said first surface.

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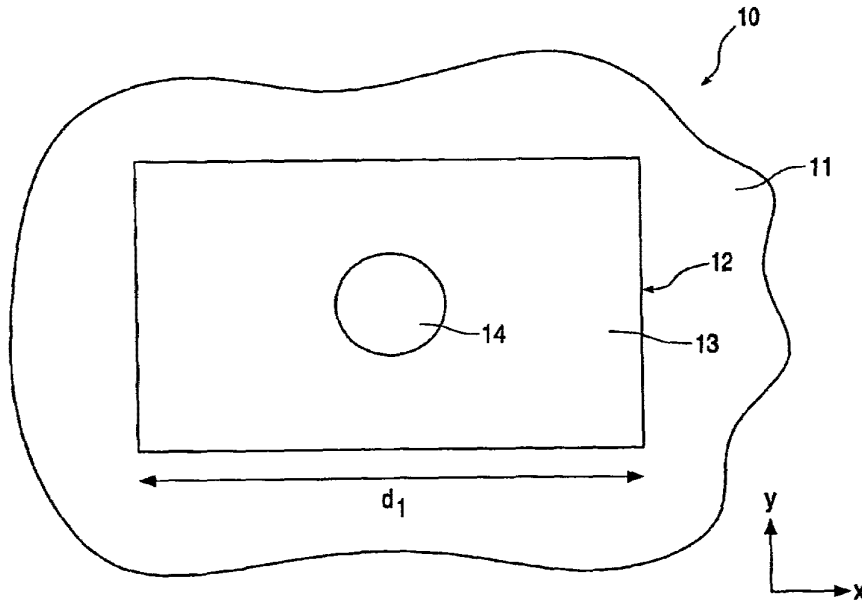
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- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **GOUGH, Paul, A.** [GB/GB]; c/o Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB). **BICKERTON, Matthew, J.** [GB/GB]; c/o Philips Intellectual
- (74) Agent: **WHITE, Andrew, G.**; Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).
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[Continued on next page]

(54) Title: ELECTRODE ARRANGEMENT



(57) Abstract: An electrode arrangement (10) comprises a knitted electrically conductive electrode portion (12) containing electrically conductive yarn and at least one portion (14) of moisture impermeable electrically conductive material attached to the electrode portion (12). During use the electrode portion (12) and portion of material (14) are applied to a wearers skin. The moisture impermeable material portion (14) is of silicon loaded with carbon black. The moisture impermeable portion (14) encourages perspiration of a user and the perspiration trapped between the skin and moisture impermeable portion (14) reduces skin to electrode contact resistance to increase efficiency of detection of user heart rate or other electrical signals generated by a user.

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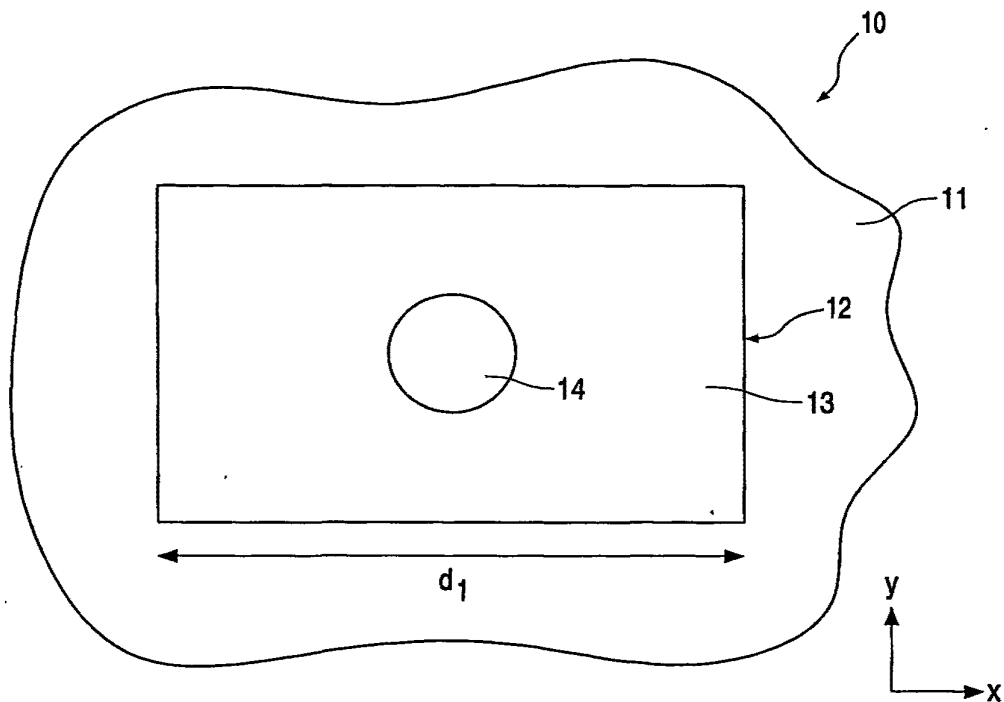


FIG. 1

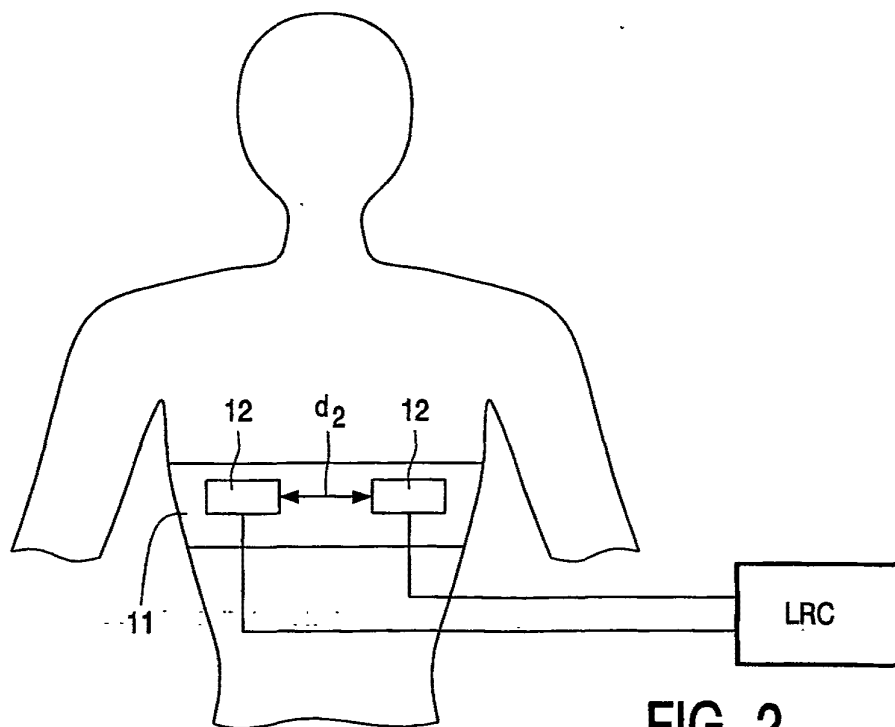


FIG. 2

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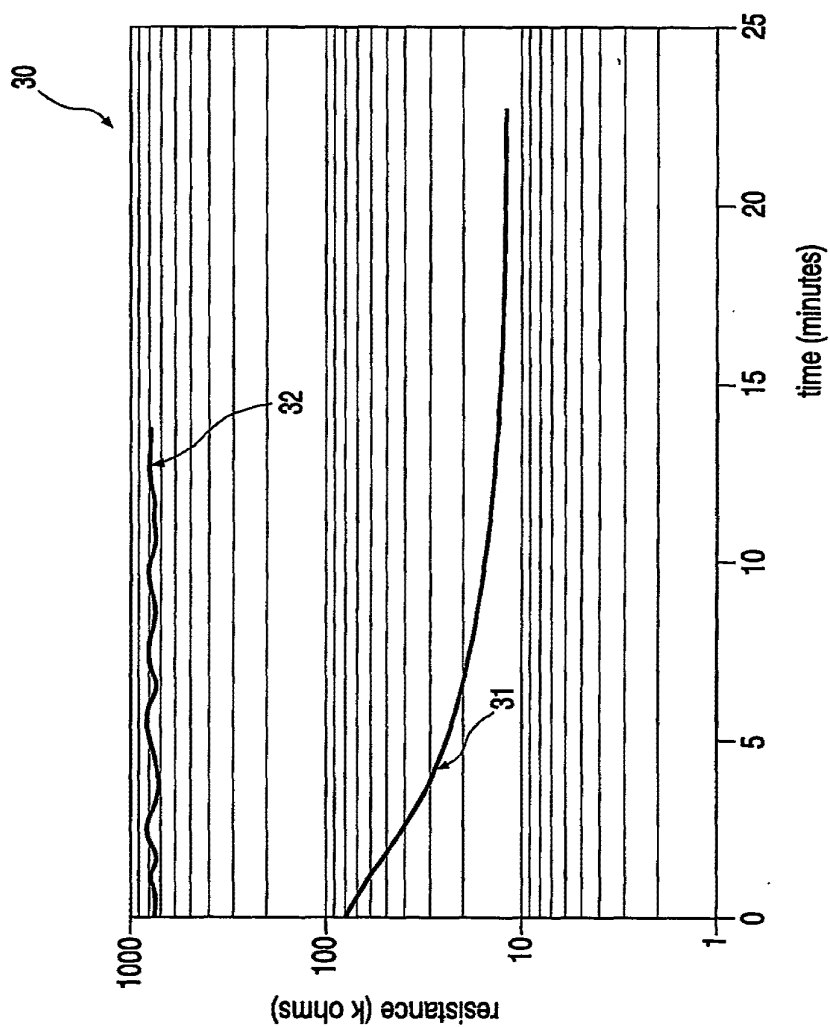


FIG. 3

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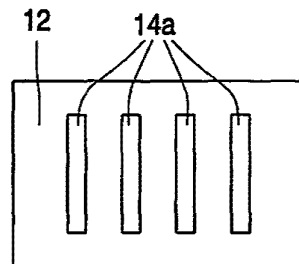


FIG. 4a

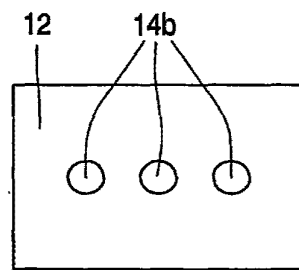


FIG. 4b

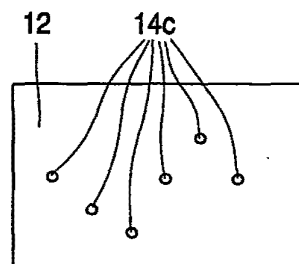


FIG. 4c

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24737

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Assignee Name and Address:

KONINKLIJKE PHILIPS ELECTRONICS N.V.
Groenewoudseweg 1
5621 BA Eindhoven, The Netherlands

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

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

Signature		Date	14 January 2005
Name	Michael E. Marion	Telephone	(914) 333-9637
Title	Authorized Representative		

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

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10/540594

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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Koninklijke Philips Electronics N.V.

Application No./Patent No.: Concurrently Filed/Issue Date: Concurrently

Entitled: ELECTRODE ARRANGEMENT

Koninklijke Philips Electronics N.V., a corporation
 (Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest.
 The extent (by percentage) of its ownership interest is _____ %
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A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

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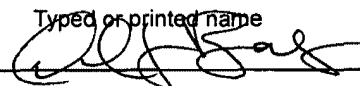
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The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

5-24-05
 Date
(914) 333-9693
 Telephone number

DAVID BARNES, REG. 47,407
 Typed or printed name

 Signature

 Corporate Counsel
 Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **ELECTRODE ARRANGEMENT**
the specification of which (check only one item below):

☐ is attached hereto.

☐ was filed as United States application

Serial No

on

and was amended

on

☒ was filed as PCT international application

Number IB03/05963

On 11 December 2003

and was amended under PCT Article 19

on

(if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.


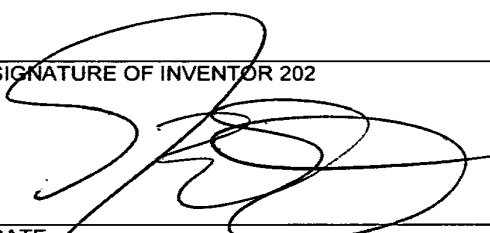
I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 USC 119
GB	0230361.8	27 December 2002	YES

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Combined Declaration For Patent Application and Power of Attorney (Continued) (includes Reference to PCT International Applications)				Attorneys Docket Number PHGB020258 US	
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)					
Jack E. Haken, Reg. No. 26,902 Michael E. Marion, Reg. No. 32,266 Edward M. Blocker, Reg. No. 30,245				Direct Telephone Calls to: (name and telephone number) (914)332-0222	
201	FULL NAME OF INVENTOR	FAMILY NAME GOUGH	FIRST GIVEN NAME Paul	SECOND GIVEN NAME A	
	RESIDENCE & CITIZENSHIP	CITY SMALLFIELD	STATE OR FOREIGN COUNTRY Great Britain	COUNTRY OF CITIZENSHIP Great Britain	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS 14 Hayes Walk	CITY SMALLFIELD	STATE & ZIP CODE/COUNTRY RH6 9QW, England	
202	FULL NAME OF INVENTOR	FAMILY NAME BICKERTON	FIRST GIVEN NAME Matthew	SECOND GIVEN NAME J	
	RESIDENCE & CITIZENSHIP	CITY REDHILL	STATE OR FOREIGN COUNTRY Great Britain	COUNTRY OF CITIZENSHIP Great Britain	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Tye Copse Cottage, South Park,	CITY REDHILL	STATE & ZIP CODE/COUNTRY RH1 4NE, England	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true: and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 if Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.					
SIGNATURE OF INVENTOR 201 			SIGNATURE OF INVENTOR 202 		
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APPLICANTS Paul A Gough, Smallfield, UNITED KINGDOM; Mathew J Bickerton, Redhill, UNITED KINGDOM;				
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** FOREIGN APPLICATIONS ***** UNITED KINGDOM 02303618 12/27/2002				
Foreign Priority claimed <input type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance Verified and Acknowledged _____ Examiner's Signature Initials		STATE OR COUNTRY UNITED KINGDOM	SHEETS DRAWING 3	TOTAL CLAIMS 14
INDEPENDENT CLAIMS 3				
ADDRESS 24737				
TITLE Electrode arrangement				
FILING FEE RECEIVED 900	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit	

**MULTIPLE DEPENDENT CLAIM
FEE CALCULATION SHEET**
(FOR USE WITH FORM PTO-875)

10/540594

SERIAL NO.

FILING DATE

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1 st AMENDMENT		AFTER 2 nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1			/	/		
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TOTAL DEP.	←		11	←		←
TOTAL CLAIMS			14			

	AS FILED		AFTER 1 st AMENDMENT		AFTER 2 nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
51						
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TOTAL DEP.	←			←		←
TOTAL CLAIMS						

PATENT APPLICATION FEE DETERMINATION RECORD

Effective Date: December 8, 2004

Application or Docket Number

10/540594

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
U.S. NATIONAL STAGE FEES		
BASIC FEE	SMALL ENT. = \$ 150	LARGE ENT. = \$ 300
EXAMINATION FEE	Satisfies PCT Article 33(1)-(4) = \$ 50 / \$ 100	All other situations = \$ 100 / \$ 200
SEARCH FEE	U.S. is ISA = \$ 50 / \$ 100 ALL other countries = \$ 200 / \$ 400	All other situations = \$ 250 / \$ 500
FEE FOR EXTRA SPEC. PGS.	minus 100 =	/ 50 =
TOTAL CHARGEABLE CLAIMS	14 minus 20 = *	
INDEPENDENT CLAIMS	3 minus 3 = *	
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐

RATE	FEE
BASIC FEE	
EXAM. FEE	
SEARCH FEE	
X \$ 125 =	
X \$ 25 =	
X \$ 100 =	
+ \$ 180 =	
TOTAL	

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	300
EXAM. FEE	200
SEARCH FEE	400
X \$ 250 =	
X \$ 50 =	
X \$ 200 =	
+ \$ 360 =	900
TOTAL	

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X \$ 25 =	
X \$ 100 =	
+ \$ 180 =	
TOTAL ADDIT. FEE	

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X \$ 50 =	
X \$ 200 =	
+ \$ 360 =	
TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE
X \$ 25 =	
X \$ 100 =	
+ \$ 180 =	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X \$ 50 =	
X \$ 200 =	
+ \$ 360 =	
TOTAL ADDIT. FEE	

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

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

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

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

PATENT APPLICATION SERIAL NO. 10/540594

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

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PTO-1556
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10/540594

JC20 Rec'd PCT/PTO 23 JUN 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

GOUGH

GB 020258

Serial No.

Group Art Unit

Filed: CONCURRENTLY

Ex.

ELECTRODE ARRANGEMENT

Commissioner for Patents
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to calculation of the filing fee and examination, please
amend the above-identified application as follows:

IN THE CLAIMS

Please amend the claims as follows:

1. (original) A fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.
2. (original) An electrode arrangement in accordance with claim 1 wherein said at least one portion of material is located directly on said first surface.
3. (currently amended) An electrode arrangement in accordance with claim 1 ~~or 2~~ wherein said at least one portion of material is bonded to said first surface.
4. (currently amended) An electrode arrangement in accordance with claim 1, ~~2, or 3~~ wherein said material is mechanically flexible.

5. (currently amended) An electrode arrangement in accordance with ~~any one or more of claims 1 to 4~~claim 1 wherein said material is silicone rubber loaded with conductive material.
6. (original) An electrode arrangement in accordance with claim 5 wherein said conductive material is carbon black.
7. (currently amended) An electrode arrangement in accordance with ~~any one or more of claims 1 to 6~~claim 1 wherein said material exhibits a resistivity of less than 10,000 ohms per square.
8. (currently amended) An electrode arrangement in accordance with ~~any one or more of claims 1 to 7~~claim 1 wherein the at least one portion or a plurality of such portions collectively occupy a proportion of between one fifth and one half inclusive of that area of the first surface intended to be applied to the skin.
9. (currently amended) An electrode arrangement in accordance with ~~any one or more of claims 1 to 8~~claim 1 wherein said electrode is of a knitted construction or a woven construction.

10. (currently amended) An electrode arrangement in accordance with ~~any one or more of claims 1 to 9~~claim 1 wherein said electrode is integral with a garment.

11. (currently amended) A substantially textile article comprising the fabric electrode of ~~any one or more of claims 1 to 10~~claim 1.

12. (currently amended) A wearable article comprising the fabric electrode of ~~any one or more of claims 1 to 10~~claim 1.

13. (original) A garment comprising a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

14. (original) A fabric electrode arrangement, textile article, wearable article or garment substantially as described herein, with reference to or as illustrated in any one or more of the figures of the accompanying drawings.

REMARKS

The foregoing amendments to the claims were made solely to avoid filing the claims in the multiple dependent form so as to avoid the additional filing fee.

The claims were not amended in order to address issues of patentability and Applicants respectfully reserve all rights they may have under the Doctrine of Equivalents. Applicants furthermore reserve their right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or continuing applications.

Respectfully submitted,

By 

David Barnes, Reg. 47,407

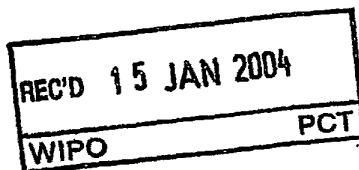
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(914) 333-9693



10/540594
Rec'd PCT/PTO 2/3 JUN 2005
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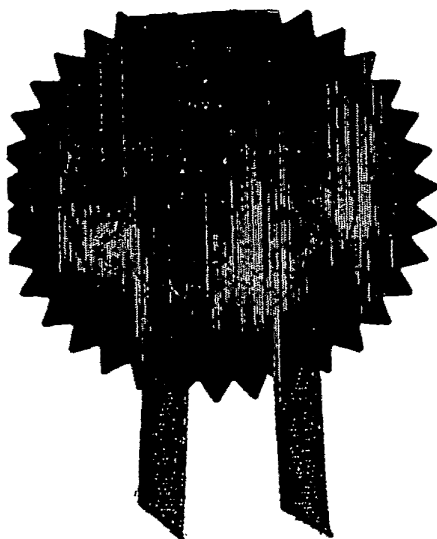
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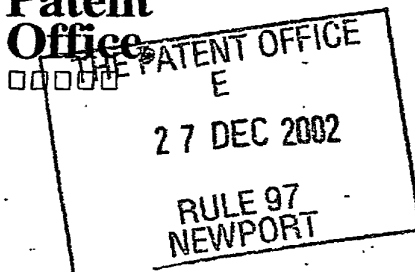
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PHGB020258

03JAN03 E774357-2 D03008
P01/7700 0.00-0230361.8

Patent application number

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27 DEC 2002

0230361.8

Full name, address and postcode of the or of each applicant (underline all surnames)

KONINKLIJKE PHILIPS ELECTRONICS N.V.
GROENEWOUDSEWEG 1
5621 BA EINDHOVEN
THE NETHERLANDS

Patents ADP Number (if you know it)

07419294001

If the applicant is a corporate body, give the country/state of its incorporation

THE NETHERLANDS

Title of the invention

ELECTRODE ARRANGEMENT

Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Philips Intellectual Property and Standards
Cross Oak Lane
Redhill
Surrey RH1 5HA
08359655001

Patents ADP number (if you know it)

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Country

Priority Application number
(if you know it)

Date of filing
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If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
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Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:

YES

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
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- See note (d))

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Description

11

Claims(s)

2

Abstract

1

Drawings

3 ~~only~~ only

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Priority Documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

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Request for substantive examination

(Patents Form 10/77)

Any other documents

(Please specify)

1.

I/We request the grant of a patent on the basis of this application.

Signature

[Handwritten Signature]

Date 24/12/2002.

12. Name and daytime telephone number of person to contact in the United Kingdom

01293 815365

(D.Melbourne)

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DESCRIPTION

ELECTRODE ARRANGEMENT

5 The present invention relates to performance improvements in substantially fabric based electrodes.

WO-A-01/02052 relates to a garment comprising at least two zones; one being formed of electrically insulative yarns and the other being formed of
10 one or more electrically conductive yarns. The zone comprising electrically conductive yarns is intended to function as an electrode surface for contacting the corpus. Therefore the zone comprising electrically conductive yarns is present on the inner side of the garment, which is to contact the corpus skin. WO-A-01/02052 states that an electro-conductive gel can be used between
15 the zone containing the electrically conductive yarns and the skin to assist the electrical contact between yarn and skin. It is not always desirable to introduce such gel between an electrode and the skin for a number of reasons, but in any case people are not always happy to apply a liquid or gel to a fabric based article.

20 Trials conducted with a textile based electrode (of which the electrode of WO-A-01/02052 is an example) fitted to a wearer have shown that the electrical resistance between the conductive portion of the textile based electrode and the skin of a wearer to which the electrode is applied is high enough to render detection of electrical signals corresponding to the wearers
25 heartbeat very difficult. These signals are of the type that can be used to generate an electrocardiogram. The difficulty in detecting these electrical signals is not helped when there is an upper limit on the percentage of electrically conductive material that can be present in the electrode conductive portion, either for reasons of limitations imposed by the manufacturing process
30 or because the feel or other physical property of the conductive portion would be adversely affected.

It is an object of the present invention to provide a substantially fabric based electrode arrangement with improved performance in comparison with a fabric based electrode not benefiting from the present invention.

5 In accordance with a first aspect of the present invention there is provided a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

10 Because the at least one portion of material is substantially impermeable to moisture, the act of placing that material on the wearers skin would restrict the amount by which the skin underneath is able to breath. During use of the electrode arrangement, the at least one portion of material is positioned on the wearers skin which promotes gathering of perspiration
15 between the skin and the portion of material by virtue of restricting the degree to which that skin is able to breath. A person secretes moisture from their skin naturally but moreover when a person takes exercise the exertion causes a person to perspire and the at least one portion of material traps perspiration between itself and the skin. The presence of the moisture or perspiration
20 reduces the electrical resistance present between the skin and portion of material and so in turn reduces the electrical resistance present between the skin and electrode arrangement. The reduction in electrical resistance allows more efficient detection of electrical signals that may be associated with the body of a wearer, such as electrical signals corresponding to the heartbeat of
25 the wearer, which may be used to produce an electrocardiogram. The increased efficiency of detection has the potential to allow more reliable measurement of the electrical signals under a wider variety of conditions therefore improving reliability of measurement, facilitating the measurement of signals in circumstances where it would otherwise not be possible to perform
30 successful measurement, or allowing use of less sensitive lower cost measuring apparatus.

In cases where the electrode arrangement is to be used in or in conjunction with fitness measuring equipment, sports training aids, exercise equipment or other such equipment where a user will undergo physical exertion, the electrode of the present invention will contribute to more efficient
5 detection of user signals, especially during the early stages of exertion. Tests have revealed that a basic knitted electrode of the type generally described by WO-A-01/02052 does not perform as well during early stages of user activity but performs much better once a user begins to perspire appreciably, thereby moistening the basic electrode and reducing the electrical resistance between
10 the basic electrode and the wearers skin. Therefore, in cases where the electrode arrangement is to be used for monitoring a patient who is not exercising, the electrode arrangement of the present invention provides detection of user signals when the basic knitted electrode of the type generally described by WO-A-01/02052 may not.

15 Furthermore, the applicants have found that fabric based electrodes can exhibit electrical noise when distorted as can occur during stretching or bending of the fabric electrode. In the case of the electrode of the present invention, the increased efficiency of detection of electrical signals made possible by promoting reduction of the resistance between the skin and
20 electrode arrangement helps to avoid or reduce the effects of such noise causing undesirable masking of the users electrical signals or otherwise interfering with the detection of such signals, which latter case can confuse signal processing apparatus.

Optionally, said at least one portion of material is located directly on
25 said first surface. Otherwise, one or intermediate layers of further material may be present between the one portion and said first surface.

Optionally, said at least one portion of material can be bonded to said first surface. Bonding may be performed with or without the addition of further bonding material.

30 Preferably, the material is mechanically flexible. Thus, the at least one portion of material is able to flex in sympathy with the first surface of the electrode arrangement.

The said material may exhibit a resistivity of less than 500 ohms per square.

However, an important property is the electrical resistance across the thickness of the material, that is the dimension between the surface for contacting the users skin and the surface for contacting the first surface of the fabric electrode. Ideally this resistance is as low as possible but a value of a few 10's of Ohms to a few hundred Ohms is tolerable. Typically the thickness is in the order of a few mm.

In one optional implementation, said material is silicone rubber loaded with conductive material. The conductive material can be carbon black or silver powder

In a preferred arrangement, the at least one portion or a plurality of such portions collectively occupy a proportion of between one fifth and one half inclusive of that area of the first surface intended to be applied to the skin.

In general it is desirable that the presence of the at least one portion of material or plurality of such portions does not detract from the inherent advantages of a fabric electrode; these include the electrode being flexible, mechanically elastic and allowing the wearers skin to breathe thereby contributing to user comfort. In respect of this last advantage, the at least one portion of material reduces the ability of the skin to breath so the area of the first surface occupied by the portion or portions of material needs to be chosen to strike a good balance between providing an electrode arrangement which generally allows the skin to breath but which promotes gathering of perspiration in specific regions to reduce electrical contact resistance between the skin and electrode.

The said electrode can be of a knitted construction or a woven construction. Thus by choice of appropriate materials the electrode can be made comfortable for a user to wear and also permits a fair degree the breathing of the skin covered by the electrode.

The said electrode can be integral with a garment which permits the garment and electrode to be mass produced in a cost-effective manner.

Furthermore an electrode that is integral with a garment also permits low profile or more elegant structures to be realised.

In accordance with second aspect of the invention there is provided a substantially textile article comprising the fabric electrode.

5 In accordance with a third aspect of the present invention there is provided a wearable article comprising the fabric electrode.

In accordance with a fourth aspect of the present invention there is provided a garment comprising a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode
10 arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

These and other aspects of the present invention appear in the appended claims to which the reader is now referred and which are incorporated herein by reference.

15 The present invention will now be described with reference to the Figures of the accompanying drawings in which:

Figure 1 shows a first embodiment of an electrode arrangement made in accordance with the present invention;

20 Figure 2 shows a schematic arrangement of an electrode arrangement of the present invention positioned on a wearer and electrical resistance measuring equipment;

Figure 3 shows plots of electrical resistance measured across two electrodes of an electrode arrangement placed in contact with a wearers skin;
25 and

Figures 4a-4c show further embodiments of an electrode arrangement made in accordance with the present invention.

It should be noted that the drawings are diagrammatic and not drawn to scale. Relative dimensions and proportions of parts of the figures have been
30 shown exaggerated or reduced in size for the sake of clarity and convenience in the drawings. The same reference signs are generally used to refer to corresponding or similar features in the different embodiments.

The first illustrated embodiment of a fabric electrode arrangement 10 is shown located on a textile article 11 (part shown), the electrode arrangement including an electrically conductive electrode portion 12 exhibiting a first surface 13 and a portion of material 14 located on the first surface 13. The first surface 13 and the material 14 are intended to contact the skin of a wearer during electrode use. The portion of material 14 is substantially impermeable to moisture and is electrically conductive. In this example the portion of material 14 is of silicon rubber loaded with carbon black. The portion of material 14 is 1.2mm thick, has a surface area of 0.035m^2 for presenting to the wearers skin during electrode use and exhibits an electrical resistance of 120 Ohms per square.

Ideally, the resistance measured across the thickness of the portion of the material 14 should be as low as possible but may be in the order of 10's Ohms or lower, but ideally less than 200 Ohms or so. By thickness it is meant that dimension between the surface of portion 14 which contacts the wearers skin and the surface of portion 14 which contacts the first surface 13 of conductive electrode portion 12.

The electrically conductive electrode portion 12 is of knitted construction. More specifically the first embodiment is of plain knit structure using yarn comprising tactel™ (a type of nylon) which is an electrical insulator and stainless steel which is an electrical conductor. The yarn is a staple yarn and comprises 20%-30% of the stainless steel. As illustrated in Figure 1, the yarn is knitted to extend in the direction denoted x.

The electrical resistance of the conductive electrode portion 12 when measured lengthways over distance denoted d_1 in Figure 1 is in the region of 20 Ohms to 40 Ohms but in any case in the region of 10's of Ohms. Distance d_1 is 0.065m.

The need to reduce the electrical resistance between the users skin and the conductive electrode portion 12 could be met to some extent by increasing the percentage of conductive material in the electrode portion 12. This could be done by increasing the percentage of stainless steel in the yarn used to knit

the electrode or by introducing a further yarn having conductive qualities. However, manufacturing constraints can impose a limit on the amount of conductive material that can be included in the knit. Furthermore, as the amount of conductive material is increased the electrode portion 12 takes on a feel that is progressively dissimilar to the textile article 11 that it is integrated with and becomes less flexible and less comfortable when worn against the users skin.

The electrically conductive electrode portion 12 may be sewn, glued or otherwise attached to the textile article 11. Alternatively the electrically conductive electrode portion 12 may be an integral part of the textile article 11. In the latter case, where the textile article 11 is of knitted construction the electrode portion 12 may also be of knitted construction and formed during the same production process merely by appropriate selection of electrically conductive yarn during knitting of the article to define the electrode portion. Intarsia and jacquard techniques may also be used, or the conductive yarn may be laid in.

The portion of conductive moisture impermeable material 14 is attached to the electrode portion 12 by suitable electrically conductive adhesive but may be attached by other means such as heat bonding (partially melting the impermeable material onto the electrode portion 12), ultrasonic welding, sewing or other means as will be appreciated by the person skilled in the art. In certain cases the conductive properties of material 14 may permit attachment by inductive welding.

Measurement of the electrode to skin electrical contact impedance was conducted using the setup shown schematically in Figure 2. A garment in the form of a fabric band 11 is worn around the chest of the torso and is provided with an electrode arrangement having two conductive electrode portions 12 such that when the band is worn correctly, one electrode portion 12 is positioned on each front side of a wearers chest. Each electrode portion 12 is provided with a portion of material 14 (not shown) that is impermeable to moisture and electrically conductive, as already described with reference to Figure 1. The electrodes 12 are rectangular in shape each with a height of

0.02m and a width of 0.065m as viewed while the garment 11 is appropriately worn. The shortest spacing between the electrodes is 0.01m which is denoted in Figure 2 as d_2 . Each electrode portion 12 and moisture impermeable portion 14 is held in contact with the wearers skin by the band 11 during measurement.

A first one of the electrode portions 12 was connected to one measurement lead of an inductance, resistance and capacitance (LRC) meter while a second one of the electrode portions 12 was connected to another one measurement lead of the meter. A 120Hz measurement signal was applied to the electrode portions and the impedance across the two electrodes was measured. For the avoidance of doubt each electrode was physically separated from the another but both were placed in contact with a different portion of the wearers skin.

The resistance component of the measured impedance is shown in Figure 3; this measurement being total series resistance of a first electrode portion 12 in contact with the users skin and a second electrode portion 12 in contact with another part of the users skin. Assuming the major component of the impedance is present at the electrode-to-skin interfaces, and in comparison impedance within the body is low, an approximate indication of the electrode-to-skin impedance of one electrode can be reached by dividing the measured values by a factor of two.

Graph 30 shown in Figure 3 has a linear x axis of time in minutes and a logarithmic y axis of resistance in kilo ohms. The measurements were started once the electrodes had been attached to a wearer and the electrical resistance component of the measured impedance is shown by plot line 31. As can be seen initial measured resistance was in the order of 80k Ohms falling to around 25k Ohms after 5 minutes of continual wearing, approximately 15k Ohms after 10 minutes of wearing and levelling off at around 12k Ohms after 20 minutes of wearing. These measurements were taken with the wearer sitting down and the reduction of resistance over time is due to moisture between component 14 and the wearers skin forming to reduce the electrical resistance at the component 14 and skin interface.

To form a comparison the same set-up of Figure 2 was used with knitted electrodes of the same type and dimensions but not having the component 14 of moisture impermeable conductive rubber. The electrical resistance component of the measured impedance is shown by plot line 32. In this case the measured resistance is much higher, in the order of 750k Ohms to 850k Ohms for the first 15 minutes of use for which measurements were available.

The reduced electrical resistance or impedance of the electrode arrangement improves the process of detecting electrical signals from a wearers body. The improvement is realised because during early stages of wearing the electrode arrangement the formation of perspiration between the skin and the moisture impermeable material 14 reduces electrical resistance between the skin and material 14. The electrical resistance between the material 14 and knitted conductive electrode portion 12 is already low due to design of the electrode arrangement and so a path of relatively low electrical resistance is established between the skin and conductive electrode portion 12 via the material 14. The said path certainly has a lower electrical resistance in comparison with the electrical resistance of a direct skin-to-electrically conductive textile portion 12 interface, especially when the wearers skin is dry. In fact, the nature of the knitted conductive electrode portion 12 is such that it tends to absorb and dissipate user perspiration while letting the users skin breathe. While these effects contribute to user comfort when wearing the electrode having a textile conductive electrode portion 12, they also raise the skin to electrode contact resistance, at least until a wearer has performed enough exercise to generate considerable perspiration to moisten the electrode portion 12. Thus, the portions of electrically conductive material 14 that are impermeable to moisture define regions of the electrode arrangement where a relatively low amount of perspiration serves to reduce electrode to skin electrical resistance.

Although electrical resistance between the users skin and fabric portion 12 is quite high, the electrical resistance within electrode conductive portion 12 is relatively low, that is in the region of 20 Ohms to 40 Ohms when measured

along length denoted d_1 . Therefore, the combined effect of a conductive electrode portion 12 having a resistance of 10's of Ohms and an impermeable conductive portion 14 having a resistance across its thickness of a few 10's of Ohms provides an efficient arrangement for detecting electrical signals of a user. By making the moisture impermeable portion 14 thin, efficiency can be improved and / or materials having a higher bulk resistivity can still be used to form portion 14.

Although the arrangement of the first embodiment is described with the portion of electrically conductive moisture impermeable material 14 attached to the conductive electrode portion 12, the attachment does not need to be direct and there may be one or more layer of electrically conductive material between the material 14 and portion 12. Furthermore attachment of the moisture impermeable material 14 to portion 12 is not mandatory because mere appropriate location of material 14, such that during use material 14 contacts portion 12, either directly or indirectly, is sufficient to allow operation in accordance with the present invention.

Figures 4a-4c show further embodiments of the present invention where the single circular portion of conductive moisture impermeable material 14 has been replaced by other arrangements of such material. In Figure 4a electrode portion 12 is provided with one or more substantially rectangular portions of conductive moisture impermeable material 14a. In Figure 4b electrode portion 12 is provided with two or more substantially circular portions of conductive moisture impermeable material 14b. In Figure 4c electrode portion 12 is provided with a plurality of circular portions 14c of conductive moisture impermeable material, each of the portions 14c being appreciably smaller in terms of the surface area they present to the users skin during use than the area presented by portion 14 of the first embodiment shown in Figure 1. However the or each portion 14 of electrically conductive moisture impermeable material needs to be of a shape and size adequate to encourage the skin it covers to perspire; too small an area or too narrow the portion and perspiration will not be encouraged and trapped in the manner required to reduce electrode to skin resistance as described above.

While the present invention has been discussed with reference to a knitted electrode structure this is not a limiting feature of the present invention which has use in textile based electrodes in general, whether the electrodes are of a knitted, woven, embroidered, or non-woven structure. Furthermore, 5 although the present invention has been described in the context of detecting signals from the body of a wearer, the electrodes could also be used for application of electrical current to a mammal.

In most cases the present arrangement will obviate the need for a user to actively wet an electrode component for correct operation. However, in 10 some cases, depending on the user, it may be necessary to provide some supplementary moisture, for example by wetting the moisture impermeable conductive portions 14. Even where such supplemental wetting is required, less moisture will be required to do this than would be the case when wetting fabric portion 12 and the moisture impermeable portions are less prone to 15 drying out than fabric conductive portions 12 and so correct operation can be expected for a longer period than an arrangement without the impermeable conductive portions 14.

From reading the present invention other modifications will be apparent to persons skilled in the art. Such modifications may include other features 20 which are already known in the design, manufacture and use of fabric based electrodes, signal processing circuitry, garment construction and materials and applications thereof and which may be used instead of or in addition to features already described herein.

CLAIMS

1. A fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement
5 comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

2. An electrode arrangement in accordance with claim 1 wherein said
at least one portion of material is located directly on said first surface.

10

3. An electrode arrangement in accordance with claim 1 or 2 wherein
said at least one portion of material is bonded to said first surface.

4. An electrode arrangement in accordance with claim 1, 2, or 3
15 wherein said material is mechanically flexible.

5. An electrode arrangement in accordance with any one or more of
claims 1 to 4 wherein said material is silicone rubber loaded with conductive
material.

20

6. An electrode arrangement in accordance with claim 5 wherein said
conductive material is carbon black.

7. An electrode arrangement in accordance with any one or more of
25 claims 1 to 6 wherein said material exhibits a resistivity of less than 10,000
ohms per square.

8. An electrode arrangement in accordance with any one or more of
claims 1 to 7 wherein the at least one portion or a plurality of such portions
30 collectively occupy a proportion of between one fifth and one half inclusive of
that area of the first surface intended to be applied to the skin.

9. An electrode arrangement in accordance with any one or more of claims 1 to 8 wherein said electrode is of a knitted construction or a woven construction.

5 10. An electrode arrangement in accordance with any one or more of claims 1 to 9 wherein said electrode is integral with a garment.

11. A substantially textile article comprising the fabric electrode of any one or more of claims 1 to 10.

10

12. A wearable article comprising the fabric electrode of any one or more of claims 1 to 10.

13. A garment comprising a fabric electrode arrangement exhibiting a first surface for application to the skin of a mammal, wherein said fabric electrode arrangement comprises at least one portion of material being substantially impermeable to moisture, said material being located on said first surface.

14. A fabric electrode arrangement, textile article, wearable article or garment substantially as described herein, with reference to or as illustrated in any one or more of the figures of the accompanying drawings.

25

ABSTRACT

ELECTRODE ARRANGEMENT

5 An electrode arrangement (10) comprises a knitted electrically
conductive electrode portion (12) containing electrically conductive yarn and at
least one portion (14) of moisture impermeable electrically conductive material
attached to the electrode portion (12). During use the electrode portion (12)
and portion of material (14) are applied to a wearers skin. The moisture
10 impermeable material portion (14) is of silicon loaded with carbon black. The
moisture impermeable portion (14) encourages perspiration of a user and the
perspiration trapped between the skin and moisture impermeable portion (14)
reduces skin to electrode contact resistance to increase efficiency of detection
of user heart rate or other electrical signals generated by a user.

15

(Figure 1)

1/3

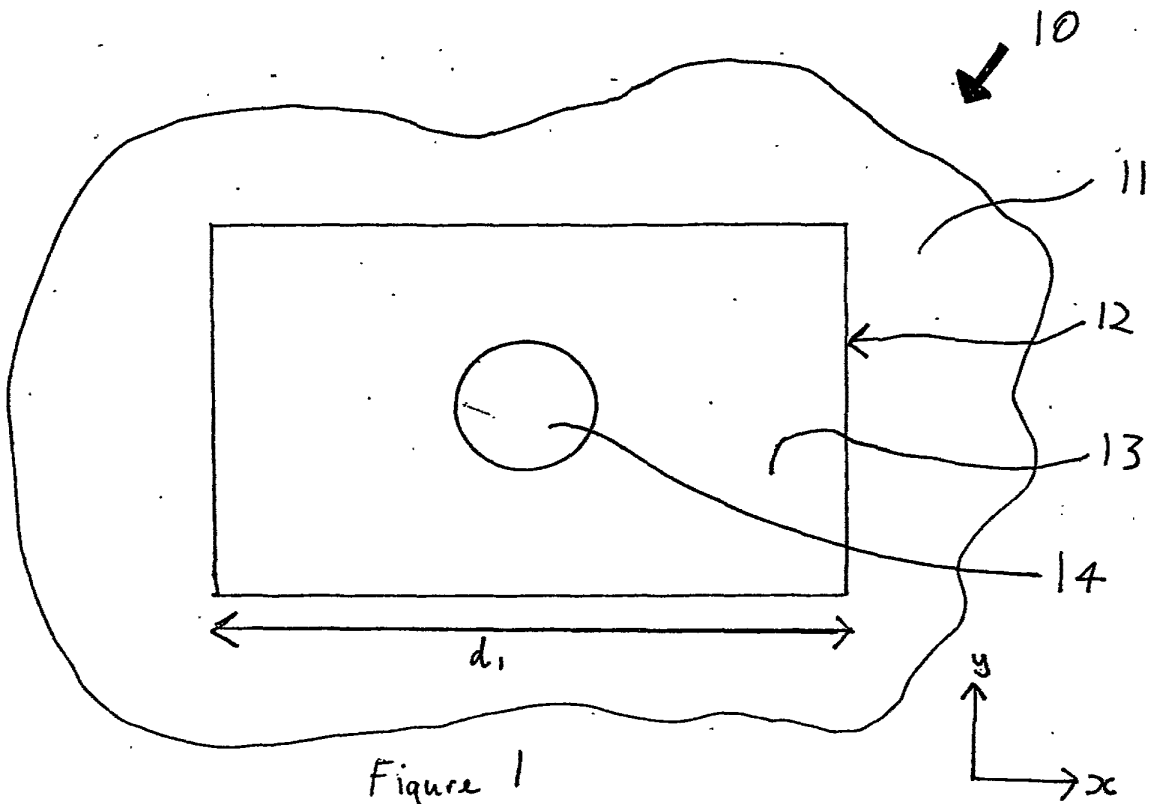


Figure 1

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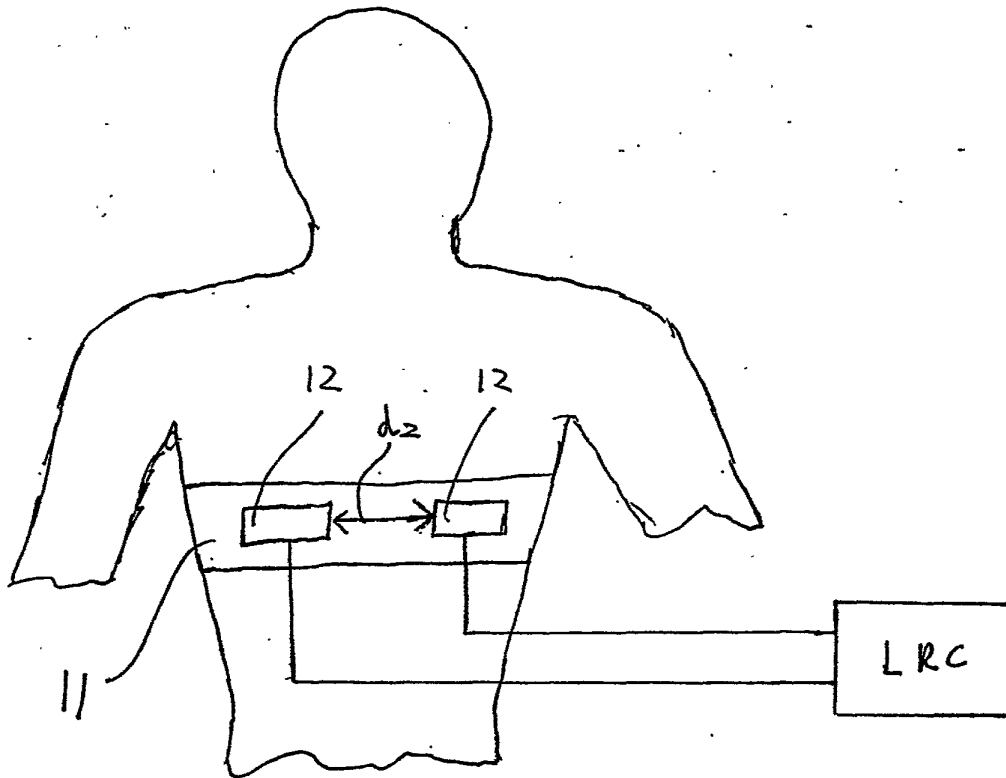


Figure 2

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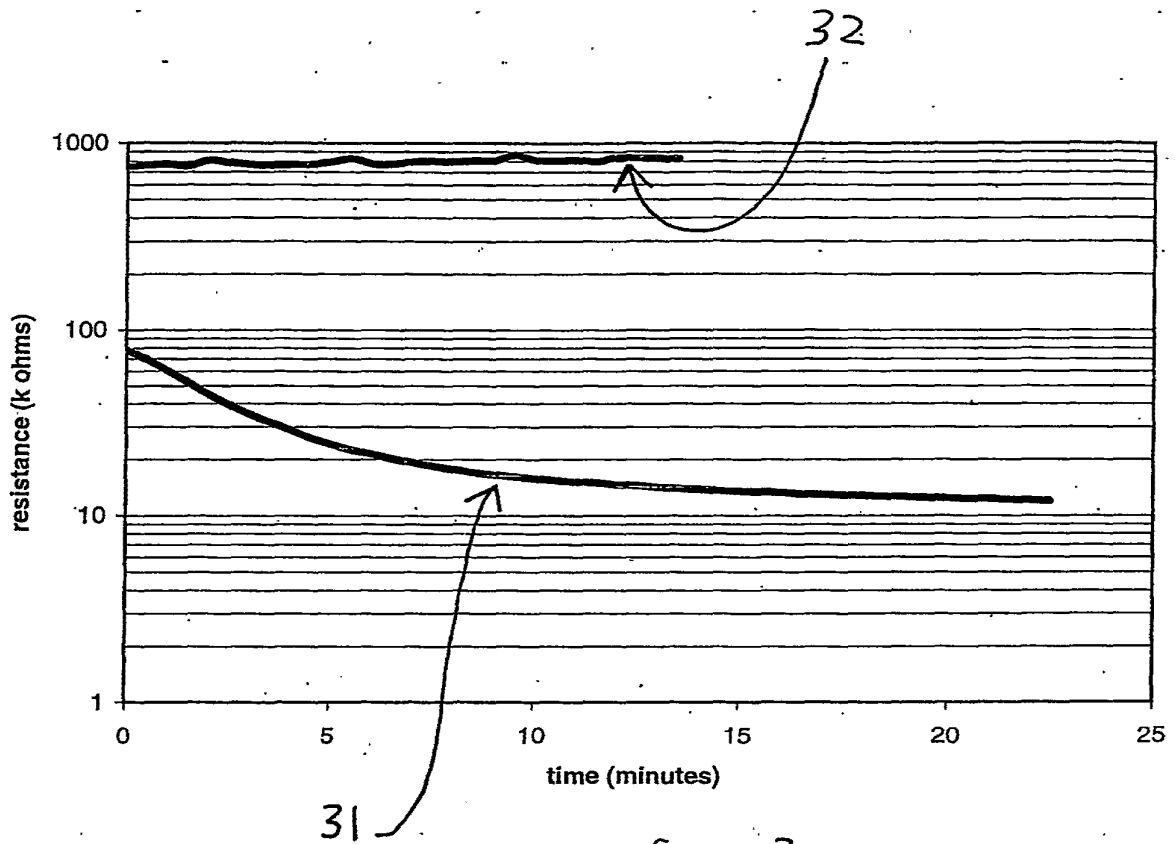


Figure 3

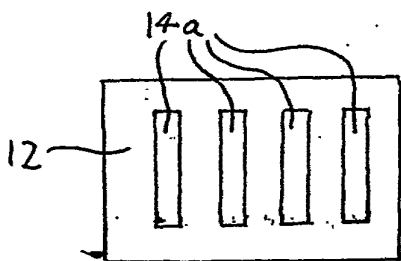


Figure 4a

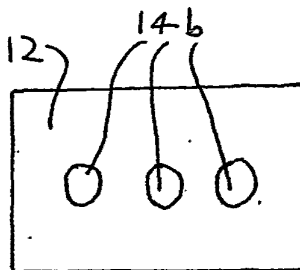


Figure 4b

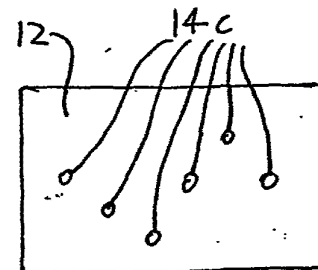


Figure 4c

PCT Application
IB0305963



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10/540594

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- ☒ International Application (RECORD COPY)
- ☐ Article 19 Amendments
- ☐ PCT/IPEA/409 IPER : ☐ EP ☐ JP ☐ SE ☐ AU ☐ US ☐ FR ☐ CN ☐ ES ☐ RU ☐ AT ☐ KR ☐ _____
- ☐ PCT/IPEA/409 IPER was NOT AVAILABLE at the time of paralegal review
- ☐ Annexes to 409
- ☒ Priority Document (s) No. 1

- ☐ PCT/IB/331
- ☐ Request form PCT/RO/101
- ☒ PCT/ISA/210 - Search Report : ☐ EP ☐ JP ☐ SE ☐ AU ☐ US ☐ FR ☐ CN ☐ ES ☐ RU ☐ AT ☐ KR ☐ OTHER _____
- ☐ NONE
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NOTES : ☐ I.A. used as Specification ☐ Other :

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/05963

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61N1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61N A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 746 207 A (MCADAMS ERIC THOMAS ET AL) 5 May 1998 (1998-05-05) column 1, line 8 -column 2, line 38; figures	1,13
A	WO 01 02052 A (DEMEYERE EMMANUEL ;BEKAERT SA NV (BE); HEIRBAUT GUIDO (BE); STEENL) 11 January 2001 (2001-01-11) cited in the application page 10, line 1 -page 12, line 32; figures	1,13
A	US 5 944 685 A (MURAKI MASAHIRO) 31 August 1999 (1999-08-31) column 1, line 22 -column 3, line 26; figures	1,13
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Date of the actual completion of the international search

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Date of mailing of the international search report

22/03/2004

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A	EP 0 128 103 A (BIO STIMU TREND CORP) 12 December 1984 (1984-12-12) page 5, line 2 -page 6, line 21; figures -----	1,13
A	WO 02 065904 A (CORDLESS ANTISTATIC RES INC ;BATKIN IZMAIL (CA); BRUN DEL RE RICCA) 29 August 2002 (2002-08-29) page 6, line 17 -page 12, line 2; figures -----	1,13

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/05963

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5746207	A	05-05-1998	DE 4410017 A1 FR 2704417 A1 GB 2276326 A , B JP 6296594 A	29-09-1994 04-11-1994 28-09-1994 25-10-1994
WO 0102052	A	11-01-2001	AU 5530900 A WO 0102052 A2	22-01-2001 11-01-2001
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EP 0128103	A	12-12-1984	US 4580572 A US 4583547 A US 4729377 A AT 47038 T CA 1263710 A1 DE 3480055 D1 DE 128103 T1 DK 268984 A EP 0128103 A1 GB 2143135 A , B IL 71968 A JP 60005170 A NO 842222 A	08-04-1986 22-04-1986 08-03-1988 15-10-1989 05-12-1989 16-11-1989 12-09-1985 02-12-1984 12-12-1984 06-02-1985 31-01-1989 11-01-1985 03-12-1984
WO 02065904	A	29-08-2002	WO 02065904 A1 WO 02065905 A1 CA 2438683 A1	29-08-2002 29-08-2002 29-08-2002

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PATENT APPLICATION FEE DETERMINATION RECORD

Effective Date December 8, 2004

Application or Docket Number

10/540594

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(Column 2)

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SEARCH FEE	U.S. is ISA = \$ 50 / \$ 100 ALL other countries = \$ 200 / \$ 400	All other situations = \$ 250 / \$ 500
FEE FOR EXTRA SPEC. PGS.	minus 100 =	/ 50 =
TOTAL CHARGEABLE CLAIMS	14 minus 20 =	
INDEPENDENT CLAIMS	3 minus 3 =	
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

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RATE	FEE
BASIC FEE	
EXAM. FEE	
SEARCH FEE	
X \$ 125 =	
X \$ 25 =	
X \$ 100 =	
+ \$ 180 =	
TOTAL	

OR

RATE	FEE
BASIC FEE	300
EXAM. FEE	200
SEARCH FEE	400
X \$ 250 =	
X \$ 50 =	
X \$ 200 =	
+ \$ 360 =	900
TOTAL	900

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6.23.05

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Independent	*	Minus	***
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X \$ 100 =	
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OR

RATE	ADDITIONAL FEE
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