

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5630095

|                                   |                              |
|-----------------------------------|------------------------------|
| <b>SUBMISSION TYPE:</b>           | NEW ASSIGNMENT               |
| <b>NATURE OF CONVEYANCE:</b>      | RELEASE OF SECURITY INTEREST |
| <b>CONVEYING PARTY DATA</b>       |                              |
| <b>Name</b>                       | <b>Execution Date</b>        |
| FITLINXX, INC.                    | 07/06/2019                   |
| <b>RECEIVING PARTY DATA</b>       |                              |
| <b>Name:</b>                      | LUMIRADX UK LTD              |
| <b>Street Address:</b>            | 3 MORE LONDON                |
| <b>Internal Address:</b>          | RIVERSIDE                    |
| <b>City:</b>                      | LONDON                       |
| <b>State/Country:</b>             | UNITED KINGDOM               |
| <b>Postal Code:</b>               | SE1 2AQ                      |
| <b>PROPERTY NUMBERS Total: 30</b> |                              |
| <b>Property Type</b>              | <b>Number</b>                |
| Application Number:               | 60180915                     |
| Patent Number:                    | 7187924                      |
| Patent Number:                    | 7466979                      |
| Patent Number:                    | 7937121                      |
| Patent Number:                    | 8150424                      |
| Patent Number:                    | 8606338                      |
| Patent Number:                    | 6336365                      |
| Patent Number:                    | 8214007                      |
| Patent Number:                    | 8630699                      |
| Patent Number:                    | 8750974                      |
| Patent Number:                    | 8965492                      |
| Patent Number:                    | 9155484                      |
| Application Number:               | 14062242                     |
| Application Number:               | 60795763                     |
| Application Number:               | 60813846                     |
| Application Number:               | 13480169                     |
| Application Number:               | 14333601                     |
| Application Number:               | 11799033                     |
| Application Number:               | 61566528                     |

| Property Type       | Number    |
|---------------------|-----------|
| Application Number: | 13690313  |
| Application Number: | 13840098  |
| Application Number: | 14184042  |
| Application Number: | 14491441  |
| Application Number: | 14757584  |
| Application Number: | 61602819  |
| Application Number: | 14380701  |
| Application Number: | 14880413  |
| Application Number: | 14880366  |
| Application Number: | 14270971  |
| PCT Number:         | US1456532 |

**CORRESPONDENCE DATA**

**Fax Number:**

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

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**Email:** teas@friedfrank.com

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**Address Line 1:** ONE NEW YORK PLAZA

**Address Line 4:** NEW YORK, NEW YORK 10004

|                                |                                                            |
|--------------------------------|------------------------------------------------------------|
| <b>ATTORNEY DOCKET NUMBER:</b> | 5485-1                                                     |
| <b>NAME OF SUBMITTER:</b>      | DANIEL STERN                                               |
| <b>SIGNATURE:</b>              | /Daniel Stern/                                             |
| <b>DATE SIGNED:</b>            | 07/22/2019                                                 |
|                                | This document serves as an Oath/Declaration (37 CFR 1.63). |

**Total Attachments: 5**

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**TERMINATION AND RELEASE OF  
NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS**

WHEREAS, pursuant to that certain Security Agreement dated as of December 1, 2016, between LumiraDx UK Ltd (“**Grantor**”) and FitLinxx, Inc. (“**Secured Party**”), Grantor granted to the Secured Party a continuing security interest in and continuing lien upon the patents, patent licenses and patent applications set forth on Schedule 1 attached hereto (such patents, patent licenses and patent applications, the “**IP Collateral**”).

WHEREAS, notice of that grant was recorded in the United States Patent and Trademark Office (“**USPTO**”) at Reel 041038/0102 on December 20, 2016, as corrected by that certain corrective notice, which was recorded in the USPTO at Reel 043516/0799 on August 10, 2017; and

WHEREAS, Grantor has requested and Secured Party has agreed to provide a document suitable for recording in the USPTO for purposes of recording the release, relinquishment and discharge of its continuing security interest in and continuing lien upon the IP Collateral.

NOW, THEREFORE, in consideration of and in exchange for good and valuable consideration, Secured Party hereby releases, relinquishes and discharges its continuing security interest in and continuing lien upon the IP Collateral.

THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF DELAWARE APPLICABLE TO CONTRACTS MADE AND TO BE PERFORMED IN THE STATE OF DELAWARE WITHOUT REGARD TO CONFLICTS OF LAW PRINCIPLES.

IN WITNESS WHEREOF, the Secured Party has caused this Termination and Release of Notice of Grant of Security Interest in Patents to be duly executed as of July 6, 2019.

Fitlinxx, Inc., as Secured Party

By:



Name: David P. Monahan

Title: President and CEO

**SCHEDULE 1**

SCHEDULE 1

PATENTS

| Country | Patent No./<br>App No. | Title                                                       | Filing<br>Date | Issue Date |  |
|---------|------------------------|-------------------------------------------------------------|----------------|------------|--|
| U.S.    | 60/180,915             | Intelligent Data network with power management capabilities | 2/8/2000       | N/A        |  |
| U.S.    | 7,187,924              | Intelligent Data network with power management capabilities | 2/8/2001       | 3/6/2007   |  |
| U.S.    | 7,466,979              | Intelligent Data network with power management capabilities | 4/11/2006      | 12/16/2008 |  |
| U.S.    | 7,937,121              | Intelligent Data network with power management capabilities | 12/5/2008      | 5/3/2011   |  |
| U.S.    | 8,150,424              | Intelligent Data network with power management capabilities | 4/11/2011      | 4/3/2012   |  |
| U.S.    | 8,606,338              | Intelligent Data network with power management capabilities | 1/17/2012      | 12/10/2013 |  |
| U.S.    | 14/062,242             | Intelligent Data network with power management capabilities | 10/24/2013     | N/A        |  |
| U.S.    | 6,336,365              | Low-cost accelerometer                                      | 8/24/1999      | 1/8/2002   |  |
| U.S.    | 60/795,763             | Intelligent Device and Data Network                         | 4/28/2006      | N/A        |  |
| U.S.    | 60/813,846             | Intelligent Device and Data Network                         | 6/15/2006      | N/A        |  |
| U.S.    | 13/480,169             | Intelligent Device and Data Network                         | 5/24/2012      | N/A        |  |
| U.S.    | 14/333,601             | Intelligent Device and Data Network                         | 7/17/2014      | N/A        |  |
| U.S.    | 11/799,033             | Intelligent Device and Data Network                         | 4/30/2017      | N/A        |  |

| Country | Patent No./<br>App No. | Title                                                                      | Filing<br>Date | Issue Date |  |
|---------|------------------------|----------------------------------------------------------------------------|----------------|------------|--|
| U.S.    | 61/566,528             | Intelligent Activity Monitoring                                            | 12/2/2011      | N/A        |  |
| U.S.    | 13/690,313             | Intelligent Activity Monitor                                               | 11/30/2012     | N/A        |  |
| U.S.    | 13/840,098             | Versatile Sensors with Data Fusion Functionality                           | 3/15/2013      | N/A        |  |
| U.S.    | 14/184,042             | Versatile Sensors with Data Fusion Functionality                           | 2/19/2014      | N/A        |  |
| U.S.    | 14/491,441             | Health Monitor                                                             | 9/19/2014      | N/A        |  |
| U.S.    | 14/757,584             | Health Monitor                                                             | 12/23/15       | N/A        |  |
| U.S.    | 61/602,819             | Intermediate Audio Link and Apparatus for Device-to-Device Communications  | 2/24/2012      | N/A        |  |
| U.S.    | 14/380,701             | Intermediate Audio Link and Apparatus for Device-to-Device Communications  | 8/22/2014      | N/A        |  |
| U.S.    | 8,214,007              | Body Worn Physiological Sensor Device Having a Disposable Electrode Module | 11/1/2006      | 7/3/2012   |  |
| U.S.    | 8,630,699              | Body Worn Physiological Sensor Device Having a Disposable Electrode Module | 6/5/2012       | 1/14/2014  |  |
| U.S.    | 8,750,974              | Body Worn Physiological Sensor Device Having a Disposable Electrode Module | 12/11/2013     | 6/10/2014  |  |
| U.S.    | 8,965,492              | Body Worn Physiological Sensor Device Having a Disposable Electrode Module | 5/2/2014       | 2/24/2015  |  |
| U.S.    | 9,155,484              | Body Worn Physiological Sensor Device Having a Disposable Electrode        | 1/13/2015      | 10/15/2015 |  |

| Country | Patent No./<br>App No. | Title                                                                                  | Filing<br>Date | Issue Date |  |
|---------|------------------------|----------------------------------------------------------------------------------------|----------------|------------|--|
|         |                        | Module                                                                                 |                |            |  |
| U.S.    | 14/880,413             | Body Worn<br>Physiological Sensor<br>Device Having a<br>Disposable Electrode<br>Module | 10/12/2015     | N/A        |  |
| U.S.    | 14/880,366             | Body Worn<br>Physiological Sensor<br>Device Having a<br>Disposable Electrode<br>Module | 10/12/2015     | N/A        |  |
| U.S.    | 14/270,971             | Clip for Securing a<br>Wearable Item                                                   | 5/6/2014       | N/A        |  |
| Europe  | 14769534.0             | Versatile Sensor with<br>Data Fusion<br>Functionality                                  | 3/15/2013      | N/A        |  |
| PCT     | PCT/US14/56<br>532     | Versatile Sensor with<br>Data Fusion<br>Functionality                                  | 9/19/2014      | N/A        |  |

{M0892677.4 }



## 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](http://www.uspto.gov)

| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|------------|------------|---------------------|------------------|
| 14/595,815      | 10/13/2015 | 9155484    | 3022036 US05        | 9197             |

88750 7590 09/23/2015  
Barclay Damon  
ONE PARK PLACE, 300 S. STATE ST.  
SYRACUSE, NY 13202

### ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

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

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

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

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

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

Steven D. Baker, Beaverton, NY;  
Welch Allyn, Inc., Skaneateles Falls, NY;  
Eric T. McAdams, Whitehead, UNITED KINGDOM;  
James P. Welch, Mission Viejo, CA;

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

|                                                                                                                                       |                                   |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US01    | Application Number:<br>11/591,619 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 7955            |
|                                                                                                                                       | Filing Date: November 1, 2006     | Group Art Unit: 3762              |

| U.S. PATENT DOCUMENTS |                      |                      |                             |       |          |                               |
|-----------------------|----------------------|----------------------|-----------------------------|-------|----------|-------------------------------|
| EXAMINER<br>INITIAL   | DOCUMENT NO.         | DATE                 | NAME                        | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
|                       | 5,515,735            | 5/14/1996            | Sarihan                     |       |          |                               |
|                       | 5,600,071            | 2/4/1997             | Sooriakumar et al.          |       |          |                               |
|                       | 5,808,331            | 9/15/1998            | Zhang et al.                |       |          |                               |
|                       | 5,889,211            | 3/30/1999            | Maudie et al.               |       |          |                               |
|                       | <del>6,013,933</del> | <del>1/11/2000</del> | <del>Foerstner et al.</del> |       |          |                               |
|                       | 6,089,692            | 7/18/2000            | Anagnostopoulos             |       |          |                               |
|                       | 6,212,944            | 4/10/2001            | Kwun et al.                 |       |          |                               |
|                       | 6,331,444            | 12/18/2001           | Ferrari et al.              |       |          |                               |
|                       | 6,448,621            | 9/10/2002            | Thakur                      |       |          |                               |
|                       | 6,586,810            | 7/1/2003             | Thakur                      |       |          |                               |
|                       | 2004/0252031         | 12/16/2004           | Taylor                      |       |          |                               |
|                       | 6,911,727            | 6/28/2005            | Martin et al.               |       |          |                               |
|                       | 2005/0216334         | 9/29/2005            | Mehrabani-Farsi             |       |          |                               |
|                       | 2007/0293781         | 12/20/2007           | Sims et al.                 |       |          |                               |
|                       | 7,318,417            | 1/15/2008            | Lang et al.                 |       |          |                               |
|                       | 2009/0043185         | 2/12/2009            | McAdams et al.              |       |          |                               |
|                       | 7,508,064            | 3/24/2009            | Martin et al.               |       |          |                               |
|                       | 2009/0131759         | 5/21/2009            | Sims et al.                 |       |          |                               |
|                       | 7,563,632            | 7/21/2009            | Martin et al.               |       |          |                               |
|                       | 2010/0145202         | 6/10/2010            | McLaughlin et al.           |       |          |                               |
|                       | 2010/0160762         | 6/24/2010            | McLaughlin et al.           |       |          |                               |
|                       | 2010/0324390         | 12/23/2010           | McLaughlin et al.           |       |          |                               |
|                       |                      |                      |                             |       |          |                               |
|                       |                      |                      |                             |       |          |                               |

Change(s) applied  
to document,  
/J.M./  
7/28/2015

|                                                                                                                                                                                                                                             |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| EXAMINER /Nicole Lavert/                                                                                                                                                                                                                    | DATE CONSIDERED 02/21/2015 |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                            |

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

|                                                                                                                                       |                                   |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| U.S. PATENT DOCUMENTS |                      |            |                    |       |          |                            |
|-----------------------|----------------------|------------|--------------------|-------|----------|----------------------------|
| EXAMINER INITIAL      | DOCUMENT NO.         | DATE       | NAME               | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|                       | 5,882,300            | 03/16/1999 | Malinouskas et al. |       |          |                            |
|                       | 5,889,211            | 03/30/1999 | Maudie et al.      |       |          |                            |
|                       | 5,899,866            | 05/04/1999 | Cyrus, et al.      |       |          |                            |
|                       | 5,916,159            | 06/29/1999 | Kelly et al.       |       |          |                            |
|                       | 5,917,414 A          | 06/29/1999 | Oppelt et al.      |       |          |                            |
|                       | 5,919,141            | 07/06/1999 | Money et al.       |       |          |                            |
|                       | 5,938,597            | 08/17/1999 | Stratbucker        |       |          |                            |
|                       | 5,966,692            | 10/12/1999 | Langer et al.      |       |          |                            |
|                       | 5,987,519            | 11/16/1999 | Peifer et al.      |       |          |                            |
|                       | 5,995,861            | 11/30/1999 | Price              |       |          |                            |
|                       | 6,006,125            | 12/21/1999 | Kelly et al.       |       |          |                            |
|                       | <del>6,013,933</del> | 01/11/2000 | Foerstner et al.   |       |          |                            |
|                       | 6,018,705            | 01/25/2000 | Gaudet et al.      |       |          |                            |
|                       | 6,026,321            | 02/15/2000 | Miyata et al.      |       |          |                            |
|                       | 6,052,654            | 04/18/2000 | Gaudet et al.      |       |          |                            |
|                       | 6,057,758 A          | 05/02/2000 | Dempsey et al.     |       |          |                            |
|                       | 6,066,093            | 05/23/2000 | Kelly et al.       |       |          |                            |
|                       | 6,073,046            | 06/06/2000 | Patel et al.       |       |          |                            |
|                       | 6,076,003            | 06/13/2000 | Rogel              |       |          |                            |
|                       | 6,089,692            | 07/18/2000 | Anagnostopoulos    |       |          |                            |
|                       | 6,122,340            | 09/19/2000 | Darley et al.      |       |          |                            |
|                       | 6,150,951            | 11/21/2000 | Olejniczak         |       |          |                            |
|                       | 6,161,036            | 12/12/2000 | Matsumura et al.   |       |          |                            |
|                       | <del>6,171,237</del> | 01/09/2001 | Avitall et al.     |       |          |                            |
|                       | 6,198,394 B1         | 03/06/2001 | Jacobsen et al.    |       |          |                            |
|                       | 6,212,944            | 04/10/2001 | Kwun et al.        |       |          |                            |

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to document,  
/J.M./  
7/28/2015

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| EXAMINER /Nicole Lavert/                                                                                                                                                                                                                    | DATE CONSIDERED 02/21/2015 |
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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| U.S. PATENT DOCUMENTS |                                           |            |                                   |       |          |                            |
|-----------------------|-------------------------------------------|------------|-----------------------------------|-------|----------|----------------------------|
| EXAMINER INITIAL      | DOCUMENT NO.                              | DATE       | NAME                              | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|                       | 4,141,367 A                               | 02/27/1979 | Ferreira                          |       |          |                            |
|                       | 4,791,933                                 | 12/20/1988 | Asai et al.                       |       |          |                            |
|                       | 4,800,894 A                               | 01/31/1989 | Milani                            |       |          |                            |
|                       | 4,957,109                                 | 09/18/1990 | Groeger et al.                    |       |          |                            |
|                       | 4,958,645                                 | 09/25/1990 | Cadell et al.                     |       |          |                            |
|                       | 4,974,607                                 | 12/04/1990 | Miwa                              |       |          |                            |
|                       | 5,257,631                                 | 11/02/1993 | Wik                               |       |          |                            |
|                       | 5,294,928 A                               | 03/15/1994 | Cooper et al.                     |       |          |                            |
|                       | 5,309,918 A                               | 05/10/1994 | Schraag                           |       |          |                            |
|                       | 5,319,363                                 | 06/07/1994 | Welch et al.                      |       |          |                            |
|                       | 5,458,122                                 | 10/17/1995 | Hethuin                           |       |          |                            |
|                       | <del>5,515,735</del> <del>5,515,796</del> | 05/14/1996 | Sarihan                           |       |          |                            |
|                       | 5,538,007                                 | 07/23/1996 | Gorman                            |       |          |                            |
|                       | 5,544,661                                 | 08/13/1996 | Davis et al.                      |       |          |                            |
|                       | 5,579,001                                 | 11/26/1996 | Dempsey et al.                    |       |          |                            |
|                       | 5,579,775                                 | 12/03/1996 | Dempsey et al.                    |       |          |                            |
|                       | 5,600,071                                 | 02/04/1997 | Sooriakumar et al.                |       |          |                            |
|                       | 5,682,803                                 | 11/04/1997 | <del>Cideon et al.</del> Boianjiu |       |          |                            |
|                       | 5,687,734                                 | 11/18/1997 | Dempsey et al.                    |       |          |                            |
|                       | 5,694,940                                 | 12/09/1997 | Unger et al.                      |       |          |                            |
|                       | 5,743,269                                 | 04/28/1998 | Okigami et al.                    |       |          |                            |
|                       | 5,748,103                                 | 05/05/1998 | Flach et al.                      |       |          |                            |
|                       | 5,767,791                                 | 06/16/1998 | Stoop et al.                      |       |          |                            |
|                       | 5,808,331                                 | 09/15/1998 | Zhang et al.                      |       |          |                            |
|                       | 5,832,490                                 | 11/03/1998 | Riley                             |       |          |                            |
|                       | 5,871,451                                 | 02/16/1999 | Unger et al.                      |       |          |                            |

Change(s) applied  
to document,  
/J.M./  
7/28/2015

|                                                                                                                                                                                                                                             |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| EXAMINER /Nicole Lavert/                                                                                                                                                                                                                    | DATE CONSIDERED 02/21/2015 |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                            |

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# PART B - FEE(S) TRANSMITTAL

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

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

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

88750 7590 06/10/2015  
**Barclay Damon**  
**ONE PARK PLACE, 300 S. STATE ST.**  
**SYRACUSE, NY 13202**

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

## Certificate of Mailing or Transmission

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 14/595,815      | 01/13/2015  | Steven D. Baker      | 3022036 US05        | 9197             |

TITLE OF INVENTION: BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | UNDISCOUNTED  | \$960         | \$0                 | \$0                  | \$960            | 09/10/2015 |

| EXAMINER         | ART UNIT | CLASS-SUBCLASS |
|------------------|----------|----------------|
| LAVERT, NICOLE F | 3762     | 600-509000     |

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 Barclay Damon, LLP  
 (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  
 Welch Allyn, Inc.

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)  
 Skaneateles Falls, NY

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

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

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

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

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

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

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29  
☐ Applicant asserting small entity status. See 37 CFR 1.27  
☐ Applicant changing to regular undiscounted fee status.

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

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

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

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

Authorized Signature /Peter J. Bilinski/

Date September 10, 2015

Typed or printed name Peter J. Bilinski

Registration No. 35,067

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No. : 14/595,815  
Applicant : Steven D. Baker et al.  
Filed : January 13, 2015  
Art Unit : 3762  
Examiner : Nicole F. Lavert  
Docket No. : 3022036 US05  
Confirmation No.: 9197  
Customer No. : 88,750  
Title : BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A  
DISPOSABLE ELECTRODE MODULE

Mail Stop: Issue Fee  
Hon. Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**COMMENTS ON STATEMENT FOR REASONS FOR ALLOWANCE**

Sir:

Applicant acknowledges the Examiner's Reason(s) for Allowance dated June 10, 2015. Applicant respectfully notes, however, that there may be additional reasons for allowance that have not been specifically cited, and which may apply to the allowed claims, in addition to or instead of the cited Reason(s). Applicant respectfully notes that each of the allowed claims is patentable in its own right and for other reasons raised during its prosecution or as explained in the specification of the captioned application. Moreover, as the prosecution history of the claims is clear and is not limited only to the Examiner's Reason(s), the Examiner's Reason for Allowance therefore is not binding on Applicant and no acquiescence is made by Applicant to such Reason(s).

9498225.1

Entry of this submission into the file is respectfully requested.

Respectfully submitted,

HISCOCK & BARCLAY, LLP

/Peter J. Bilinski/

Date: September 10, 2015

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Peter J. Bilinski  
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Syracuse, NY 13202-2078  
Tel: (315) 425-2856  
Fax: (315) 703-7397

- 2 -

| Electronic Patent Application Fee Transmittal      |                 |                                                                            |               |                             |
|----------------------------------------------------|-----------------|----------------------------------------------------------------------------|---------------|-----------------------------|
| <b>Application Number:</b>                         |                 | 14595815                                                                   |               |                             |
| <b>Filing Date:</b>                                |                 | 13-Jan-2015                                                                |               |                             |
| <b>Title of Invention:</b>                         |                 | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        |                 | Steven D. Baker                                                            |               |                             |
| <b>Filer:</b>                                      |                 | Peter J Bilinski/Susanne Pelose                                            |               |                             |
| <b>Attorney Docket Number:</b>                     |                 | 3022036 US05                                                               |               |                             |
| Filed as Large Entity                              |                 |                                                                            |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</b> |                 |                                                                            |               |                             |
| <b>Description</b>                                 | <b>Fee Code</b> | <b>Quantity</b>                                                            | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                               |                 |                                                                            |               |                             |
| <b>Pages:</b>                                      |                 |                                                                            |               |                             |
| <b>Claims:</b>                                     |                 |                                                                            |               |                             |
| <b>Miscellaneous-Filing:</b>                       |                 |                                                                            |               |                             |
| <b>Petition:</b>                                   |                 |                                                                            |               |                             |
| <b>Patent-Appeals-and-Interference:</b>            |                 |                                                                            |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>           |                 |                                                                            |               |                             |
| Utility Appl Issue Fee                             | 1501            | 1                                                                          | 960           | 960                         |

| Description        | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|--------------------|----------|----------|--------|----------------------|
| Extension-of-Time: |          |          |        |                      |
| Miscellaneous:     |          |          |        |                      |
| Total in USD (\$)  |          |          |        | 960                  |

| Electronic Acknowledgement Receipt          |                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 23454433                                                                   |
| <b>Application Number:</b>                  | 14595815                                                                   |
| <b>International Application Number:</b>    |                                                                            |
| <b>Confirmation Number:</b>                 | 9197                                                                       |
| <b>Title of Invention:</b>                  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |
| <b>First Named Inventor/Applicant Name:</b> | Steven D. Baker                                                            |
| <b>Customer Number:</b>                     | 88750                                                                      |
| <b>Filer:</b>                               | Peter J Bilinski/Susanne Pelose                                            |
| <b>Filer Authorized By:</b>                 | Peter J Bilinski                                                           |
| <b>Attorney Docket Number:</b>              | 3022036 US05                                                               |
| <b>Receipt Date:</b>                        | 10-SEP-2015                                                                |
| <b>Filing Date:</b>                         | 13-JAN-2015                                                                |
| <b>Time Stamp:</b>                          | 14:44:08                                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                |

### Payment information:

|                                                                                                                |             |
|----------------------------------------------------------------------------------------------------------------|-------------|
| Submitted with Payment                                                                                         | yes         |
| Payment Type                                                                                                   | Credit Card |
| Payment was successfully received in RAM                                                                       | \$ 960      |
| RAM confirmation Number                                                                                        | 1124        |
| Deposit Account                                                                                                |             |
| Authorized User                                                                                                |             |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: |             |

| <b>File Listing:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                                |                                                    |                  |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------|----------------------------------------------------|------------------|------------------|
| Document Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Document Description          | File Name                                                      | File Size(Bytes)/ Message Digest                   | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Miscellaneous Incoming Letter | 2015-09-10-Issue-Fee-Transmittal-Letter.pdf                    | 202166<br>d35a6a1b2cf840bfade58140f8a670d7fcc1a887 | no               | 1                |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                                                                |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                                |                                                    |                  |                  |
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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                                                                |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                                |                                                    |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Miscellaneous Incoming Letter | 2015-09-10-Comments-On-Statement-For-Reasons-For-Allowance.pdf | 301210<br>5084a3cf5e99ac5bb820a296a0b3bd67b9461d   | no               | 2                |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                                                                |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                                |                                                    |                  |                  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fee Worksheet (SB06)          | fee-info.pdf                                                   | 30809<br>8007359a9673f440f0526f997a12b1dd25ba0e91  | no               | 2                |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                                                                |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                                |                                                    |                  |                  |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                                | 1008134                                            |                  |                  |
| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> 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><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> 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><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> 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> |                               |                                                                |                                                    |                  |                  |

**BARCLAY DAMON LLP**

Peter J. Bilinski  
Partner

September 10, 2015

**Via Electronic Filing System (EFS)**

Mail Stop: ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

|                          |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| Application Number:      | 14/595,815                                                                 |
| Filing Date:             | January 13, 2015                                                           |
| First Named Inventor(s): | Steven D. Baker                                                            |
| Art Unit:                | 3762                                                                       |
| Examiner Name:           | Nicole F. Lavert                                                           |
| Attorney Docket Number:  | 3022036 US05                                                               |
| Invention:               | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |

In response to the Notice of Allowance and Fee(s) due, mailed June 10, 2015, Applicants submit as follows:

- This Transmittal Letter (1 page);
- Part B – Fee(s) Transmittal (PTOL-85) (1 page); and
- Comments on Statement for Reasons for Allowance (2 pages)

The issue fee, for a large entity, in the amount of \$960.00 associated with this filing will be paid by credit card at the time of filing. However, the Commissioner is authorized to charge any deficiencies or credit any excess payments to our Deposit Account No. 50-3010.

Very truly yours,

/Peter J. Bilinski/

Peter J. Bilinski  
Reg. No. 35,067

PJB:scp  
Enclosures

One Park Place – 300 South State Street – Syracuse, New York 13202 hblaw.com  
pbilinski@hblaw.com Direct: 315.425.2856 Fax: 315.703.7397

9498206.1

|                                                                                                                  |                                            |                                                                |  |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|--|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |  |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |  |

| CPC    |  |      |  |       |      |            |
|--------|--|------|--|-------|------|------------|
| Symbol |  |      |  |       | Type | Version    |
| A61B   |  | 5    |  | 04085 | F    | 2013-01-01 |
| A61B   |  | 5    |  | 0006  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 04286 | A    | 2013-01-01 |
| A61B   |  | 2560 |  | 0209  | A    | 2013-01-01 |
| A61B   |  | 2560 |  | 0412  | A    | 2013-01-01 |
| A61B   |  | 5    |  | 7232  | A    | 2013-01-01 |
| A61B   |  | 5    |  | 04282 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 04087 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 0416  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 0816  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 14552 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 742   | I    | 2013-01-01 |
| A61B   |  | 5    |  | 746   | I    | 2013-01-01 |
| A61B   |  | 5    |  | 14542 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 6832  | I    | 2013-01-01 |

| CPC Combination Sets |  |  |      |     |         |         |
|----------------------|--|--|------|-----|---------|---------|
| Symbol               |  |  | Type | Set | Ranking | Version |
|                      |  |  |      |     |         |         |
|                      |  |  |      |     |         |         |

|                                                     |         |                              |                   |
|-----------------------------------------------------|---------|------------------------------|-------------------|
| NONE                                                |         | <b>Total Claims Allowed:</b> |                   |
|                                                     |         | 20                           |                   |
| (Assistant Examiner)                                | (Date)  |                              |                   |
| /NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762 | 7/14/15 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                                  | (Date)  | 1                            | 1A                |

|                                                                                                                  |                                            |                                                                |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |

| US ORIGINAL CLASSIFICATION |                                   |          |  |  |  | INTERNATIONAL CLASSIFICATION |   |   |   |                 |  |             |  |  |  |
|----------------------------|-----------------------------------|----------|--|--|--|------------------------------|---|---|---|-----------------|--|-------------|--|--|--|
| CLASS                      |                                   | SUBCLASS |  |  |  | CLAIMED                      |   |   |   |                 |  | NON-CLAIMED |  |  |  |
| 600                        |                                   | 509      |  |  |  | A                            | 6 | 1 | B | 5 / 00 (2006.0) |  |             |  |  |  |
| CROSS REFERENCE(S)         |                                   |          |  |  |  | A                            | 6 | 1 | B | 5 / 02 (2006.0) |  |             |  |  |  |
|                            |                                   |          |  |  |  | A                            | 6 | 1 | B | 5 / 04 (2006.0) |  |             |  |  |  |
| CLASS                      | SUBCLASS (ONE SUBCLASS PER BLOCK) |          |  |  |  |                              |   |   |   |                 |  |             |  |  |  |
| 600                        | 372                               | 508      |  |  |  |                              |   |   |   |                 |  |             |  |  |  |
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|                                                     |         |                              |                   |
|-----------------------------------------------------|---------|------------------------------|-------------------|
| NONE                                                |         | <b>Total Claims Allowed:</b> |                   |
|                                                     |         | 20                           |                   |
| (Assistant Examiner)                                | (Date)  |                              |                   |
| /NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762 | 7/14/15 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                                  | (Date)  | 1                            | 1A                |

|                                                                                                                  |                                            |                                                                |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |

| <input checked="" type="checkbox"/> <b>Claims renumbered in the same order as presented by applicant</b> <input type="checkbox"/> <b>CPA</b> <input checked="" type="checkbox"/> <b>T.D.</b> <input type="checkbox"/> <b>R.1.47</b> |          |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| Final                                                                                                                                                                                                                               | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|                                                                                                                                                                                                                                     | 1        |       | 17       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 2        |       | 18       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 3        |       | 19       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 4        |       | 20       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 5        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 6        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 7        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 8        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 9        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 10       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 11       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 12       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
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|                                                                                                                                                                                                                                     | 14       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
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|                                                     |         |                              |                   |
|-----------------------------------------------------|---------|------------------------------|-------------------|
| NONE                                                |         | <b>Total Claims Allowed:</b> |                   |
|                                                     |         | 20                           |                   |
| (Assistant Examiner)                                | (Date)  |                              |                   |
| /NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762 | 7/14/15 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                                  | (Date)  | 1                            | 1A                |



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| APPLICATION NO.                                                         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.             | CONFIRMATION NO.            |
|-------------------------------------------------------------------------|-------------|----------------------|---------------------------------|-----------------------------|
| 14/595,815                                                              | 01/13/2015  | Steven D. Baker      | 3022036 US05                    | 9197                        |
| 88750                                                                   | 7590        | 07/24/2015           |                                 |                             |
| Barclay Damon<br>ONE PARK PLACE, 300 S. STATE ST.<br>SYRACUSE, NY 13202 |             |                      | EXAMINER<br>LAVERT, NICOLE F    |                             |
|                                                                         |             |                      | ART UNIT<br>3762                | PAPER NUMBER                |
|                                                                         |             |                      | NOTIFICATION DATE<br>07/24/2015 | DELIVERY MODE<br>ELECTRONIC |

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

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

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

ipdocket@hblaw.com

|                                             |                                      |                                     |                                                  |
|---------------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------------------|
| <b>Corrected<br/>Notice of Allowability</b> | <b>Application No.</b><br>14/595,815 | <b>Applicant(s)</b><br>BAKER ET AL. |                                                  |
|                                             | <b>Examiner</b><br>NICOLE F. LAVERT  | <b>Art Unit</b><br>3762             | <b>AIA (First Inventor to File) Status</b><br>No |

**-- 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 the printer rush submitted on June 20, 2015.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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

3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
**Certified copies:**  
 a) ☐ All    b) ☐ Some    \*c) ☐ None of the:  
     1. ☐ Certified copies of the priority documents have been received.  
     2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* Certified copies not received: \_\_\_\_\_.

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

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

|                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)<br>2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____<br>3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material<br>4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____ | 5. <input type="checkbox"/> Examiner's Amendment/Comment<br>6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance<br>7. <input type="checkbox"/> Other _____ |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                       |  |
|-------------------------------------------------------|--|
| /NICOLE F. LAVERT/<br>Primary Examiner, Art Unit 3762 |  |
|-------------------------------------------------------|--|

1. The present application is being examined under the pre-AIA first to invent provisions.

### **DETAILED ACTION**

#### **EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance: The closest prior art (as cited by 14/268666) fails to disclose a high voltage circuit protection for a body worn monitor comprising the steps of determining a print pattern and thickness of a first and a second material, wherein each material has a resistivity to be printed on said substrate.

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."

#### ***Allowable Subject Matter***

2. Claims 1-20 are allowed.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE F. LAVERT whose telephone number is (571)270-5040. The examiner can normally be reached on M-F 7:30-5:00p.m. (alt. Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Koharski can be reached on 571-272-7230. 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.

/NICOLE F. LAVERT/  
Primary Examiner, Art Unit 3762

|                                                                                                              |                                                |                                                                    |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>BAKER ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>NICOLE F LAVERT         | <b>Art Unit</b><br><br>3762                                        |

| CPC- SEARCHED |      |          |
|---------------|------|----------|
| Symbol        | Date | Examiner |
|               |      |          |

| CPC COMBINATION SETS - SEARCHED |           |          |
|---------------------------------|-----------|----------|
| Symbol                          | Date      | Examiner |
| H05K3/361                       | 2/23/2015 | NFL      |
| A61B5/04084                     |           |          |
| ABOVE UPDATED                   | 5/30/2015 | NFL      |

| US CLASSIFICATION SEARCHED |               |           |          |
|----------------------------|---------------|-----------|----------|
| Class                      | Subclass      | Date      | Examiner |
| 600                        | 372 & 508-509 | 2/23/2015 | NFL      |
| ABOVE                      | UPDATED       | 5/30/2015 | NFL      |

| SEARCH NOTES                                                |           |          |
|-------------------------------------------------------------|-----------|----------|
| Search Notes                                                | Date      | Examiner |
| Inventor Search (EDAN)                                      | 2/23/2015 | NFL      |
| EAST Search (see attachment)                                |           |          |
| Consulated search notes from 14/268666 (same patent family) |           |          |

| INTERFERENCE SEARCH                                       |                                                                       |           |          |
|-----------------------------------------------------------|-----------------------------------------------------------------------|-----------|----------|
| US Class/<br>CPC Symbol                                   | US Subclass / CPC Group                                               | Date      | Examiner |
| Searched all classes and subclasses from the Search notes | Searched the USPAT, USOCR, USPGPUB, EPO, JPO, DERWENT, etc. databases | 5/30/2015 | NFL      |

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## Content Information for 14/595815

Search Another: Application#  Search or Patent#  Search  
PCT /  /  Search or PG PUBS #  Search  
Attorney Docket #  Search  
Bar Code #  Search

| Appln Info | Contents | Petition Info | Atty/Agent Info                                                              | Continuity Data | Foreign Data | Inventors | Address | Fees | Post Info | Pre Grant Pub |
|------------|----------|---------------|------------------------------------------------------------------------------|-----------------|--------------|-----------|---------|------|-----------|---------------|
| Date       | Status   | Code          | Description                                                                  |                 |              |           |         |      |           |               |
| 07/24/2015 |          | TCPB          | PRINTER RUSH- NO MAILING                                                     |                 |              |           |         |      |           |               |
| 07/24/2015 |          | MCNOA         | MAILING CORRECTED NOTICE OF ALLOWABILITY                                     |                 |              |           |         |      |           |               |
| 07/21/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 07/21/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 07/21/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 07/17/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 07/17/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 07/16/2015 |          | P574          | PARALEGAL OR ELECTRONIC TERMINAL DISCLAIMER APPROVED                         |                 |              |           |         |      |           |               |
| 05/15/2015 |          | DIST          | TERMINAL DISCLAIMER FILED                                                    |                 |              |           |         |      |           |               |
| 07/14/2015 |          | EX.R          | REASONS FOR ALLOWANCE                                                        |                 |              |           |         |      |           |               |
| 07/14/2015 | 93       | CNOA          | CORRECTED NOTICE OF ALLOWABILITY                                             |                 |              |           |         |      |           |               |
| 06/30/2015 | 98       | PUBTC         | PUBS CASE REMAND TO TC                                                       |                 |              |           |         |      |           |               |
| 06/09/2015 |          | EIDC          | EXPORT TO INITIAL DATA CAPTURE                                               |                 |              |           |         |      |           |               |
| 06/10/2015 |          | ELC RVW       | ELECTRONIC REVIEW                                                            |                 |              |           |         |      |           |               |
| 06/10/2015 |          | EML NTF       | EMAIL NOTIFICATION                                                           |                 |              |           |         |      |           |               |
| 06/10/2015 | 93       | MN/-          | MAIL NOTICE OF ALLOWANCE                                                     |                 |              |           |         |      |           |               |
| 06/05/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 06/05/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 06/05/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 06/02/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 06/02/2015 | 90       | N/-           | NOTICE OF ALLOWANCE DATA VERIFICATION COMPLETED                              |                 |              |           |         |      |           |               |
| 06/02/2015 |          | IREV          | ISSUE REVISION COMPLETED                                                     |                 |              |           |         |      |           |               |
| 06/02/2015 |          | DVER          | DOCUMENT VERIFICATION                                                        |                 |              |           |         |      |           |               |
| 05/30/2015 | 89       | CNTA          | ALLOWABILITY NOTICE                                                          |                 |              |           |         |      |           |               |
| 05/19/2015 |          | FWDX          | DATE FORWARDED TO EXAMINER                                                   |                 |              |           |         |      |           |               |
| 05/15/2015 | 71       | A...          | RESPONSE AFTER NON-FINAL ACTION                                              |                 |              |           |         |      |           |               |
| 05/08/2015 |          | EML NTR       | EMAIL NOTIFICATION                                                           |                 |              |           |         |      |           |               |
| 05/07/2015 |          | PG-ISSUE      | PG-PUB ISSUE NOTIFICATION                                                    |                 |              |           |         |      |           |               |
| 03/04/2015 |          | ELC RVW       | ELECTRONIC REVIEW                                                            |                 |              |           |         |      |           |               |
| 03/04/2015 |          | EML NTF       | EMAIL NOTIFICATION                                                           |                 |              |           |         |      |           |               |
| 03/04/2015 | 41       | MCTNF         | MAIL NON-FINAL REJECTION                                                     |                 |              |           |         |      |           |               |
| 02/25/2015 |          | OAR           | OFFICE ACTION REVIEW                                                         |                 |              |           |         |      |           |               |
| 02/24/2015 | 40       | CTNF          | NON-FINAL REJECTION                                                          |                 |              |           |         |      |           |               |
| 02/21/2015 |          | IDSC          | INFORMATION DISCLOSURE STATEMENT CONSIDERED                                  |                 |              |           |         |      |           |               |
| 02/21/2015 |          | IDSC          | INFORMATION DISCLOSURE STATEMENT CONSIDERED                                  |                 |              |           |         |      |           |               |
| 01/13/2015 |          | RCAP          | REFERENCE CAPTURE ON IDS                                                     |                 |              |           |         |      |           |               |
| 01/13/2015 |          | M844          | INFORMATION DISCLOSURE STATEMENT (IDS) FILED                                 |                 |              |           |         |      |           |               |
| 01/28/2015 | 30       | DOCK          | CASE DOCKETED TO EXAMINER IN GAU                                             |                 |              |           |         |      |           |               |
| 01/27/2015 |          | EML NTR       | EMAIL NOTIFICATION                                                           |                 |              |           |         |      |           |               |
| 01/26/2015 | 20       | OIPE          | APPLICATION DISPATCHED FROM OIPE                                             |                 |              |           |         |      |           |               |
| 01/26/2015 |          | FITF          | FITF SET TO NO - REVISE INITIAL SETTING                                      |                 |              |           |         |      |           |               |
| 01/13/2015 |          | PTA.RFE       | PATENT TERM ADJUSTMENT - READY FOR EXAMINATION                               |                 |              |           |         |      |           |               |
| 01/27/2015 |          | COMP          | APPLICATION IS NOW COMPLETE                                                  |                 |              |           |         |      |           |               |
| 01/27/2015 |          | FLRCPT.O      | FILING RECEIPT                                                               |                 |              |           |         |      |           |               |
| 01/13/2015 |          | APPERMS       | APPLICANTS HAVE GIVEN ACCEPTABLE PERMISSION FOR PARTICIPATING FOREIGN        |                 |              |           |         |      |           |               |
| 01/13/2015 |          | WIDS          | INFORMATION DISCLOSURE STATEMENT (IDS) FILED                                 |                 |              |           |         |      |           |               |
| 01/13/2015 |          | WIDS          | INFORMATION DISCLOSURE STATEMENT (IDS) FILED                                 |                 |              |           |         |      |           |               |
| 01/13/2015 |          | L194          | CLEARED BY OIPE CSR                                                          |                 |              |           |         |      |           |               |
| 01/13/2015 |          | SCAN          | IFW SCAN & PACR AUTO SECURITY REVIEW                                         |                 |              |           |         |      |           |               |
| 01/13/2015 |          | BIG.          | ENTITY STATUS SET TO UNDISCOUNTED (INITIAL DEFAULT SETTING OR STATUS CHANGE) |                 |              |           |         |      |           |               |
| 01/13/2015 | 19       | IEXX          | INITIAL EXAM TEAM NN                                                         |                 |              |           |         |      |           |               |

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|                                                                                                                |                         |                                         |  |
|----------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------|--|
| <b>Application Number</b><br> | Application/Control No. | Applicant(s)/Patent under Reexamination |  |
|                                                                                                                | 14/595,815              | BAKER ET AL.                            |  |
| Document Code - DISQ                                                                                           |                         | Internal Document – DO NOT MAIL         |  |

|                                |                                                       |                                      |
|--------------------------------|-------------------------------------------------------|--------------------------------------|
| <b>TERMINAL<br/>DISCLAIMER</b> | <input checked="" type="checkbox"/> APPROVED          | <input type="checkbox"/> DISAPPROVED |
| Date Filed : 5/15/15           | This patent is subject<br>to a Terminal<br>Disclaimer |                                      |

|                                                     |
|-----------------------------------------------------|
| <b>Approved/Disapproved by:</b><br><br>jean proctor |
|-----------------------------------------------------|

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## NOTICE OF ALLOWANCE AND FEE(S) DUE

88750 7590 06/10/2015  
Barclay Damon  
ONE PARK PLACE, 300 S. STATE ST.  
SYRACUSE, NY 13202

EXAMINER

LAVERT, NICOLE F

ART UNIT

PAPER NUMBER

3762

DATE MAILED: 06/10/2015

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 14/595,815      | 01/13/2015  | Steven D. Baker      | 3022036 US05        | 9197             |

TITLE OF INVENTION: BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | UNDISCOUNTED  | \$960         | \$0                 | \$0                  | \$960            | 09/10/2015 |

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

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

### HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

**IMPORTANT REMINDER: 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.**

# PART B - FEE(S) TRANSMITTAL

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

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

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

88750 7590 06/10/2015  
**Barclay Damon**  
**ONE PARK PLACE, 300 S. STATE ST.**  
**SYRACUSE, NY 13202**

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

## Certificate of Mailing or Transmission

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

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 14/595,815      | 01/13/2015  | Steven D. Baker      | 3022036 US05        | 9197             |

TITLE OF INVENTION: BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | UNDISCOUNTED  | \$960         | \$0                 | \$0                  | \$960            | 09/10/2015 |

| EXAMINER         | ART UNIT | CLASS-SUBCLASS |
|------------------|----------|----------------|
| LAVERT, NICOLE F | 3762     | 600-509000     |

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 credits any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

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

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

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

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

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

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

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_



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| APPLICATION NO.                                                         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.          | CONFIRMATION NO. |
|-------------------------------------------------------------------------|-------------|----------------------|------------------------------|------------------|
| 14/595,815                                                              | 01/13/2015  | Steven D. Baker      | 3022036 US05                 | 9197             |
| 88750                                                                   | 7590        | 06/10/2015           |                              |                  |
| Barclay Damon<br>ONE PARK PLACE, 300 S. STATE ST.<br>SYRACUSE, NY 13202 |             |                      | EXAMINER<br>LAVERT, NICOLE F |                  |
|                                                                         |             |                      | ART UNIT                     | PAPER NUMBER     |
|                                                                         |             |                      | 3762                         |                  |
| DATE MAILED: 06/10/2015                                                 |             |                      |                              |                  |

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

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

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

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

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

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

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

### Privacy Act Statement

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

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

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

|                               |                                      |                                     |                                                  |
|-------------------------------|--------------------------------------|-------------------------------------|--------------------------------------------------|
| <b>Notice of Allowability</b> | <b>Application No.</b><br>14/595,815 | <b>Applicant(s)</b><br>BAKER ET AL. |                                                  |
|                               | <b>Examiner</b><br>NICOLE F. LAVERT  | <b>Art Unit</b><br>3762             | <b>AIA (First Inventor to File) Status</b><br>No |

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

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

3. ☐ The allowed claim(s) is/are \_\_\_\_\_. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
**Certified copies:**  
a) ☐ All    b) ☐ Some    \*c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).  
\* Certified copies not received: \_\_\_\_\_.

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

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

|                                                                                                            |                                                                                      |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 5. <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 7. <input type="checkbox"/> Other _____                                              |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____                      |                                                                                      |

1. The present application is being examined under the pre-AIA first to invent provisions.

#### **DETAILED ACTION**

#### **EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance: The closest prior art (as cited by 14/268666) fails to disclose a high voltage circuit protection for a body worn monitor comprising the steps of determining a print pattern and thickness of a first and a second material, wherein each material has a resistivity to be printed on said substrate.

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."

#### ***Allowable Subject Matter***

2. Claims 1-20 are allowed.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE F. LAVERT whose telephone number is (571)270-5040. The examiner can normally be reached on M-F 7:30-5:00p.m. (alt. Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Koharski can be reached on 571-272-7230. 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.

/NICOLE F. LAVERT/  
Primary Examiner, Art Unit 3762

|                                                                                                              |                                                |                                                                    |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>BAKER ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>NICOLE F LAVERT         | <b>Art Unit</b><br><br>3762                                        |

| CPC- SEARCHED |      |          |
|---------------|------|----------|
| Symbol        | Date | Examiner |
|               |      |          |

| CPC COMBINATION SETS - SEARCHED |           |          |
|---------------------------------|-----------|----------|
| Symbol                          | Date      | Examiner |
| H05K3/361                       | 2/23/2015 | NFL      |
| A61B5/04084                     |           |          |
| ABOVE UPDATED                   | 5/30/2015 | NFL      |

| US CLASSIFICATION SEARCHED |               |           |          |
|----------------------------|---------------|-----------|----------|
| Class                      | Subclass      | Date      | Examiner |
| 600                        | 372 & 508-509 | 2/23/2015 | NFL      |
| ABOVE                      | UPDATED       | 5/30/2015 | NFL      |

| SEARCH NOTES                                                |           |          |
|-------------------------------------------------------------|-----------|----------|
| Search Notes                                                | Date      | Examiner |
| Inventor Search (EDAN)                                      | 2/23/2015 | NFL      |
| EAST Search (see attachment)                                |           |          |
| Consulated search notes from 14/268666 (same patent family) |           |          |

| INTERFERENCE SEARCH                                       |                                                                       |           |          |
|-----------------------------------------------------------|-----------------------------------------------------------------------|-----------|----------|
| US Class/<br>CPC Symbol                                   | US Subclass / CPC Group                                               | Date      | Examiner |
| Searched all classes and subclasses from the Search notes | Searched the USPAT, USOCR, USPGPUB, EPO, JPO, DERWENT, etc. databases | 5/30/2015 | NFL      |

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|--|--|

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits  | Search Query                                      | DBs                                                            | Default Operator | Plurals | Time Stamp          |
|-------|-------|---------------------------------------------------|----------------------------------------------------------------|------------------|---------|---------------------|
| L1    | 1231  | 600/372.ccls.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2015/05/30<br>11:32 |
| L2    | 2686  | 600/508.ccls.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2015/05/30<br>11:33 |
| L3    | 4711  | 600/509.ccls.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2015/05/30<br>11:37 |
| L4    | 0     | h05k3/361.cpc "."                                 | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2015/05/30<br>11:37 |
| L5    | 1580  | A61B5/0484.cpc.                                   | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2015/05/30<br>11:37 |
| S1    | 1534  | 600/508.OCLS.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:14 |
| S2    | 2846  | 600/509.OCLS.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:16 |
| S3    | 717   | 600/372.ccls.                                     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:25 |
| S4    | 38520 | (eck or eckg or cardiac<br>or heart) same monitor | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:25 |
| S5    | 3417  | S4 and (electrical same<br>connections)           | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:25 |
| S6    | 1847  | S5 and (power same<br>source)\                    | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:26 |
| S7    | 53826 | (current same limiting)<br>same resistor          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:26 |
| S8    | 33    | S6 and (current same<br>limiting) same resistor   | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:26 |
| S9    | 33    | S6 and ((current same<br>limiting) same resistor) | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:26 |
| S10   | 23    | S9 and @py<="2005"                                | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11<br>12:27 |
| S11   | 4727  | (external) same ((heart<br>or EKG or EOG) same    | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;                     | OR               | OFF     | 2013/05/11<br>12:38 |

|     |         |                                                        |                                                                |    |     |                     |
|-----|---------|--------------------------------------------------------|----------------------------------------------------------------|----|-----|---------------------|
|     |         | monitor)                                               | DERWENT; IBM_TDB                                               |    |     |                     |
| S12 | 2815    | S11 and @py<="2009"                                    | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:38 |
| S13 | 11      | S12 and ((current same<br>limiting) same resistor)     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:39 |
| S14 | 351     | 607/7.ccls.                                            | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:52 |
| S15 | 3       | "20030171743"                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/07/16<br>10:50 |
| S16 | 1       | S15 and heart                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/07/16<br>10:51 |
| S17 | 1758    | 600/508.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:02 |
| S18 | 3249    | 600/509.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:02 |
| S19 | 829     | 600/372.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:03 |
| S23 | 1956    | 600/508.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>11:56 |
| S24 | 3618    | 600/509.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>11:59 |
| S25 | 59931   | (substrate same<br>resistivity)                        | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:03 |
| S26 | 7022177 | S25 and ((print same<br>pattern) same<br>thickness)"0" | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S27 | 502     | S25 and ((print same<br>pattern) same<br>thickness)    | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S28 | 5       | S27 and (medical same<br>device)                       | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S29 | 925     | 600/372.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:09 |
| S33 | 2367    | 600/508.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/09/30<br>15:21 |
| S34 | 4254    | 600/509.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/09/30<br>15:24 |
| S35 | 1095    | 600/372.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/09/30<br>15:25 |
| S36 | 2559    | 600/508.ccls.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;                     | OR | OFF | 2015/02/21<br>16:08 |

|     |      |                                                           |                                                                |    |     |                     |
|-----|------|-----------------------------------------------------------|----------------------------------------------------------------|----|-----|---------------------|
|     |      |                                                           | DERWENT; IBM_TDB                                               |    |     |                     |
| S37 | 4544 | 600/509.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/21<br>16:12 |
| S38 | 2559 | 600/508.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:27 |
| S39 | 4544 | 600/509.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:46 |
| S40 | 2049 | (external same sensor)<br>same (flexible same<br>circuit) | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S41 | 735  | S40 and adhesive                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S42 | 398  | S41 and (conductors or<br>trace\$2)                       | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S44 | 1190 | 600/372.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>09:00 |
| S45 | 2049 | (external same sensor)<br>same (flexible same<br>circuit) | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:02 |
| S46 | 735  | S45 and adhesive                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:02 |
| S47 | 398  | S46 and (conductors or<br>trace\$2)                       | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:02 |
| S48 | 7    | S47 and (electrode\$2<br>same gel)                        | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:02 |
| S49 | 6137 | h05k3/361.cpc.                                            | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:06 |
| S50 | 0    | A61B5/04084.cpc.                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:10 |
| S51 | 1544 | A61B5/0484.cpc.                                           | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>12:10 |

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|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |

| CPC    |  |      |  |       |      |            |
|--------|--|------|--|-------|------|------------|
| Symbol |  |      |  |       | Type | Version    |
| A61B   |  | 5    |  | 04085 | F    | 2013-01-01 |
| A61B   |  | 5    |  | 0006  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 04286 | A    | 2013-01-01 |
| A61B   |  | 2560 |  | 0209  | A    | 2013-01-01 |
| A61B   |  | 2560 |  | 0412  | A    | 2013-01-01 |
| A61B   |  | 5    |  | 7232  | A    | 2013-01-01 |
| A61B   |  | 5    |  | 04282 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 04087 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 0416  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 0816  | I    | 2013-01-01 |
| A61B   |  | 5    |  | 14552 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 742   | I    | 2013-01-01 |
| A61B   |  | 5    |  | 746   | I    | 2013-01-01 |
| A61B   |  | 5    |  | 14542 | I    | 2013-01-01 |
| A61B   |  | 5    |  | 6832  | I    | 2013-01-01 |

| CPC Combination Sets |  |  |      |     |         |         |
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| Symbol               |  |  | Type | Set | Ranking | Version |
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|-----------------------------------------------------|------------------------------------|-------------------|
| NONE                                                | <b>Total Claims Allowed:</b><br>20 |                   |
| (Assistant Examiner)                                |                                    |                   |
| /NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762 | O.G. Print Claim(s)                | O.G. Print Figure |
| (Primary Examiner)                                  | 1                                  | 1A                |
|                                                     | (Date)                             |                   |

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| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |

| US ORIGINAL CLASSIFICATION |                                   |          |  |  |  | INTERNATIONAL CLASSIFICATION |   |   |   |                     |  |             |  |  |  |
|----------------------------|-----------------------------------|----------|--|--|--|------------------------------|---|---|---|---------------------|--|-------------|--|--|--|
| CLASS                      |                                   | SUBCLASS |  |  |  | CLAIMED                      |   |   |   |                     |  | NON-CLAIMED |  |  |  |
| 600                        |                                   | 509      |  |  |  | A                            | 6 | 1 | B | 5 / 00 (2006.0)     |  |             |  |  |  |
| CROSS REFERENCE(S)         |                                   |          |  |  |  | A                            | 6 | 1 | B | 5 / 02 (2006.0)     |  |             |  |  |  |
|                            |                                   |          |  |  |  | A                            | 6 | 1 | B | 5 / 04 (2006.01.01) |  |             |  |  |  |
| CLASS                      | SUBCLASS (ONE SUBCLASS PER BLOCK) |          |  |  |  |                              |   |   |   |                     |  |             |  |  |  |
| 600                        | 372                               | 508      |  |  |  |                              |   |   |   |                     |  |             |  |  |  |
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|-----------------------------------------------------|------------------------------|-------------------|
| NONE                                                | <b>Total Claims Allowed:</b> |                   |
|                                                     | 20                           |                   |
| (Assistant Examiner)                                | (Date)                       |                   |
| /NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762 |                              |                   |
| (Primary Examiner)                                  | (Date)                       |                   |
|                                                     | O.G. Print Claim(s)          | O.G. Print Figure |
|                                                     | 1                            | 1A                |

|                                                                                                                  |                                            |                                                                |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br>BAKER ET AL. |
|                                                                                                                  | <b>Examiner</b><br>NICOLE F LAVERT         | <b>Art Unit</b><br>3762                                        |

| <input type="checkbox"/> <b>Claims renumbered in the same order as presented by applicant</b> <input type="checkbox"/> <b>CPA</b> <input type="checkbox"/> <b>T.D.</b> <input type="checkbox"/> <b>R.1.47</b> |          |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| Final                                                                                                                                                                                                         | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|                                                                                                                                                                                                               | 1        |       | 17       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 2        |       | 18       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 3        |       | 19       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 4        |       | 20       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 5        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
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|                                                                                                                                                                                                               | 7        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 8        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 9        |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 10       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 11       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 12       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 13       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 14       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 15       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                               | 16       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |

|                                                                                                                                                     |                                    |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------|
| NONE<br><br>(Assistant Examiner) _____ (Date) _____<br>/NICOLE F LAVERT/<br>Primary Examiner.Art Unit 3762<br>(Primary Examiner) _____ (Date) _____ | <b>Total Claims Allowed:</b><br>20 |                         |
|                                                                                                                                                     | O.G. Print Claim(s)<br>1           | O.G. Print Figure<br>1A |

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No. : 14/595,815  
Applicant : Steven D. Baker et al.  
Filed : January 13, 2015  
Art Unit : 3762  
Examiner : Nicole F. Lavert  
Docket No. : 3022036 US05  
Confirmation No.: 9197  
Customer No. : 88,750  
Title : BODY WORN PHYSIOLOGICAL SENSOR DEVICE  
HAVING A DISPOSABLE ELECTRODE MODULE

Mail Stop: Amendment  
Hon. Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AMENDMENT/RESPONSE TO NON-FINAL OFFICE ACTION**

Sir:

In response to the non-final Office Action, dated March 4, 2015, please amend the above-captioned patent application, without prejudice, as follows:

**Amendments to the Claims** are reflected in the following Listing of Claims, which begin on page 2 of this paper.

**Remarks** begin on page 5 of this paper.

**Amendments to the Claims:**

Please replace all pending and prior listing of claims in the above-captioned application with the following Listing of Claims:

Listing of Claims

1. (Currently Amended) A body-worn physiological sensor comprising:
  - a computation-communication module including a housing retaining a processor;
  - a flexible circuit layer configured to be coupled to a skin surface of a subject to measure physiological signals, said computation-communication module being attached to the flexible circuit layer;
  - an adhesive covering at least a portion of the flexible circuit layer; and
  - a protective covering that protects the adhesive.
2. (Original) The sensor of claim 1, in which the flexible circuit layer has traces of determinable electrical resistance.
3. (Original) The sensor of claim 2, in which the traces on the flexible circuit layer are configured to electrically couple the computation-communication module to the flexible circuit layer, thereby forming a disposable module connector.
4. (Original) The sensor of claim 1, in which the traces on the flexible circuit layer are at least partially covered by a non-removable insulating covering.
5. (Original) The sensor of claim 1, wherein the flexible circuit layer further comprises a plurality of openings sized to receive electrode gels.
6. (Original) The sensor of claim 1, further comprising a hard-wired communication cable.

7. (Original) A body-worn patient monitoring device comprising:
  - a disposable electrode portion comprising:
    - a flexible printed circuit layer made from an insulating material and defining a substrate,
    - at least two electrodes being disposed onto a surface of the substrate,
    - electrical traces defined between the at least two electrodes, and
    - a connection pad;
  - a reusable communication module comprising:
    - a housing containing a processor, and
    - a wireless communication unit, and in which the reusable communication module is releasably attached to the disposable electrode portion by at least one latching clip; and
  - a hard-wired communication cable.
8. (Original) The body-worn patient monitoring device of claim 7, wherein the electrodes are integrated into the flexible circuit layer of the disposable electrode portion.
9. (Original) The body-worn patient monitoring device of claim 7, wherein the electrodes are snap fitted to the flexible printed circuit layer.
10. (Original) The body-worn patient monitoring device of claim 9, wherein the snap is disposed at the end of an extension.
11. (Original) The body-worn patient monitoring device of claim 7, wherein the electrical traces are screened onto the flexible printed circuit layer.
12. (Original) The body-worn patient monitoring device of claim 11, including an insulating layer applied onto the electrical traces.
13. (Original) The body-worn patient monitoring device of claim 12, wherein the insulating layer is a fabric applied over the electrical traces of the flexible printed circuit layer.

14. (Original) The body-worn patient monitoring device of claim 13, wherein each electrode includes an electrode gel and a conductive surface defining a half cell.

15. (Currently Amended) A body-worn physiological sensor comprising:

a computation-communication module including a housing retaining a processor;

a flexible printed circuit layer configured to be coupled to a skin surface of a subject to measure physiological signals, the computation-communication module being attached to the flexible printed circuit layer;

an adhesive covering at least a portion of the flexible printed circuit layer; and a protective covering for the flexible printed circuit layer.

16. (Original) The body-worn physiological sensor of claim 15, in which the protective covering includes at least one opening for electrode gels.

17. (Original) The body-worn physiological sensor of claim 15, wherein the flexible printed circuit layer includes openings sized to receive electrode gels.

18. (Original) The body-worn physiological sensor of claim 15, wherein the protective covering is non removable and made from an insulating material.

19. (Original) The body-worn physiological sensor of claim 15, wherein the computation communication module is releasably attached to the flexible printed circuit layer.

20. (Original) The body-worn physiological sensor of claim 15, wherein the protective covering covers the adhesive.

## REMARKS

This paper is timely filed in response to the non-final Office Action on the merits, dated March 4, 2015, in regard to the captioned patent application and having a three (3) month statutory due date of June 5, 2015.

### *Status of Claims*

Claims 1-20 are pending. Claims 1-6 and 15-20 are rejected under 35 U.S.C. §102(b) based on Williams et al. (U.S. Patent Application Publication No. 2004/030258, hereinafter “Williams”). In addition, claim 7 is rejected on the grounds of nonstatutory double patenting over claim 7 of U.S. Patent No. 8,965,492.

### *Double Patenting*

Applicant gratefully acknowledges the allowability of claims 7-14 over the prior art of record. A timely and properly executed Terminal Disclaimer pursuant to relevant portions of 37 CFR §1.321 is filed concurrently herewith, thereby overcoming the double patenting rejection of these claims. Withdrawal of the outstanding double patenting rejection and reconsideration is respectfully requested.

### *Section 102 Rejections – Claims 1-6, 15-20 (Williams)*

The above-noted claims are rejected as being allegedly anticipated based on Williams. In order to successfully maintain a Section 102 rejection, each and every claimed feature must be found in the single cited reference. Those features that are not found in the cited prior art reference must be notoriously well known to one of sufficient (ordinary) skill in the field.

The Office opines that Williams describes each recited feature of claim 1. Applicant disagrees with this characterization noting that recited features are completely missing from this cited patent reference.

First, Williams fails to include a computation-communication module that is mechanically and electrically attached to the flexible circuit strip. While this cited reference does include an information storage chip 903 disposed as a part of a sensor assembly 911, see paragraph [0065], lines 23- 32 and Fig. 9, the module fails to include a housing that retains a processor to perform computations. Put another way, information is not processed in any way by the sensor assembly according to this reference. All stored EEG information signals are transmitted to a brain damage monitor (BDM) that is disposed separately.

In an effort to expedite prosecution, claims 1 and 15 have each been amended to specify that the computation-communication module includes a housing retaining a processor and that the computation-communication module is attached to the flexible printed circuit layer. Support for the foregoing amendment is found in the as filed application; see, at a minimum, Fig. 2, as well as paragraphs [0044], [0049]. It is respectfully submitted that no new matter has been added.

Amended claims 1 and 15 each positively recite at least one feature that is clearly not found (or suggested) by the cited prior art. As a result, an anticipatory rejection cannot be successfully maintained under the Statute. Claims 2-6 and 16-20 are allowable for the same reasons as amended claims 1 and 15, respectively, since each of these claims depend from amended claims 1 and 15 and minimally include the same features. Reconsideration and withdrawal of these rejections is respectfully requested.

### ***Conclusion***

The application is now in an allowable condition and an expedited Notice of Allowability is earnestly solicited.

Appl. No. 14/595,815  
Resp. Dated: May 15, 2015  
Reply to Office Action of March 4, 2015

If the Examiner wishes to expedite disposition of the above-captioned patent application, the Examiner is invited to contact Applicant's representative at the telephone number below.

No fees are due and owing for the filing of this paper, since this correspondence is timely filed in advance of the three (3) month deadline of June 4, 2015. However and in the event that Applicant has overlooked the need for an extension of time, additional extension of time, payment of fee, or additional payment of fee, the Director is authorized to charge Applicant's Deposit Account No.: 50-3010 and to credit any overpayments thereto.

Respectfully submitted,

HISCOCK & BARCLAY, LLP

/Peter J. Bilinski/

Date: May 15, 2015

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Peter J. Bilinski  
Reg. No. 35,067  
One Park Place  
300 South State Street  
Syracuse, NY 13202-2078  
Tel: (315) 425-2856  
Fax: (315) 703-7397

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING  
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)  
3022036 US05

In re Application of: Steven D. Baker

Application No.: 14/595,815

Filed: January 13, 2015

For: BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE

The applicant, Welch Allyn, Inc., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,965,492 B2 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

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

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 35,067

/Peter J. Bilinski/  
Signature

May 15, 2015  
Date

Peter J. Bilinski  
Typed or printed name

Attorney of Record  
Title

315-425-2700  
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

This collection of information is required by 37 CFR 1.321. 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 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.

| Electronic Patent Application Fee Transmittal      |  |                                                                            |                 |                             |
|----------------------------------------------------|--|----------------------------------------------------------------------------|-----------------|-----------------------------|
| <b>Application Number:</b>                         |  | 14595815                                                                   |                 |                             |
| <b>Filing Date:</b>                                |  | 13-Jan-2015                                                                |                 |                             |
| <b>Title of Invention:</b>                         |  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                 |                             |
| <b>First Named Inventor/Applicant Name:</b>        |  | Steven D. Baker                                                            |                 |                             |
| <b>Filer:</b>                                      |  | Peter J Bilinski/Susanne Pelose                                            |                 |                             |
| <b>Attorney Docket Number:</b>                     |  | 3022036 US05                                                               |                 |                             |
| Filed as Large Entity                              |  |                                                                            |                 |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</b> |  |                                                                            |                 |                             |
| <b>Description</b>                                 |  | <b>Fee Code</b>                                                            | <b>Quantity</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                               |  |                                                                            |                 |                             |
| <b>Pages:</b>                                      |  |                                                                            |                 |                             |
| <b>Claims:</b>                                     |  |                                                                            |                 |                             |
| <b>Miscellaneous-Filing:</b>                       |  |                                                                            |                 |                             |
| <b>Petition:</b>                                   |  |                                                                            |                 |                             |
| <b>Patent-Appeals-and-Interference:</b>            |  |                                                                            |                 |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>           |  |                                                                            |                 |                             |
| <b>Extension-of-Time:</b>                          |  |                                                                            |                 |                             |

| Description                      | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|----------------------------------|----------|----------|--------|----------------------|
| <b>Miscellaneous:</b>            |          |          |        |                      |
| Statutory or Terminal Disclaimer | 1814     | 1        | 160    | 160                  |
| <b>Total in USD (\$)</b>         |          |          |        | <b>160</b>           |

| Electronic Acknowledgement Receipt          |                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 22362036                                                                   |
| <b>Application Number:</b>                  | 14595815                                                                   |
| <b>International Application Number:</b>    |                                                                            |
| <b>Confirmation Number:</b>                 | 9197                                                                       |
| <b>Title of Invention:</b>                  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |
| <b>First Named Inventor/Applicant Name:</b> | Steven D. Baker                                                            |
| <b>Customer Number:</b>                     | 88750                                                                      |
| <b>Filer:</b>                               | Peter J Bilinski/Susanne Pelose                                            |
| <b>Filer Authorized By:</b>                 | Peter J Bilinski                                                           |
| <b>Attorney Docket Number:</b>              | 3022036 US05                                                               |
| <b>Receipt Date:</b>                        | 15-MAY-2015                                                                |
| <b>Filing Date:</b>                         | 13-JAN-2015                                                                |
| <b>Time Stamp:</b>                          | 15:45:56                                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                |

### Payment information:

|                                                                                                                |             |
|----------------------------------------------------------------------------------------------------------------|-------------|
| Submitted with Payment                                                                                         | yes         |
| Payment Type                                                                                                   | Credit Card |
| Payment was successfully received in RAM                                                                       | \$ 160      |
| RAM confirmation Number                                                                                        | 2243        |
| Deposit Account                                                                                                |             |
| Authorized User                                                                                                |             |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: |             |

|                              |                                                       |                                    |                                           |                  |                  |
|------------------------------|-------------------------------------------------------|------------------------------------|-------------------------------------------|------------------|------------------|
|                              |                                                       |                                    |                                           |                  |                  |
| File Listing:                |                                                       |                                    |                                           |                  |                  |
| Document Number              | Document Description                                  | File Name                          | File Size(Bytes)/ Message Digest          | Multi Part /.zip | Pages (if appl.) |
| 1                            | Miscellaneous Incoming Letter                         | 2015-05-15-Transmittal-Form.pdf    | 450936                                    | no               | 1                |
|                              |                                                       |                                    | 46be6008e82c4b8fb9c262ea2725eeae37c3b8a5  |                  |                  |
| Warnings:                    |                                                       |                                    |                                           |                  |                  |
| Information:                 |                                                       |                                    |                                           |                  |                  |
| 2                            | Miscellaneous Incoming Letter                         | 2015-05-15-Fee-Transmittal.pdf     | 450748                                    | no               | 1                |
|                              |                                                       |                                    | c919b9e3b7f285c1052f66a7e8708f757dcf911   |                  |                  |
| Warnings:                    |                                                       |                                    |                                           |                  |                  |
| Information:                 |                                                       |                                    |                                           |                  |                  |
| 3                            |                                                       | 2015-05-15-Amendment.pdf           | 521768                                    | yes              | 7                |
|                              |                                                       |                                    | d892ffb9754586173bd948881290e021d3bbab1ba |                  |                  |
|                              | Multipart Description/PDF files in .zip description   |                                    |                                           |                  |                  |
|                              | Document Description                                  |                                    | Start                                     | End              |                  |
|                              | Amendment/Req. Reconsideration-After Non-Final Reject |                                    | 1                                         | 1                |                  |
|                              | Claims                                                |                                    | 2                                         | 4                |                  |
|                              | Applicant Arguments/Remarks Made in an Amendment      |                                    | 5                                         | 7                |                  |
| Warnings:                    |                                                       |                                    |                                           |                  |                  |
| Information:                 |                                                       |                                    |                                           |                  |                  |
| 4                            | Terminal Disclaimer Filed                             | 2015-05-15-Terminal-Disclaimer.pdf | 393468                                    | no               | 1                |
|                              |                                                       |                                    | 5de8e2979eb81543c0a7a70d1be3fb3b83442c66  |                  |                  |
| Warnings:                    |                                                       |                                    |                                           |                  |                  |
| Information:                 |                                                       |                                    |                                           |                  |                  |
| 5                            | Fee Worksheet (SB06)                                  | fee-info.pdf                       | 30760                                     | no               | 2                |
|                              |                                                       |                                    | f25106fd4c334009dfd67df036a2561e3a736b0   |                  |                  |
| Warnings:                    |                                                       |                                    |                                           |                  |                  |
| Information:                 |                                                       |                                    |                                           |                  |                  |
| Total Files Size (in bytes): |                                                       |                                    | 1847680                                   |                  |                  |

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.

|                                                                                                    |                      |                        |              |
|----------------------------------------------------------------------------------------------------|----------------------|------------------------|--------------|
| <b>TRANSMITTAL<br/>FORM</b><br><br><i>(to be used for all correspondence after initial filing)</i> | Application Number   | 14/595,815             |              |
|                                                                                                    | Filing Date          | January 13, 2015       |              |
|                                                                                                    | First Named Inventor | Steven D. Baker        |              |
|                                                                                                    | Art Unit             | 3762                   |              |
|                                                                                                    | Examiner Name        | Nicole F. Lavert       |              |
| Total Number of Pages in This Submission                                                           | 10                   | Attorney Docket Number | 3022036 US05 |

| ENCLOSURES (Check all that apply)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Fee Transmittal Form<br><input checked="" type="checkbox"/> Fee Attached<br><input checked="" type="checkbox"/> Amendment/Reply<br><input type="checkbox"/> After Final<br><input type="checkbox"/> Affidavits/declaration(s)<br><input type="checkbox"/> Extension of Time Request<br><input type="checkbox"/> Express Abandonment Request<br><input type="checkbox"/> Information Disclosure Statement<br><br><input type="checkbox"/> Certified Copy of Priority Document(s)<br><input type="checkbox"/> Reply to Missing Parts/Incomplete Application<br><input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s)<br><input type="checkbox"/> Licensing-related Papers<br><input type="checkbox"/> Petition<br><input type="checkbox"/> Petition to Convert to a Provisional Application<br><input type="checkbox"/> Power of Attorney, Revocation<br><input type="checkbox"/> Change of Correspondence Address<br><input checked="" type="checkbox"/> Terminal Disclaimer<br><input type="checkbox"/> Request for Refund<br><input type="checkbox"/> CD, Number of CD(s) _____<br><input type="checkbox"/> Landscape Table on CD | <input type="checkbox"/> After Allowance Communication to TC<br><input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences<br><input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)<br><input type="checkbox"/> Proprietary Information<br><input type="checkbox"/> Status Letter<br><input type="checkbox"/> Other Enclosure(s) (please identify below): |
| Remarks _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Firm Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Hiscock & Barclay, LLP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Signature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | /Peter J. Bilinski/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Printed name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Peter J. Bilinski                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | May 15, 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Reg. No. 35,067                                                                                                                                                                                                                                                                                                                                                                                                      |

| CERTIFICATE OF TRANSMISSION/MAILING                                                                                                                                                                                                                                                                           |  |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------|
| I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below: |  |      |
| Signature                                                                                                                                                                                                                                                                                                     |  |      |
| Typed or printed name                                                                                                                                                                                                                                                                                         |  | Date |

This collection of information is required by 37 CFR 1.5. 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 2 hours 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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| FEE TRANSMITTAL                                                                                                                                                                     |  | Complete if known       |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------|------------------|
|                                                                                                                                                                                     |  | Application Number      | 14/595,815       |
| <input type="checkbox"/> Applicant asserts small entity status. See 37 CFR 1.27.                                                                                                    |  | Filing Date             | January 13, 2015 |
| <input type="checkbox"/> Applicant certifies micro entity status. See 37 CFR 1.29.<br>Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously. |  | First Named Inventor    | Steven D. Baker  |
| TOTAL AMOUNT OF PAYMENT (\$)                                                                                                                                                        |  | Examiner Name           | Nicole F. Lavert |
|                                                                                                                                                                                     |  | Art Unit                | 3762             |
| (\$)                                                                                                                                                                                |  | Practitioner Docket No. | 3022036 US05     |

**METHOD OF PAYMENT** (check all that apply)

- ☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_
- ☒ Deposit Account Deposit Account Number: 50-3010 Deposit Account Name: Hiscock & Barclay, LLP
- For the above-identified deposit account, the Director is hereby authorized to (check all that apply):
- ☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**
- ☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayment of fee(s)

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

**FEE CALCULATION**

**1. BASIC FILING, SEARCH, AND EXAMINATION FEES** (U = undiscounted fee; S = small entity fee; M = micro entity fee)

| Application Type | FILING FEES |        |        | SEARCH FEES |        |        | EXAMINATION FEES |        |        | Fees Paid (\$) |
|------------------|-------------|--------|--------|-------------|--------|--------|------------------|--------|--------|----------------|
|                  | U (\$)      | S (\$) | M (\$) | U (\$)      | S (\$) | M (\$) | U (\$)           | S (\$) | M (\$) |                |
| Utility          | 280         | 140*   | 70     | 600         | 300    | 150    | 720              | 360    | 180    |                |
| Design           | 180         | 90     | 45     | 120         | 60     | 30     | 460              | 230    | 115    |                |
| Plant            | 180         | 90     | 45     | 380         | 190    | 95     | 580              | 290    | 145    |                |
| Reissue          | 280         | 140    | 70     | 600         | 300    | 150    | 2,160            | 1,080  | 540    |                |
| Provisional      | 260         | 130    | 65     | 0           | 0      | 0      | 0                | 0      | 0      |                |

\* The \$140 small entity status filing fee for a utility application is further reduced to \$70 for a small entity status applicant who files the application via EFS-Web.

**2. EXCESS CLAIM FEES**

| Fee Description                                                        | Undiscounted Fee (\$) | Small Entity Fee (\$) | Micro Entity Fee (\$) |
|------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|
| Each claim over 20 (including Reissues)                                | 80                    | 40                    | 20                    |
| Each independent claim over 3 (including Reissues)                     | 420                   | 210                   | 105                   |
| Multiple dependent claims                                              | 780                   | 390                   | 195                   |
| <b>Total Claims</b>                                                    |                       |                       |                       |
| _____ - 20 or HP = _____ x _____ = _____                               |                       |                       |                       |
| HP = highest number of total claims paid for, if greater than 20.      |                       |                       |                       |
| <b>Indep. Claims</b>                                                   |                       |                       |                       |
| _____ - 3 or HP = _____ x _____ = _____                                |                       |                       |                       |
| HP = highest number of independent claims paid for, if greater than 3. |                       |                       |                       |

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$400 (\$200 for small entity) (\$100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets                                                  | Extra Sheets | Number of each additional 50 or fraction thereof | Fee (\$) | Fees Paid (\$) |
|---------------------------------------------------------------|--------------|--------------------------------------------------|----------|----------------|
| _____ - 100 = _____ / 50 = _____ (round up to a whole number) |              |                                                  |          |                |

**4. OTHER FEE(S)**

|                                                                                                                   | Fees Paid (\$) |
|-------------------------------------------------------------------------------------------------------------------|----------------|
| Non-English specification, \$130 fee (no small or micro entity discount)                                          |                |
| Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, \$400 fee (\$200 small or micro entity) |                |
| Other (e.g., late filing surcharge): Terminal Disclaimer (\$160.00)                                               | \$160.00       |

**SUBMITTED BY**

|                   |                     |                                   |              |           |              |
|-------------------|---------------------|-----------------------------------|--------------|-----------|--------------|
| Signature         | /Peter J. Bilinski/ | Registration No. (Attorney/Agent) | 35,067       | Telephone | 315-425-2700 |
| Name (Print/Type) | Peter J. Bilinski   | Date                              | May 15, 2015 |           |              |

This collection of information is required by 37 CFR 1.136. 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 30 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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|                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                  |       |                                                   |               |                                  |  |                                       |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------|---------------------------------------------------|---------------|----------------------------------|--|---------------------------------------|---------------------|
| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                               |                                  |       | Application or Docket Number<br><b>14/595,815</b> |               | Filing Date<br><b>01/13/2015</b> |  | <input type="checkbox"/> To be Mailed |                     |
| ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                  |       |                                                   |               |                                  |  |                                       |                     |
| <b>APPLICATION AS FILED – PART I</b>                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                               |                                  |       |                                                   |               |                                  |  |                                       |                     |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               | (Column 2)                       |       |                                                   |               |                                  |  |                                       |                     |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                               | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                     |       |                                                   | RATE (\$)     | FEE (\$)                         |  |                                       |                     |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                                                                                                                                                                                                                                                                                                               | N/A                                                                                                                                                                                                                           | N/A                              |       |                                                   | N/A           |                                  |  |                                       |                     |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (j), or (m))                                                                                                                                                                                                                                                                                                                                              | N/A                                                                                                                                                                                                                           | N/A                              |       |                                                   | N/A           |                                  |  |                                       |                     |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                                                                                                                                                           | N/A                              |       |                                                   | N/A           |                                  |  |                                       |                     |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                                                                                                                                                                                                                                                                                                  | minus 20 =                                                                                                                                                                                                                    | *                                |       |                                                   | X \$          | =                                |  |                                       |                     |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                                                                                                                                                                                                                                                                                                            | minus 3 =                                                                                                                                                                                                                     | *                                |       |                                                   | X \$          | =                                |  |                                       |                     |
| <input type="checkbox"/> APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                 | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |                                  |       |                                                   |               |                                  |  |                                       |                     |
| <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         |                                  |  |                                       |                     |
| <b>APPLICATION AS AMENDED – PART II</b>                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |                                  |       |                                                   |               |                                  |  |                                       |                     |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               | (Column 2)                       |       | (Column 3)                                        |               |                                  |  |                                       |                     |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                         | <b>05/15/2015</b>                                                                                                                                                                                                             | CLAIMS REMAINING AFTER AMENDMENT |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                | PRESENT EXTRA |                                  |  | RATE (\$)                             | ADDITIONAL FEE (\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | * 20                             | Minus | ** 20                                             | = 0           |                                  |  | X \$80 =                              | 0                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Independent (37 CFR 1.16(h))                                                                                                                                                                                                  | * 3                              | Minus | ***3                                              | = 0           |                                  |  | X \$420 =                             | 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                  |  | <b>0</b>                              |                     |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               | (Column 2)                       |       | (Column 3)                                        |               |                                  |  |                                       |                     |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                               | CLAIMS REMAINING AFTER AMENDMENT |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                | PRESENT EXTRA |                                  |  | RATE (\$)                             | ADDITIONAL FEE (\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | *                                | Minus | **                                                | =             |                                  |  | X \$                                  | =                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Independent (37 CFR 1.16(h))                                                                                                                                                                                                  | *                                | Minus | ***                                               | =             |                                  |  | 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                  |  |                                       |                     |
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.<br>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".<br>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".<br>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1. |                                                                                                                                                                                                                               |                                  |       |                                                   |               |                                  |  |                                       |                     |

LIE  
/CAROL BARNES/

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 NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 14/595,815         | 01/13/2015            | Steven D. Baker       | 3022036 US05           |

**CONFIRMATION NO. 9197**

**PUBLICATION NOTICE**



OC000000075045251

88750  
HISCOCK & BARCLAY, LLP  
ONE PARK PLACE, 300 S. STATE ST.  
SYRACUSE, NY 13202

**Title:**BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE

**Publication No.**US-2015-0126848-A1

**Publication Date:**05/07/2015

**NOTICE OF PUBLICATION OF APPLICATION**

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

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

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

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

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

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



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| APPLICATION NO.                                                                                           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.             | CONFIRMATION NO.            |
|-----------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------------------|-----------------------------|
| 14/595,815                                                                                                | 01/13/2015  | Steven D. Baker      | 3022036 US05                    | 9197                        |
| 88750 7590 03/04/2015<br>HISCOCK & BARCLAY, LLP<br>ONE PARK PLACE, 300 S. STATE ST.<br>SYRACUSE, NY 13202 |             |                      | EXAMINER<br>LAVERT, NICOLE F    |                             |
|                                                                                                           |             |                      | ART UNIT<br>3762                | PAPER NUMBER                |
|                                                                                                           |             |                      | NOTIFICATION DATE<br>03/04/2015 | DELIVERY MODE<br>ELECTRONIC |

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

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

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

ipdocket@hblaw.com

|                              |                                      |                                     |                                                  |
|------------------------------|--------------------------------------|-------------------------------------|--------------------------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>14/595,815 | <b>Applicant(s)</b><br>BAKER ET AL. |                                                  |
|                              | <b>Examiner</b><br>NICOLE F. LAVERT  | <b>Art Unit</b><br>3762             | <b>AIA (First Inventor to File) Status</b><br>No |

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

**Period for Reply**

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

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

**Status**

1) ☒ Responsive to communication(s) filed on 1/13/15.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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

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

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

**Disposition of Claims\***

5) ☒ Claim(s) 1-20 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

6) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

7) ☒ Claim(s) 1-20 is/are rejected.

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

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

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

**Application Papers**

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

11) ☒ The drawing(s) filed on 1/13/15 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

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

**Certified copies:**

a) ☐ All    b) ☐ Some\*\*    c) ☐ None of the:

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

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

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

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

**Attachment(s)**

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

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  
Paper No(s)/Mail Date 1/13/15.

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

4) ☐ Other: \_\_\_\_\_.

1. The present application is being examined under the pre-AIA first to invent provisions.

### DETAILED ACTION

#### *Claim Rejections - 35 USC § 102*

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

3. The following is a quotation of the appropriate paragraphs of pre-AIA 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.

4. **Claims 1-6 & 15-20** are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Williams et al. (US 2004/0030258).

Williams et al. discloses a body-worn physiological sensor comprising: a computation-communication module; a flexible circuit layer (e.g., via the disclosed flexible, insulating material 100) configured to be coupled to a skin surface of a subject to measure physiological signals (e.g., via the disclosed electrodes 103/104); an adhesive covering (e.g., via the disclosed hydrogel that acts as a peelable adhesive) at least a portion of the flexible circuit layer; and a protective covering (e.g., via the disclosed ‘paper strip’ that is attached over the electrode using a low-stick adhesive material) that protects the adhesive and further comprises a plurality of opening sized to receive electrode gels, wherein said sensor further comprises traces (e.g., via the disclosed ‘W’ and/or wires that are embedded within the flexible material) of determinable

electrical resistance and are configured to electrically couple the computation-communication module to the flexible circuit layer, thereby forming a disposable module connector {e.g., [0058]-[0059], [0068]-[0069] & (Figs 1 & 11)}.

### ***Double Patenting***

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

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

6. Claims 7 is rejected on the ground of nonstatutory double patenting over claim 7 of U.S. Patent No. 8,,965,492 since the claims, if allowed, would improperly extend the “right to exclude” already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: A body-worn patient monitoring system comprising a disposable electrode portion comprising a flexible printed circuit layer, at least one electrode disposed on the surface of a substrate, at least one connection pad, electrical traces defined between said electrode(s) and connection pad, a reusable communication and computation module containing a processor and a wireless communication unit.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Note: Claims 7-14 would be considered allowable subject matter if the applicant acknowledges and overcomes the above double patenting rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE F. LAVERT whose telephone number is (571)270-5040. The examiner can normally be reached on M-F 7:30-5:00p.m. (alt. Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Koharski can be reached on 571-272-7230. 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.

/NICOLE F. LAVERT/  
Primary Examiner, Art Unit 3762

|                                   |                                       |  |                                                            |             |
|-----------------------------------|---------------------------------------|--|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>14/595,815 |  | Applicant(s)/Patent Under<br>Reexamination<br>BAKER ET AL. |             |
|                                   | Examiner<br>NICOLE F. LAVERT          |  | Art Unit<br>3762                                           | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name            | Classification |
|---|---|--------------------------------------------------|-----------------|-----------------|----------------|
| * | A | US-2004/0030258 A1                               | 02-2004         | Williams et al. | 600/544        |
|   | B | US-                                              |                 |                 |                |
|   | C | US-                                              |                 |                 |                |
|   | D | US-                                              |                 |                 |                |
|   | E | US-                                              |                 |                 |                |
|   | F | US-                                              |                 |                 |                |
|   | G | US-                                              |                 |                 |                |
|   | H | US-                                              |                 |                 |                |
|   | I | US-                                              |                 |                 |                |
|   | J | US-                                              |                 |                 |                |
|   | K | US-                                              |                 |                 |                |
|   | L | US-                                              |                 |                 |                |
|   | M | US-                                              |                 |                 |                |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>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.



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## BIB DATA SHEET

CONFIRMATION NO. 9197

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                   |                                                                 |                                   |                                                              |                               |                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------|-------------------------------|------------------------------------|
| <b>SERIAL NUMBER</b><br>14/595,815                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>FILING or 371(c)<br/>DATE</b><br>01/13/2015<br><b>RULE</b>                                                     | <b>CLASS</b><br>600                                             | <b>GROUP ART UNIT</b><br>3762     | <b>ATTORNEY DOCKET<br/>NO.</b><br>3022036 US05               |                               |                                    |
| <b>APPLICANTS</b><br>Welch Allyn, Inc., Skaneateles Falls, NY, Assignee (with 37 CFR 1.172 Interest);<br><b>INVENTORS</b><br>Steven D. Baker, Beaverton, NY;<br>Eric T. McAdams, Whitehead, UNITED KINGDOM;<br>James P. Welch, Mission Viejo, CA;<br><b>** CONTINUING DATA *****</b><br>This application is a CON of 14/268,666 05/02/2014 PAT 8965492<br>which is a CON of 14/103,219 12/11/2013 PAT 8750974<br>which is a DIV of 13/488,520 06/05/2012 PAT 8630699<br>which is a CON of 11/591,619 11/01/2006 PAT 8214007<br><b>** FOREIGN APPLICATIONS *****</b><br><b>** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **</b><br>01/23/2015 |                                                                                                                   |                                                                 |                                   |                                                              |                               |                                    |
| Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>Verified and /NICOLE F. LAVERT/<br>Acknowledged Examiner's Signature                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                   | <input type="checkbox"/> Met after Allowance<br>NFL<br>Initials | <b>STATE OR<br/>COUNTRY</b><br>NY | <b>SHEETS<br/>DRAWINGS</b><br>14                             | <b>TOTAL<br/>CLAIMS</b><br>20 | <b>INDEPENDENT<br/>CLAIMS</b><br>3 |
| <b>ADDRESS</b><br>HISCOCK & BARCLAY, LLP<br>ONE PARK PLACE, 300 S. STATE ST.<br>SYRACUSE, NY 13202<br>UNITED STATES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                   |                                                                 |                                   |                                                              |                               |                                    |
| <b>TITLE</b><br>BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                   |                                                                 |                                   |                                                              |                               |                                    |
| <b>FILING FEE<br/>RECEIVED</b><br>1600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | FEES: Authority has been given in Paper<br>No. _____ to charge/credit DEPOSIT ACCOUNT<br>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   |                                                              |                               |                                    |

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

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---|--------------------------|-----------------------|
| <div>Substitute for form 1449/PTO</div> <div><b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b></div> <div><i>(Use as many sheets as necessary)</i></div> |   |    |   | <b>Complete if Known</b> |                       |
|                                                                                                                                                                 |   |    |   | Application Number       | Not Yet Assigned      |
|                                                                                                                                                                 |   |    |   | Filing Date              | Concurrently Herewith |
|                                                                                                                                                                 |   |    |   | First Named Inventor     | Steven D. Baker       |
|                                                                                                                                                                 |   |    |   | Art Unit                 | Not Yet Assigned      |
|                                                                                                                                                                 |   |    |   | Examiner Name            | Not Yet Assigned      |
|                                                                                                                                                                 |   |    |   | Attorney Docket Number   | 3022036 US05          |
| Sheet                                                                                                                                                           | 1 | of | 1 |                          |                       |

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|                    |                 |                 |            |
|--------------------|-----------------|-----------------|------------|
| Examiner Signature | /Nicole Lavert/ | Date Considered | 02/21/2015 |
|--------------------|-----------------|-----------------|------------|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \* CITE NO.: Those application(s) which are marked with an single asterisk (\*) next to the Cite No. are not supplied under 37 CFR 1.98(a)(2)(iii) because that application was filed after June 30, 2003 or is available in the IFW. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits  | Search Query                                        | DBs                                                      | Default Operator | Plurals | Time Stamp       |
|-------|-------|-----------------------------------------------------|----------------------------------------------------------|------------------|---------|------------------|
| L1    | 2049  | (external same sensor) same (flexible same circuit) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:02 |
| L2    | 735   | L1 and adhesive                                     | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:02 |
| L3    | 398   | L2 and (conductors or trace\$2)                     | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:02 |
| L4    | 7     | L3 and (electrode\$2 same gel)                      | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:02 |
| L5    | 6137  | h05k3/361.cpc.                                      | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:06 |
| L6    | 0     | A61B5/04084.cpc.                                    | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:10 |
| L7    | 1544  | A61B5/0484.cpc.                                     | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2015/02/23 12:10 |
| S1    | 1534  | 600/508.CCLS.                                       | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:14 |
| S2    | 2846  | 600/509.CCLS.                                       | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:16 |
| S3    | 717   | 600/372.ccls.                                       | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:25 |
| S4    | 38520 | (eck or eckg or cardiac or heart) same monitor      | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:25 |
| S5    | 3417  | S4 and (electrical same connections)                | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:25 |
| S6    | 1847  | S5 and (power same source)\                         | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:26 |
| S7    | 53826 | (current same limiting) same resistor               | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:26 |
| S8    | 33    | S6 and (current same limiting) same resistor        | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:26 |
| S9    | 33    | S6 and ((current same limiting) same resistor)      | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | OFF     | 2013/05/11 12:26 |

|     |         |                                                            |                                                                |    |     |                     |
|-----|---------|------------------------------------------------------------|----------------------------------------------------------------|----|-----|---------------------|
|     |         |                                                            | DERWENT; IBM_TDB                                               |    |     |                     |
| S10 | 23      | S9 and @py<="2005"                                         | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:27 |
| S11 | 4727    | (external) same ((heart<br>or EKG or ECG) same<br>monitor) | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:38 |
| S12 | 2815    | S11 and @py<="2009"                                        | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:38 |
| S13 | 11      | S12 and ((current same<br>limiting) same resistor)         | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:39 |
| S14 | 351     | 607/7.ccls.                                                | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/05/11<br>12:52 |
| S15 | 3       | "20030171743"                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/07/16<br>10:50 |
| S16 | 1       | S15 and heart                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/07/16<br>10:51 |
| S17 | 1758    | 600/508.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:02 |
| S18 | 3249    | 600/509.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:02 |
| S19 | 829     | 600/372.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2013/08/25<br>19:03 |
| S23 | 1956    | 600/508.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>11:56 |
| S24 | 3618    | 600/509.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>11:59 |
| S25 | 59931   | (substrate same<br>resistivity)                            | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:03 |
| S26 | 7022177 | S25 and ((print same<br>pattern) same<br>thickness)"0"     | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S27 | 502     | S25 and ((print same<br>pattern) same<br>thickness)        | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S28 | 5       | S27 and (medical same<br>device)                           | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:04 |
| S29 | 925     | 600/372.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/01/13<br>12:09 |
| S33 | 2367    | 600/508.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/09/30<br>15:21 |
| S34 | 4254    | 600/509.ccls.                                              | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;                     | OR | OFF | 2014/09/30<br>15:24 |

|     |      |                                                           |                                                                |    |     |                     |
|-----|------|-----------------------------------------------------------|----------------------------------------------------------------|----|-----|---------------------|
|     |      |                                                           | DERWENT; IBM_TDB                                               |    |     |                     |
| S35 | 1095 | 600/372.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2014/09/30<br>15:25 |
| S36 | 2559 | 600/508.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/21<br>16:08 |
| S37 | 4544 | 600/509.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/21<br>16:12 |
| S38 | 2559 | 600/508.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:27 |
| S39 | 4544 | 600/509.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:46 |
| S40 | 2049 | (external same sensor)<br>same (flexible same<br>circuit) | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S41 | 735  | S40 and adhesive                                          | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S42 | 398  | S41 and (conductors or<br>trace\$2)                       | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>08:51 |
| S44 | 1190 | 600/372.ccls.                                             | US-PGPUB; USPAT;<br>USOCR; FPRS; EPO; JPO;<br>DERWENT; IBM_TDB | OR | OFF | 2015/02/23<br>09:00 |

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|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>14595815 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>BAKER ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>NICOLE F LAVERT         | <b>Art Unit</b><br><br>3762                                        |

| CPC- SEARCHED |      |          |
|---------------|------|----------|
| Symbol        | Date | Examiner |
|               |      |          |

| CPC COMBINATION SETS - SEARCHED |           |          |
|---------------------------------|-----------|----------|
| Symbol                          | Date      | Examiner |
| H05K3/361                       | 2/23/2015 | NFL      |
| A61B5/04084                     |           |          |

| US CLASSIFICATION SEARCHED |               |           |          |
|----------------------------|---------------|-----------|----------|
| Class                      | Subclass      | Date      | Examiner |
| 600                        | 372 & 508-509 | 2/23/2015 | NFL      |

| SEARCH NOTES                                                |           |          |
|-------------------------------------------------------------|-----------|----------|
| Search Notes                                                | Date      | Examiner |
| Inventor Search (EDAN)                                      | 2/23/2015 | NFL      |
| EAST Search (see attachment)                                |           |          |
| Consulated search notes from 14/268666 (same patent family) |           |          |

| INTERFERENCE SEARCH     |                         |      |          |
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| US Class/<br>CPC Symbol | US Subclass / CPC Group | Date | Examiner |
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|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

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\*Substitute Disclosure Statement Form (PTO-1449)

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| EXAMINER                                                                                                                                                                                                                                    | /Nicole Lavert/ | DATE CONSIDERED | 02/21/2015 |
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Date: June 7, 2012

Sheet 6 of 6

Customer No.: 88750

|                                                                                                                                       |                                   |                                   |
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| EXAMINER                                                                                                                                                                                                                                    | /Nicole Lavert/ | DATE CONSIDERED | 02/21/2015 |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                 |                 |            |

\*Substitute Disclosure Statement Form (PTO-1449)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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|                                                                                                                                   |                                   |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US01    | Application Number:<br>11/591,619 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 7955            |
|                                                                                                                                   | Filing Date: November 1, 2006     | Group Art Unit: 3762              |

| U.S. PATENT DOCUMENTS |              |            |                    |       |          |                               |
|-----------------------|--------------|------------|--------------------|-------|----------|-------------------------------|
| EXAMINER<br>INITIAL   | DOCUMENT NO. | DATE       | NAME               | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
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|                       | 5,600,071    | 2/4/1997   | Sooriakumar et al. |       |          |                               |
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|                       |              |            |                    |       |          |                               |
|                       |              |            |                    |       |          |                               |

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| EXAMINER /Nicole Lavert/                                                                                                                                                                                                                    | DATE CONSIDERED 02/21/2015 |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                            |

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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US01    | Application Number:<br>11/591,619 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 7955            |
|                                                                                                                                   | Filing Date: November 1, 2006     | Group Art Unit: 3762              |

| FOREIGN PATENT DOCUMENTS |                |            |         |       |          |             |    |
|--------------------------|----------------|------------|---------|-------|----------|-------------|----|
|                          | DOCUMENT NO.   | DATE       | COUNTRY | CLASS | SUBCLASS | TRANSLATION |    |
|                          |                |            |         |       |          | YES         | NO |
|                          | WO 2008/142365 | 11/27/2008 | WO      |       |          |             |    |
|                          | WO 2009/056859 | 5/7/2009   | WO      |       |          |             |    |
|                          |                |            |         |       |          |             |    |
|                          |                |            |         |       |          |             |    |
|                          |                |            |         |       |          |             |    |

| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) |  |  |
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| EXAMINER /Nicole Lavert/                                                                                                                                                                                                                    | DATE CONSIDERED 02/21/2015 |
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\*Substitute Disclosure Statement Form (PTO-1449)

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|                                   |                                       |                                                            |             |
|-----------------------------------|---------------------------------------|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>11/591,619 | Applicant(s)/Patent Under<br>Reexamination<br>BAKER ET AL. |             |
|                                   | Examiner<br>NICOLE F. LAVERT          | Art Unit<br>3762                                           | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name            | Classification |
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| * | B | US-5,309,918 A                                   | 05-1994         | Schraag, Martin | 600/508        |
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| * | E | US-2003/0055460 A1                               | 03-2003         | Owen et al.     | 607/5          |
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| * | K | US-2006/0183434 A1                               | 08-2006         | Westra et al.   | 455/078        |
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|   | M | US-                                              |                 |                 |                |

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| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>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 |                                                                                           |

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U.S. Patent and Trademark Office  
PTO-892 (Rev. 01-2001)

**Notice of References Cited**

Part of Paper No. 20100303

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|                                   |                                       |                                                            |             |
|-----------------------------------|---------------------------------------|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>13/488,520 | Applicant(s)/Patent Under<br>Reexamination<br>BAKER ET AL. |             |
|                                   | Examiner<br>NICOLE F. LAVERT          | Art Unit<br>3762                                           | Page 1 of 1 |

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|   | B | US-                                              |                 |              |                |
|   | C | US-                                              |                 |              |                |
|   | D | US-                                              |                 |              |                |
|   | E | US-                                              |                 |              |                |
|   | F | US-                                              |                 |              |                |
|   | G | US-                                              |                 |              |                |
|   | H | US-                                              |                 |              |                |
|   | I | US-                                              |                 |              |                |
|   | J | US-                                              |                 |              |                |
|   | K | US-                                              |                 |              |                |
|   | L | US-                                              |                 |              |                |
|   | M | US-                                              |                 |              |                |

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| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
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| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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www.uspto.gov

| APPLICATION<br>NUMBER | FILING or<br>371(c) DATE | GRP ART<br>UNIT | FIL FEE REC'D | ATTY. DOCKET NO | TOT CLAIMS | IND CLAIMS |
|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 14/595,815            | 01/13/2015               | 3769            | 1600          | 3022036 US05    | 20         | 3          |

CONFIRMATION NO. 9197

FILING RECEIPT



88750  
HISCOCK & BARCLAY, LLP  
ONE PARK PLACE, 300 S. STATE ST.  
SYRACUSE, NY 13202

Date Mailed: 01/27/2015

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

**Inventor(s)**

Steven D. Baker, Beaverton, NY;  
Eric T. McAdams, Whitehead, UNITED KINGDOM;  
James P. Welch, Mission Viejo, CA;

**Applicant(s)**

Welch Allyn, Inc., Skaneateles Falls, NY

**Power of Attorney:** The patent practitioners associated with Customer Number 88750

**Domestic Priority data as claimed by applicant**

This application is a CON of 14/268,666 05/02/2014  
which is a CON of 14/103,219 12/11/2013 PAT 8750974  
which is a DIV of 13/488,520 06/05/2012 PAT 8630699  
which is a CON of 11/591,619 11/01/2006 PAT 8214007

**Foreign Applications** for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

*Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.*

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

**If Required, Foreign Filing License Granted:** 01/23/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/595,815**

page 1 of 3

iRhythm, Inc. / Welch Allyn, Inc.

Exhibit 1006

Page 84

**Projected Publication Date:** 05/07/2015

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE  
MODULE

**Preliminary Class**

600

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

## **PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

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

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| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                               |                                    |               |              |                    | Application or Docket Number<br>14/595,815 |              |                               |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------|--------------|--------------------|--------------------------------------------|--------------|-------------------------------|--------------------|
| Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                    |               |              |                    |                                            |              |                               |                    |
| <b>APPLICATION AS FILED - PART I</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               |                                    |               |              |                    |                                            |              |                               |                    |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               | (Column 2)                         |               | SMALL ENTITY |                    | OR<br>OTHER THAN SMALL ENTITY              |              |                               |                    |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                       |               | RATE(\$)     | FEE(\$)            |                                            |              |                               |                    |
| BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          |                    |                                            | N/A          |                               |                    |
| SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          |                    |                                            | N/A          |                               |                    |
| EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          |                    |                                            | N/A          |                               |                    |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20                                                                                                                                                                                                                            | minus 20 =                         | *             |              |                    |                                            | x 80 = 0.00  |                               |                    |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3                                                                                                                                                                                                                             | minus 3 =                          | *             |              |                    |                                            | x 420 = 0.00 |                               |                    |
| APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |                                    |               |              |                    |                                            | 0.00         |                               |                    |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |                                    |               |              |                    |                                            | 0.00         |                               |                    |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                               |                                    |               | TOTAL        |                    |                                            | TOTAL 1600   |                               |                    |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                               |                                    |               |              |                    |                                            |              |                               |                    |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               | (Column 2)                         |               | (Column 3)   |                    | SMALL ENTITY                               |              | OR<br>OTHER THAN SMALL ENTITY |                    |
| AMENDMENT A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |              | RATE(\$)           | ADDITIONAL FEE(\$)                         |              | RATE(\$)                      | ADDITIONAL FEE(\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total<br>(37 CFR 1.16(i))                                                                                                                                                                                                     | *                                  | Minus         | **           | =                  |                                            |              | x                             | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Independent<br>(37 CFR 1.16(h))                                                                                                                                                                                               | *                                  | Minus         | ***          | =                  |                                            |              | x                             | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Application Size Fee (37 CFR 1.16(s))                                                                                                                                                                                         |                                    |               |              |                    |                                            |              |                               |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))                                                                                                                                                               |                                    |               |              |                    |                                            |              |                               |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                               |                                    |               |              | TOTAL<br>ADD'L FEE |                                            |              | TOTAL<br>ADD'L FEE            |                    |
| AMENDMENT B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |              | RATE(\$)           | ADDITIONAL FEE(\$)                         |              | RATE(\$)                      | ADDITIONAL FEE(\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total<br>(37 CFR 1.16(i))                                                                                                                                                                                                     | *                                  | Minus         | **           | =                  |                                            |              | x                             | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Independent<br>(37 CFR 1.16(h))                                                                                                                                                                                               | *                                  | Minus         | ***          | =                  |                                            |              | x                             | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Application Size Fee (37 CFR 1.16(s))                                                                                                                                                                                         |                                    |               |              |                    |                                            |              |                               |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))                                                                                                                                                               |                                    |               |              |                    |                                            |              |                               |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                               |                                    |               |              | TOTAL<br>ADD'L FEE |                                            |              | TOTAL<br>ADD'L FEE            |                    |
| <p style="font-size: x-small;">* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p style="font-size: x-small;">** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p style="font-size: x-small;">*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p style="font-size: x-small;">The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.</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

# UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

|                        |                                          |
|------------------------|------------------------------------------|
| Attorney Docket No.    | 3022036 US05                             |
| First Named Inventor   | Steven D. Baker                          |
| Title                  | Body Worn Physiological Sensor Device... |
| Express Mail Label No. | N/A                                      |

## APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ **Fee Transmittal Form**  
(PTO/SB/17 or equivalent)
2. ☐ **Applicant asserts small entity status.**  
See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29.  
Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☒ **Specification** [Total Pages 31]  
Both the claims and abstract must start on a new page.  
(See MPEP § 608.01(a) for information on the preferred arrangement)
5. ☒ **Drawing(s)** (35 U.S.C. 113) [Total Sheets 14]
6. **Inventor's Oath or Declaration** [Total Pages 3]  
(Including substitute statements under 37 CFR 1.64 and assignments  
serving as an oath or declaration under 37 CFR 1.63(e))
  - a. ☐ Newly executed (original or copy)
  - b. ☒ A copy from a prior application (37 CFR 1.63(d))
7. ☒ **Application Data Sheet** \* See note below.  
See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R**  
in duplicate, large table, or Computer Program (Appendix)  
☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission**  
(if applicable, items a. – c. are required)
  - a. ☐ Computer Readable Form (CRF)
  - b. ☐ Specification Sequence Listing on:
    - i. ☐ CD-ROM or CD-R (2 copies); or
    - ii. ☐ Paper
  - c. ☐ Statements verifying identity of above copies

**ADDRESS TO:** Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

## ACCOMPANYING APPLICATION PAPERS

10. ☐ **Assignment Papers**  
(cover sheet & document(s))  
Name of Assignee \_\_\_\_\_
11. ☐ **37 CFR 3.73(c) Statement** ☒ **Power of Attorney**  
(when there is an assignee)
12. ☐ **English Translation Document**  
(if applicable)
13. ☒ **Information Disclosure Statement**  
(PTO/SB/08 or PTO-1449)  
☐ Copies of citations attached
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard**  
(MPEP § 503) (Should be specifically itemized)
16. ☐ **Certified Copy of Priority Document(s)**  
(if foreign priority is claimed)
17. ☐ **Nonpublication Request**  
Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35  
or equivalent.
18. ☐ **Other:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**\*Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).  
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

## 19. CORRESPONDENCE ADDRESS

☒ The address associated with Customer Number: 88,750 OR ☐ Correspondence address below

|         |           |          |  |
|---------|-----------|----------|--|
| Name    |           |          |  |
| Address |           |          |  |
| City    | State     | Zip Code |  |
| Country | Telephone | Email    |  |

|                   |                     |                                   |                  |
|-------------------|---------------------|-----------------------------------|------------------|
| Signature         | /Peter J. Bilinski/ | Date                              | January 13, 2015 |
| Name (Print/Type) | Peter J. Bilinski   | Registration No. (Attorney/Agent) | 35,067           |

This collection of information is required by 37 CFR 1.53(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 1.11 and 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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| FEE TRANSMITTAL                                                                                                                                                                  |                         | Complete if known     |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|------------------|
|                                                                                                                                                                                  |                         | Application Number    | Not Yet Assigned |
| <input type="checkbox"/> Applicant asserts small entity status. See 37 CFR 1.27.                                                                                                 | Filing Date             | Concurrently Herewith |                  |
| <input type="checkbox"/> Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously. | First Named Inventor    | Steven D. Baker       |                  |
| TOTAL AMOUNT OF PAYMENT (\$)                                                                                                                                                     | Examiner Name           | Not Yet Assigned      |                  |
|                                                                                                                                                                                  | Art Unit                | Not Yet Assigned      |                  |
| (\$)                                                                                                                                                                             | Practitioner Docket No. | 3022036 US05          |                  |

## METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_

☒ Deposit Account Deposit Account Number: 50-3010 Deposit Account Name: Hiscock & Barclay, LLP

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayment of fee(s) ☒ Credit any overpayment of fee(s) under 37 CFR 1.16 and 1.17

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

## FEE CALCULATION

## 1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

| Application Type | FILING FEES |        |        | SEARCH FEES |        |        | EXAMINATION FEES |        |        | Fees Paid (\$) |
|------------------|-------------|--------|--------|-------------|--------|--------|------------------|--------|--------|----------------|
|                  | U (\$)      | S (\$) | M (\$) | U (\$)      | S (\$) | M (\$) | U (\$)           | S (\$) | M (\$) |                |
| Utility          | 280         | 140*   | 70     | 600         | 300    | 150    | 720              | 360    | 180    | 1,600.00       |
| Design           | 180         | 90     | 45     | 120         | 60     | 30     | 460              | 230    | 115    |                |
| Plant            | 180         | 90     | 45     | 380         | 190    | 95     | 580              | 290    | 145    |                |
| Reissue          | 280         | 140    | 70     | 600         | 300    | 150    | 2,160            | 1,080  | 540    |                |
| Provisional      | 260         | 130    | 65     | 0           | 0      | 0      | 0                | 0      | 0      |                |

\* The \$140 small entity status filing fee for a utility application is further reduced to \$70 for a small entity status applicant who files the application via EFS-Web.

## 2. EXCESS CLAIM FEES

| Fee Description                                    | Undiscounted Fee (\$) | Small Entity Fee (\$) | Micro Entity Fee (\$) |
|----------------------------------------------------|-----------------------|-----------------------|-----------------------|
| Each claim over 20 (including Reissues)            | 80                    | 40                    | 20                    |
| Each independent claim over 3 (including Reissues) | 420                   | 210                   | 105                   |
| Multiple dependent claims                          | 780                   | 390                   | 195                   |

|                     |                     |                 |                      |
|---------------------|---------------------|-----------------|----------------------|
| <b>Total Claims</b> | <b>Extra Claims</b> | <b>Fee (\$)</b> | <b>Fee Paid (\$)</b> |
| 20                  | -20 or HP = 0       | x 0             | = 0                  |

HP = highest number of total claims paid for, if greater than 20.

|                      |                     |                 |                      |
|----------------------|---------------------|-----------------|----------------------|
| <b>Indep. Claims</b> | <b>Extra Claims</b> | <b>Fee (\$)</b> | <b>Fee Paid (\$)</b> |
| 3                    | -3 or HP = 0        | x 0             | = 0                  |

HP = highest number of independent claims paid for, if greater than 3.

## 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$400 (\$200 for small entity) (\$100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

|                     |                     |                                                         |                 |                      |
|---------------------|---------------------|---------------------------------------------------------|-----------------|----------------------|
| <b>Total Sheets</b> | <b>Extra Sheets</b> | <b>Number of each additional 50 or fraction thereof</b> | <b>Fee (\$)</b> | <b>Fee Paid (\$)</b> |
| _____ - 100 = _____ | / 50 = _____        | (round up to a whole number)                            | x _____         | = _____              |

## 4. OTHER FEE(S)

Non-English specification, \$130 fee (no small or micro entity discount)

Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, \$400 fee (\$200 small or micro entity)

Other (e.g., late filing surcharge): \_\_\_\_\_

## SUBMITTED BY

|                   |                     |                                   |                  |           |              |
|-------------------|---------------------|-----------------------------------|------------------|-----------|--------------|
| Signature         | /Peter J. Bilinski/ | Registration No. (Attorney/Agent) | 35,067           | Telephone | 315-425-2700 |
| Name (Print/Type) | Peter J. Bilinski   | Date                              | January 13, 2015 |           |              |

This collection of information is required by 37 CFR 1.136. 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 30 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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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                            |                        |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------|--------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                            | Application Number     |              |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |
| <small>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.<br/>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</small> |                                                                            |                        |              |

## Secrecy Order 37 CFR 5.2

|                          |                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.) |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Inventor Information:

|                                                                                                                                                                          |                   |                                          |                      |                |                      |    |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------|----------------------|----------------|----------------------|----|--------|
| Inventor 1                                                                                                                                                               |                   |                                          |                      |                | Remove               |    |        |
| Legal Name                                                                                                                                                               |                   |                                          |                      |                |                      |    |        |
| Prefix                                                                                                                                                                   | Given Name        |                                          | Middle Name          |                | Family Name          |    | Suffix |
|                                                                                                                                                                          | Steven            |                                          | D.                   |                | Baker                |    |        |
| Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service |                   |                                          |                      |                |                      |    |        |
| City                                                                                                                                                                     | Beaverton         |                                          | State/Province       | NY             | Country of Residence | US |        |
| Mailing Address of Inventor:                                                                                                                                             |                   |                                          |                      |                |                      |    |        |
| Address 1                                                                                                                                                                |                   | c/o Welch Allyn, Inc., Attn: Legal Dept. |                      |                |                      |    |        |
| Address 2                                                                                                                                                                |                   | 4341 State Street Road                   |                      |                |                      |    |        |
| City                                                                                                                                                                     | Skaneateles Falls |                                          |                      | State/Province | NY                   |    |        |
| Postal Code                                                                                                                                                              | 13153-0220        |                                          |                      | Country        | US                   |    |        |
| Inventor 2                                                                                                                                                               |                   |                                          |                      |                | Remove               |    |        |
| Legal Name                                                                                                                                                               |                   |                                          |                      |                |                      |    |        |
| Prefix                                                                                                                                                                   | Given Name        |                                          | Middle Name          |                | Family Name          |    | Suffix |
|                                                                                                                                                                          | Eric              |                                          | T.                   |                | McAdams              |    |        |
| Residence Information (Select One) <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service |                   |                                          |                      |                |                      |    |        |
| City                                                                                                                                                                     | Whitehead         |                                          | Country of Residence |                |                      | UK |        |
| Mailing Address of Inventor:                                                                                                                                             |                   |                                          |                      |                |                      |    |        |
| Address 1                                                                                                                                                                |                   | c/o Welch Allyn, Inc., Attn: Legal Dept. |                      |                |                      |    |        |
| Address 2                                                                                                                                                                |                   | 4341 State Street Road                   |                      |                |                      |    |        |
| City                                                                                                                                                                     | Skaneateles Falls |                                          |                      | State/Province | NY                   |    |        |
| Postal Code                                                                                                                                                              | 13153-0220        |                                          |                      | Country        | US                   |    |        |
| Inventor 3                                                                                                                                                               |                   |                                          |                      |                | Remove               |    |        |
| Legal Name                                                                                                                                                               |                   |                                          |                      |                |                      |    |        |
| Prefix                                                                                                                                                                   | Given Name        |                                          | Middle Name          |                | Family Name          |    | Suffix |
|                                                                                                                                                                          | James             |                                          | P.                   |                | Welch                |    |        |

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|                                                                                                                                                                                 |                                                                            |                        |    |                      |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------|----|----------------------|----|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                       |                                                                            | Attorney Docket Number |    | 3022036 US05         |    |
|                                                                                                                                                                                 |                                                                            | Application Number     |    |                      |    |
| Title of Invention                                                                                                                                                              | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |    |                      |    |
| <b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service |                                                                            |                        |    |                      |    |
| City                                                                                                                                                                            | Mission Viejo                                                              | State/Province         | CA | Country of Residence | US |
| <b>Mailing Address of Inventor:</b>                                                                                                                                             |                                                                            |                        |    |                      |    |
| Address 1                                                                                                                                                                       | c/o Welch Allyn, Inc., Attn: Legal Dept.                                   |                        |    |                      |    |
| Address 2                                                                                                                                                                       | 4341 State Street Road                                                     |                        |    |                      |    |
| City                                                                                                                                                                            | Skaneateles Falls                                                          | State/Province         | NY |                      |    |
| Postal Code                                                                                                                                                                     | 13153-0220                                                                 | Country                | US |                      |    |
| All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the <b>Add</b> button.                                     |                                                                            |                        |    |                      |    |

**Correspondence Information:**

|                                                                                                                                       |                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Enter either Customer Number or complete the Correspondence Information section below.<br>For further information see 37 CFR 1.33(a). |                                                                                                         |
| <input type="checkbox"/> An Address is being provided for the correspondence information of this application.                         |                                                                                                         |
| Customer Number                                                                                                                       | 88750                                                                                                   |
| Email Address                                                                                                                         | ipdocket@hblaw.com <input type="button" value="Add Email"/> <input type="button" value="Remove Email"/> |

**Application Information:**

|                                         |                                                                            |                                                      |    |
|-----------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------|----|
| Title of the Invention                  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                                                      |    |
| Attorney Docket Number                  | 3022036 US05                                                               | Small Entity Status Claimed <input type="checkbox"/> |    |
| Application Type                        | Nonprovisional                                                             |                                                      |    |
| Subject Matter                          | Utility                                                                    |                                                      |    |
| Total Number of Drawing Sheets (if any) | 14                                                                         | Suggested Figure for Publication (if any)            | 1A |

**Filing By Reference :**

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this

|                                                        |                          |                                            |
|--------------------------------------------------------|--------------------------|--------------------------------------------|
| Application number of the previously filed application | Filing date (YYYY-MM-DD) | Intellectual Property Authority or Country |
|                                                        |                          |                                            |

|                                           |                                                                            |                        |              |
|-------------------------------------------|----------------------------------------------------------------------------|------------------------|--------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                           |                                                                            | Application Number     |              |
| Title of Invention                        | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |

**Publication Information:**

|                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)                                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> <b>Request Not to Publish.</b> I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application <b>has not and will not be</b> the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing. |

**Representative Information:**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                              |                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------------------|
| Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing. |                                                  |                                              |                                                         |
| Please Select One:                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input checked="" type="radio"/> Customer Number | <input type="radio"/> US Patent Practitioner | <input type="radio"/> Limited Recognition (37 CFR 11.9) |
| Customer Number                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 88750                                            |                                              |                                                         |

**Domestic Benefit/National Stage Information:**

|                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                          |                          |               |                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|--------------------------|---------------|-------------------------|
| This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.<br>When referring to the current application, please leave the application number blank. |                 |                          |                          |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                                                                                                                      | Pending         |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                                                                                                            | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |               |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                               | Continuation of | 14268666                 | 2014-05-02               |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                                                                                                                      | Patented        |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                                                                                                            | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 14268666                                                                                                                                                                                                                                                                                                                                                                                                      | Continuation of | 14103219                 | 2013-12-11               | 8750974       | 2014-06-10              |
| Prior Application Status                                                                                                                                                                                                                                                                                                                                                                                      | Patented        |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                                                                                                            | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 14103219                                                                                                                                                                                                                                                                                                                                                                                                      | Division of     | 13488520                 | 2012-06-05               | 8630699       | 2014-01-14              |
| Prior Application Status                                                                                                                                                                                                                                                                                                                                                                                      | Patented        |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                                                                                                            | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 13488520                                                                                                                                                                                                                                                                                                                                                                                                      | Continuation of | 11591619                 | 2006-11-01               | 8214007       | 2012-07-03              |
| Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button.                                                                                                                                                                                                                                                                                         |                 |                          |                          |               |                         |

|                                           |                                                                            |                        |              |
|-------------------------------------------|----------------------------------------------------------------------------|------------------------|--------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                           |                                                                            | Application Number     |              |
| Title of Invention                        | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |

**Foreign Priority Information:**

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX), the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

|                                                                                                        |                      |                          |                                          |
|--------------------------------------------------------------------------------------------------------|----------------------|--------------------------|------------------------------------------|
| <a href="#">Remove</a>                                                                                 |                      |                          |                                          |
| Application Number                                                                                     | Country <sup>i</sup> | Filing Date (YYYY-MM-DD) | Access Code <sup>i</sup> (if applicable) |
|                                                                                                        |                      |                          |                                          |
| Additional Foreign Priority Data may be generated within this form by selecting the <b>Add</b> button. |                      |                          |                                          |

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <input type="checkbox"/> This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.<br>NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA. |
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| <b>Application Data Sheet 37 CFR 1.76</b> |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                           |                                                                            | Application Number     |              |
| Title of Invention                        | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

## Applicant Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                |                                                                        |            |
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| Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                |                                                                        |            |
| <b>Applicant 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                |                                                                        |            |
| If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. |                                                                |                                                                        |            |
| <input type="button" value="Clear"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                |                                                                        |            |
| <input checked="" type="radio"/> Assignee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="radio"/> Legal Representative under 35 U.S.C. 117 | <input type="radio"/> Joint Inventor                                   |            |
| <input type="radio"/> Person to whom the inventor is obligated to assign.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                | <input type="radio"/> Person who shows sufficient proprietary interest |            |
| If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                |                                                                        |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                |                                                                        |            |
| Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                |                                                                        |            |
| If the Applicant is an Organization check here. <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                |                                                                        |            |
| Organization Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Welch Allyn, Inc.                                              |                                                                        |            |
| <b>Mailing Address Information For Applicant:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                |                                                                        |            |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4341 State Street Road                                         |                                                                        |            |
| Address 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                |                                                                        |            |
| City                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Skaneateles Falls                                              | State/Province                                                         | NY         |
| Country                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | US                                                             | Postal Code                                                            | 13153-0220 |
| Phone Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                | Fax Number                                                             |            |

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| <b>Application Data Sheet 37 CFR 1.76</b>                                                |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                                                                          |                                                                            | Application Number     |              |
| Title of Invention                                                                       | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |
| Email Address                                                                            |                                                                            |                        |              |
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### Assignee Information including Non-Applicant Assignee Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                |             |        |
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| <b>Assignee 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                |             |        |
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| NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. |                     |           |          |                     |            |
| Signature                                                                                                                    | /Peter J. Bilinski/ |           |          | Date (YYYY-MM-DD)   | 2015-01-13 |
| First Name                                                                                                                   | Peter J.            | Last Name | Bilinski | Registration Number | 35067      |
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| <b>Application Data Sheet 37 CFR 1.76</b> |                                                                            | Attorney Docket Number | 3022036 US05 |
|                                           |                                                                            | Application Number     |              |
| Title of Invention                        | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |                        |              |

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

**BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE  
ELECTRODE MODULE**

**CROSS REFERENCE TO RELATED APPLICATIONS**

**[0001]** This patent application is a continuation application of, and claims priority and benefit to co-pending U.S. Patent Application Serial Number 14/268,666, filed May 2, 2014, and entitled: “Body Worn Physiological Sensor Device Having a Disposable Electrode Module”, which is a continuation application of U.S. Patent Application Serial Number 14/103,219, filed December 11, 2013, and entitled “Body Worn Physiological Sensor Device Having a Disposable Electrode Module”, now issued U.S. Patent No. 8,750,974 B2, which is a divisional application of, and claims priority and benefit to, co-pending U.S. Patent Application Serial Number 13/488,520, filed June 5, 2012, and entitled “Body Worn Physiological Sensor Device Having a Disposable Electrode Module”, and now issued U.S. Patent No. 8,630,699, which is a continuation application of U.S. Patent Application Serial Number 11/591,619, filed November 1, 2006, and entitled “Body Worn Physiological Sensor Device Having a Disposable Electrode Module” and now issued U.S. Patent No. 8,214,007. All of the aforementioned patent(s) and patent application(s) are herein incorporated by reference in their entirety.

**FIELD OF THE INVENTION**

**[0002]** This invention relates generally to a physiological monitor and more particularly to a body worn physiological monitor.

**BACKGROUND OF THE INVENTION**

**[0003]** Measurements of various physiological parameters are important to the study of the human condition. Physiological measurements can be particularly important in a health care setting, such as in a hospital. One of the more important physiological measurements performed on a patient is the electrocardiogram (ECG), showing the condition of the human heart.

**[0004]** Portable patient monitors have evolved that allow patients to enjoy at least some mobility. Typically a battery operated monitor can be hung on a belt, shoulder strap, or carried by a patient using some other similar hanging arrangement. Sensors, such as ECG electrodes, are affixed to the patient's body, such as with tape, and connected to the battery operated monitor by wires. After a fixed interval of time, or at a low battery indication, the batteries can be

replaced or recharged. One example of a portable patient monitor is the Micropaq wireless patient monitor, manufactured by Welch Allyn, Inc., that permits multi-parameter monitoring and patient alarm capabilities built in a small, rugged, lightweight, patient-wearable device.

**[0005]** Another version of a portable physiological monitor is the heart rate monitor typically used by individuals engaged in an athletic activity. The monitor includes a sensor, which generally makes direct or indirect contact with an individual's chest to monitor heart beats and then by wires, or by wireless techniques, the sensor transmits the sensed heart beat to a nearby microcomputer based monitor and display. Such units generally measure only heart beat and are not capable of doing any of the traditional ECG analysis functions.

**[0006]** A recurrent problem with the portable monitors typically used in healthcare applications is the need for wires from sensors situated on the patient's body to the portable unit. These wires can become tangled and cause discomfort or become unplugged when inadvertently pulled or tugged on. In addition, wire motion can increase ECG noise due to the triboelectric effect. Muscle movement can also increase ECG noise, due to the typical placement of ECG electrodes over major muscles. Moreover, portable monitor battery maintenance (e.g. battery recharging or replacement) can be time consuming and costly.

**[0007]** Another problem is related to the requirement that a medical grade monitor survive multiple defibrillation cycles of at least 360 joules. Conventionally, this requirement has been met by one or more power resistors situated in series with the wire leads of a fixed or portable physiological monitor. The problem is that the physical volume of conventional power resistors is too large for use in a compact monitor application.

**[0008]** Another shortcoming of small sensor devices is that these devices lack the intelligence to vary the amount and type of data transmitted, depending on patient condition. Exercise heart monitors do not transmit a full patient waveform for clinical analysis while medical monitors measure and transmit the full patient waveform, even when the patient is healthy. While transmitting the full patient waveform is the preferred solution from a purely clinical standpoint, such transmission requires significant power to transmit large amounts of data and restricts the design from being small and inexpensive.

**[0009]** Yet another problem is that arrhythmia analysis is a computationally intensive operation not well-suited to existing small portable monitors that presently have no ability to perform arrhythmia analysis.

**[0010]** Therefore, there is a need for a body worn combined physiological sensor and monitor having a disposable sensor, but used and worn by a patient as a single unit directly and non-permanently affixed to a patient's body. Also, what is needed is a physically compact resistive element for protecting a body worn device from damage caused by multiple defibrillation cycles. Also, what is needed is a medical-grade monitor that can intelligently measure and transmit data only as required to alert clinicians that the patient needs additional attention. What is also needed is a body-worn device capable of running arrhythmia analysis through computationally efficient algorithms.

#### SUMMARY OF THE INVENTION

**[0011]** According to one aspect, a body worn patient monitoring device comprises at least one disposable module including a plurality of electrical connections to the body. The electrical connections are coupled to a skin surface of the patient to measure physiological signals of the patient. The at least one disposable module includes a disposable module connector. The body worn patient monitoring device includes at least one internal or external power source to power the body worn patient monitoring device. The body worn patient monitoring device also includes at least one communication-computation module, having a communication-computation module connector to receive physiological signals from the at least one disposable module via said disposable module connector. The communication-computation module also includes at least one microprocessor to actively monitor the patient and to perform a real-time physiological analysis of the physiological signals and a radio circuit to communicate a raw physiological signal or a result of the physiological analysis at a predetermined time or on the occurrence of a predetermined event, via a radio transmission to a remote radio receiver, wherein the at least one disposable module is mechanically and electrically coupled directly to the at least one communication-computation module. The body worn patient monitoring device, including the at least one disposable module and the at least one communication-computation module, is directly non-permanently affixed to the skin surface of the patient.

**[0012]** According to another aspect, a method of providing high voltage circuit protection for a body worn monitor comprises the steps of: providing a substrate that supports one or more electrical connections to a patient's body; determining a print pattern and thickness of a first material having a first resistivity to be printed on the substrate; determining a print pattern and

thickness of a second material having a second resistivity to be printed on the substrate; printing the first material onto the substrate; and printing the second material onto the substrate wherein at least part of the second material overlays the first material.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0013] For a further understanding of these and objects of the invention, reference will be made to the following Detailed Description which is to be read in connection with the accompanying drawings, in which:

[0014] FIG. 1A shows an exemplary body worn physiological monitor having a disposable electrode module;

[0015] FIG. 1B shows a partially unassembled side view of the body worn physiological monitor of FIG. 1A;

[0016] FIG. 1C shows an assembled side view of the body worn physiological monitor of FIG. 1A;

[0017] FIG. 1D shows a bottom view of the body worn physiological monitor of FIG. 1A;

[0018] FIG. 2 shows an exploded perspective view of an exemplary body worn physiological monitor;

[0019] FIG. 3 shows an exploded perspective view of an exemplary computation and communication module;

[0020] FIG. 4A shows an exemplary disposable unit flexible circuit board;

[0021] FIG. 4B shows a partial enlarged view of a portion of the flexible circuit board of FIG. 4A, further showing an exemplary resistive trace having a fillet;

[0022] FIG. 4C shows a partial side elevated view of a portion of the flexible circuit board of FIG. 4A, further showing an exemplary conductive surface overlaying a resistive material;

[0023] FIG. 4D shows a partial side elevational view of the circuit board of FIG. 4A, further showing an exemplary conductive surface having a snap receptacle;

[0024] FIG. 5 shows a block diagram of one embodiment of a body worn physiological monitor having a power source in a disposable unit;

[0025] FIG. 6 shows a block diagram of one embodiment of a body worn physiological monitor having a power source in or connected to the computation and communication module;

[0026] FIG. 7A shows a schematic diagram of a direct connected reference electrode used in conjunction with a body worn physiological monitor;

[0027] FIG. 7B shows a schematic diagram of a virtual reference electrode as used in conjunction with a body worn physiological monitor;

[0028] FIG. 8 shows a schematic diagram depicting one embodiment of an analog switching arrangement provided on a body worn physiological monitor to select a reference electrode configuration;

[0029] FIG. 8A shows an exemplary driven lead circuit topology for use with electrodes of a body worn physiological monitor;

[0030] FIG. 9 shows an exemplary ESIS filter circuit topology with circuit protection;

[0031] FIG. 10 shows an alternative circuit protection to that depicted in FIG. 9;

[0032] FIG. 11 shows a flow chart for an algorithm utilized by a body worn physiological monitor to detect whether a patient has a pace maker;

[0033] FIG. 12 shows a circuit topology of a high pass filter useful for baseline restoration;

[0034] FIG. 13 shows seven graphs of amplitudes plotted versus frequency to illustrate exemplary operation of the circuit of FIG. 12;

[0035] FIG. 14 shows two exemplary positions for a body worn ECG monitor to be non-permanently affixed directly to a patient's body;

[0036] FIG. 15 shows a block diagram of a setup for simulating the effect of patient defibrillation on resistive traces;

[0037] FIG. 16A symbolically shows resistive dots silk screened on a tray;

[0038] FIG. 16B shows a histogram of an exemplary resistive distribution of baked resistive dots; and

[0039] FIG. 17 shows an exemplary ECG waveform.

[0040] Package styling varies slightly between the drawings. Such minor differences, e.g. the case styling of computation and communication module 102, illustrate minor variations in mechanical packaging suitable for use as body worn monitors. Drawings are not necessarily shown to scale.

#### DETAILED DESCRIPTION

**[0041]** A "body worn" device is described herein with regard to certain exemplary embodiments. A "body worn" device is defined herein as a device that is directly, but non-permanently, affixed to a patient's body. A "body worn monitor" is a device that can be directly "worn" on the patient's body as a single unit, including one or more physiological sensors and a communications and computation module to perform at least initial processing of one or more physiological measurements made using one or more physiological sensors. Unlike prior art patient-wearable devices, at least one sensor can be incorporated into the device that makes a direct or indirect (such as by capacitive coupling) electrical connection with the patient's body without the use of external wires from sensors to the device. In addition and unlike athletic heart monitors, a "body worn" monitor can be a full functioning medical grade monitor, e.g. meeting the requirements of European Unions' Medical Device Directive and other applicable industry standards, such as EC-13 for an electrocardiograph. The body worn medical-grade monitor can include a device, for example, such as a pulse oximeter, CO<sub>2</sub> monitor, respiration monitor, or can function as an ECG monitor, incorporating physiological sensors, front end analog electronic signal conditioning circuits, and a microcomputer based computation unit with wireless reporting of measured physiological data, all contained within in a "body worn" package that can be non-permanently affixed directly to a patient's body. A body-worn medical-grade monitor can also include additional measurement capabilities beyond those mentioned here.

**[0042]** FIGS. 1A-1D depict various views of an exemplary body worn physiological monitor 100 having a communication and computation module 102 and a disposable electrode module 110. In this exemplary embodiment, physiological monitor 100 is designed for use as an electrocardiogram (ECG) monitor for obtaining and recording and/or transmitting ECG information, including ECG waveforms and alarms for a person, such as a patient, wearing body worn physiological monitor 100.

**[0043]** FIG. 1A shows an exemplary top view of body worn physiological monitor 100. A crescent shape allows the body worn physiological monitor 100 to be placed on the chest of a patient, and more specifically around the pectoralis major, to allow measurement of lead configuration I, II, or III, or to be placed on the patient's side allowing measurement using a V-lead configuration. Though not shown, multiple body worn physiological monitor 100 units can be used to effectively provide multiple leads. By placing electrodes around the body so that they

are not situated directly atop major muscles, both motion noise artifacts and muscle noise artifacts can be prevented. Moreover, by eliminating cables, noise due to cable motion or compression (i.e. triboelectric effect) can be eliminated.

**[0044]** FIG. 1B shows a side elevated view of physiological monitor 100 having an exemplary attachment mechanism, such as a retention clip 104, to mechanically attach communications and computation module 102 to the top surface of the disposable electrode module 110. Flexible printed circuit layer 101 can be made from a thin insulating material, such as according to this embodiment, a 75 micron thick layer of Mylar®. Typically electrical traces (not shown in FIGS. 1A-1D) on flexible printed circuit layer 101 can be further protected by an insulating covering, analogous to a conformal coating. A formed plastic layer or a cloth with adhesive on one side thereof can be used to cover and protect flexible printed circuit layer 101, as well as to provide an aesthetic outer layer to make the body worn monitor 100 visually appealing.

**[0045]** FIG. 1C shows a side view of physiological monitor 100 in which the communications and computation module 102 has been affixed to disposable electrode module 110. FIG. 1D depicts a view of the underside of exemplary physiological monitor 100 showing one embodiment of disposable electrode module 110 having electrodes 109. In this embodiment, each electrode 109 comprises electrode gel 103 and conductive surface 404 (FIG. 4). Together, electrode gel 103 and conductive surface 404 create a half cell, such as, for example, a Silver/Silver Chloride half cell. Also and according to this embodiment, conductive surface 404 can directly accept the electrode gel 103.

**[0046]** FIG. 2 shows an exploded assembly view of the exemplary body worn physiological monitor 100. As noted with regard to FIGS. 1A-1D, the body worn physiological monitor 100 includes a removable and reusable communications and computation module 102 and a disposable electrode module 110, the later including electrode gels 103 for ECG monitoring and batteries 204 to power communications and computation module 102. A flat planar insulating/adhesive member 105 includes a plurality of openings that are each sized to receive electrode gels 103. The insulating member 105 provides a bottom side cover for the flexible printed circuit layer 101 and augments adhesion to the human body. Electrode gel 103, when attached to an appropriate substrate such as silver-silver-chloride or other substrate, can be used

to establish a relatively low impedance electrical connection between conductive surface 404 (FIG. 4) and the patient's skin.

**[0047]** Electrode gels 103 can adhere to a patient's skin. While electrode gel 103 is typically an adhesive electrode gel, the adhesion offered by electrode gels 103 alone might not give a sufficient holding force for non-permanently affixing body worn physiological monitor 100 to a patient. To achieve a better adhesion of body worn monitor 100 to a patient's skin, insulating/adhesive member 105 can be used to non-permanently affix body worn physiological monitor 100 to a patient. Thus, body worn monitor 100 can be applied to a patient in the same way an adhesive strip is applied, such as for example, those adhesive strips sold under the brand name "BAND-AID®". One exemplary type of foam adhesive suitable for affixing a flexible circuit board to a patient is 1.6 mm adhesive foam from Scapa Medical of Bedfordshire, UK. As shown in FIGS. 1B and 1C (although not to scale), each of the electrode gels 103 extend sufficiently below adhesive layer 105 in order to ensure good electrical connection with a patient's skin surface (not shown). Tab 106, FIG. 1A, allows for easy removal of a protective backing 111 from adhesive layer 105.

**[0048]** Flexible printed circuit layer 101 can include contacts, such as battery clips (not shown), to receive and connect to batteries 204. (It is contemplated that in some future embodiments, a single battery can provide sufficient electrical power.) In the exemplary embodiment, as shown in FIG. 2, batteries 204 can be mounted under respective battery flaps 205 arranged on opposite sides of the flexible printed circuit layer 101. Alternatively, battery clips (not shown) or battery holders (not shown) can be used to provide both mechanical support and electrical connections for each of the batteries 204. One type of battery holder suitable for such use, for example, is the model 2990 battery holder, manufactured by the Keystone Electronics Corp. of Astoria, N.Y. Battery cover 107 provides protection for batteries 204 as well as a surface to press upon when applying electrodes 103 to conductive surface 404. Retention clips 104 can comprise, for example, a plurality of spring fingers with latching clips. Retention clip 104, affixed to disposable electrode module 110, can be used to secure reusable communications and computation module 102 to disposable package 110. Reusable communications and computation module 102 is herein illustrated in a simplified representation, including cover 201, communications and computation printed circuit board assembly 202, and base 203.

**[0049]** FIG. 3 shows a mechanical view of an exemplary reusable communications and computation module 102, as well as a preferred method for making an electrical connection between flexible printed circuit layer 101 in disposable electrical module 110 and communications and computation printed circuit board assembly 202 situated in reusable communications and computation module 102. In this exemplary embodiment, communications and computation printed circuit board assembly 202 can include a plurality of press fit and/or soldered conductive sockets 301 for receiving electrical plug 302, the plug having a corresponding plurality of conductive pins. Each conductive pin shown in plug 302 can correspond to an electrical connection pad on flexible printed circuit layer 101. A row of mechanical sockets 303 can receive the multi-pin row of plug 302. Thus, an electrical connection can be made between each pad of flexible printed circuit layer 101 having a conductive post on plug 302 and each corresponding conductive socket 301 on communications and computation printed circuit board assembly 202. Posts 304 can align and secure each of the cover 201, communications and computation printed circuit board assembly 202, and base 203. Note that in FIG. 3, a simplified drawing of cover 201 omits slots to receive retention clip 104 to affix communications and computation module 102 to disposable package 110. A body worn monitor 100 would typically also include retention clip 104 FIG. 2, or other suitable type of mechanical clip(s), in order to provide a secure mechanical connection between communications and computation module 102 and disposable electrode module 110.

**[0050]** FIG. 4A shows one embodiment of flexible circuit board 101 in an expanded (e.g. unassembled) view. Flexible circuit board 101 is formed on a substrate 406. Substrate 406 can be cut, for example, from a Mylar sheet of suitable thickness. In this embodiment, one battery 204 can be mounted adjacent to a conductive surface 404. Conductive gel 103 (not shown in FIG. 4) can be mounted on the exposed conductive side of a conductive surface 404.

**[0051]** Conductive surface 404 can also be viewed as the electrode portion of a half cell and electrode gel 103 can be considered to be the electrolyte portion of a half cell. In conventional terms of art, the combination of electrode and electrolyte and ECG electrode is typically referred to as a half cell. For example, the combination of a conductive surface 404 and an electrolyte layer (e.g., electrode gel 103) forms a half cell. For convenient quick reference to a half cell structure, the term "electrode" (assigned reference designator "109") is used interchangeably

with "half cell" herein. It is understood that in typical embodiments, electrode 109 comprises conductive surface 404 and electrode gel 103.

**[0052]** Typically, electrodes make use of a circular or square conductive surface. Increasing the ratio of the perimeter of the surface to the area of the surface affects current density distribution and defibrillation recovery.

**[0053]** For convenience, we define the term "annulus" herein and throughout as the region between two simple curves. A simple curve is a closed curve that does not cross itself. Under this definition, an annulus can include substantially square shapes, substantially rectangular shapes, substantially circular shapes, substantially oval shapes, as well as substantially rectangular shapes with rounded corners. Further we include in the definition of annulus, the case of a substantially "U" shaped surface as described by a single closed curve.

**[0054]** One exemplary electrode gel 103 suitable for such use on a body worn monitor is type LT00063 hydrogel supplied by Tyco Healthcare of Prague, Czech Republic. Typically, a conductive surface 404 creates the electrode portion of the half cell. By increasing the ratio of perimeter to area of the circular electrode portion of the half cell, the signal to noise ratio of the input ECG signal can be increased.

**[0055]** As depicted herein on the exemplary circuit layout, two batteries 304 can be connected in series, with one polarity being made available at connection pad 407 from battery connection 402, battery connection 401 creating the series connection between the two batteries, and connection pad 410 providing the second polarity of the series connected batteries. Note that in some embodiments, a single battery alternatively may be used in lieu of the exemplary arrangement or two batteries can be also wired in parallel, depending on the voltage requirements of a particular communications and computation module 102.

**[0056]** Connection pads 408 and 409 electrically couple the signals from electrode gels 103 (not shown in FIGS. 4A-4D) via conductive surface 404 and resistive traces 412 to electrical plug 302 (not shown in FIGS. 4A-4D). Electrode contact pad 405 can be connected via resistive trace 413 to connection pad 411 to provide a direct-connected reference electrode (not shown in FIGS. 4A-4D). Traces 412 extending between conductive surface 404 and connection pads 408 and 409 and trace 413 extending between conductive surface 405 and connection pad 411 can be made from resistive materials including resistive metals, carbon, silver ink, powders, paints, or other material of determinable electrical resistance.

[0057] Resistive traces on flexible circuit board layer 101 replace the bulky power resistors needed by prior art monitors, having electrodes or sensors connected by wires or leads. These resistive traces should survive multiple defibrillation cycles such that body worn monitor 100 remains functional even after one or more attempts to re-start a patient's heart. In order to survive defibrillation, the resistive traces should dissipate that portion of the potentially damaging defibrillation energy that is coupled into the monitor. This fractional portion of the defibrillation energy typically enters body worn monitor 100 from electrodes 109, FIG. 1D (electrodes 109 including conductive surface 404 and electrode gel 103).

[0058] It is desirable that the resistances of the protective resistive traces be in a range between about 1 kilo ohm to about 10 kilo ohms. Below 1 kilo ohm, depending on the resistive material used, it can be more likely that the resistance of the resistive traces 412 and 413 will increase with each successive defibrillation pulse. Above 10 kilo ohms, a high resistance impairs the signal to noise ratio, specifically due to thermal noise, which has a mean square value of  $4 \cdot k \cdot T \cdot R \cdot BW$ , where "k" is Boltzmann's constant, "T" is temperature measured in degrees Kelvin, "R" is resistance in ohms, and "BW" is bandwidth, in Hz, which becomes significant relative to the EC-13 requirement that the noise referred to input be less than 30  $\mu$ V peak-to-valley.

[0059] Power dissipation in the herein described traces can be calculated by  $E^2/R$ , in which E refers to the potential across the trace and R is the resistance of the trace. R can be calculated by  $\rho \cdot L/A$ , where  $\rho$  is the resistivity of the material used to form the trace, L is the length of the trace, and A is the cross-sectional area of the trace.

[0060] In developing resistive traces for use on a flexible printed circuit layer 101, typically formed on a Mylar substrate 406, such as shown in FIG. 4A, various materials were tested. Silver, including silver inks, while useable, was found to be less desirable, because it was difficult to achieve sufficiently thin silver traces on Mylar to achieve high enough resistances. Carbon, including carbon pastes and carbon inks, was also tried and found to be suitable. In order to use carbon however, several additional problems had to be solved. At 1 kilo ohm, the power dissipated by the resistors caused them to degrade across multiple defibrillation cycles. The solution was to make carbon traces in the range of about 8 to 10 kilo ohms. 10 kilo ohm resistances proved to be a good compromise between noise levels, power dissipation by the resistors, and manufacturing tolerances for depositing carbon ink on a Mylar substrate to

dissipate the power from multiple defibrillation cycles. To achieve the desired resistance of about 10 kilo ohms (interchangeably represented herein as "10 k" or "10 k $\Omega$ "), for a given resistivity of the carbon paste, and given trace width and thickness (height), the length of the trace is then defined. In some cases, such as for traces 412, the length needed for a trace run, as between conductive surface 404 and connection point 409, might be longer than the length defined for a particular trace resistance (typically 10 k). In this case, traces can be extended by lengths of silver conductive traces. There can be a short overlay distance, on the order of 5 to 10 mm, in which a silver trace overlaps the carbon trace to provide a more robust connection between the resistive and conductive portions of the traces. Where overlap is used, the overall length of the resistive portion can be adjusted slightly to maintain the desired overall resistance.

**[0061]** Another problem associated with carbon traces was arcing at the interface between the carbon and conductive traces. Arcing was particularly problematic at the abrupt connection between the carbon trace and conductive surface 404. Arcing was also observed to occur between the end section of the carbon trace and conductive surface 404. (Electrode gels 103 create the conductive path to the patient through conductive surface 404 and a layer of conductive gel.)

**[0062]** According to one solution to the above noted arcing problem, as shown in FIG. 4B, a rounded (fillet) section 430 of carbon trace can be added at the interface to conductive surface 404. A fillet or "tear drop" shape causes the carbon trace to become gradually wider as it connects to conductive surface 404 and relieves the electrical potential stress at the interface.

**[0063]** An alternative solution to the arcing problem is shown in FIG. 4C, wherein carbon can be laid down beyond the trace (412) to include a pattern of conductive surface 404 formed from carbon. A carbon annulus pattern can be deposited before the conductive surface 404 is deposited. Conductive surface 404 can then be deposited as an overlay over the earlier formed carbon annulus shape. Finally, conductive gel 103 can be attached to the conductive surface layer (the carbon layer residing between conductive surface 404 and the Mylar substrate used as flexible circuit board 101). Both of the aforementioned arcing solutions can be used together. It should also be noted that conductive surface 404 can be formed from suitable materials other than silver, including, for example, materials such as silver chloride.

**[0064]** Arcing can also occur between the resistive traces and other (typically silver) conductive traces on the flexible circuit board 101. Trace to trace arcing can be suppressed by allowing sufficient spacing between the traces. Generally a minimum spacing of about 3 mm/kV, as required by ASNI/AAMI DF80:2003 57.10 BB, has been found to be sufficient to prevent trace to trace arcing from a defibrillation event. Closer trace spacing, as close as 0.01 mm/kV, can be employed successfully by first applying an insulating dielectric layer, similar to a conformal coating, over the surface of flexible circuit board 101 that covers most of the substrate and traces. The insulating dielectric layer can be prevented from forming or adhering to conductive surface 404, such as by use of a mask during application of the insulating layer.

**[0065]** In an alternate embodiment, as depicted in FIG. 4D, a snap device can be added to conductive surface 404 to accept a manufacture snap-on electrode (not shown), such as, for example, the ConMed Cleartrace line of ECG electrodes including the model 1700 Cleartrace electrode manufactured by the ConMed Corp. of Utica, N.Y. or similar type electrodes made by the 3M Corp. of St. Paul, Minn. When designed to accept a snap-on electrode, the conductive surface 404 is typically smaller than in the previous embodiment. A receptacle snap 432 for receiving the commercial snap-on electrode can be inserted by any suitable method, such as by press fitting or other fastening method, into conductive surface 404, typically also penetrating through substrate 406. In this embodiment, arcing can be similarly suppressed in this embodiment by adding a fillet to the carbon-conductive surface interface and/or depositing a conductive surface 404 over a carbon layer as previously described.

**[0066]** Example: Resistive traces and an annulus were tested on a substrate formed from CT3 heat stabilized treated polyester (75 microns thick), such as manufactured by the MacDermid Autotype Corp. of Schaumburg, Ill. Resistive traces were silk screened onto the substrate using 7102 carbon paste conductor from the DuPont Corporation of Wilmington, Del. The carbon paste conductor was deposited through a 43T silk screen mesh. The substrate containing the paste deposit was then cured inside a fan assisted air circulated oven at 120°C for a period of 5 minutes. The traces formed were about 55 mm long and 2 mm wide, having an overall thickness of about 7.5 microns. The initial measured resistance of each trace was about 14 kilo ohms. After each trace was subjected to 3 defibrillation cycles, the measured resistance increased to about 15 kilo ohms. Over a 3 mm length, the trace widens to about 5 mm, terminating into a carbon annulus with an outer diameter of about 20 mm and an inner diameter of about 10 mm. A

silver layer of PF-410 silver ink from the Norcote Corp. of Eastleigh Hampshire, UK was then deposited over the carbon annulus, also to an overall thickness of about 7.5 microns. The deposition of the silver layer was via the silk screen printing method, in which a 90T silk screen mesh was used. The substrate containing the deposited silver ink was then cured inside a fan assisted air circulated oven at 120°C for a period of 15 minutes. A third dielectric insulating layer comprising SD2460, components A & B (dielectric and hardener), manufactured by Lackwerke Peters GmbH + Co KG of Kempen, Germany, and having a thickness of approximately 13 microns was then deposited over the traces and substrate, but not over the annulus. (The electrodes were formed by attaching a conductive gel to the annulus. The conductive gel used was LT00063 hydrogel from Tyco Healthcare of Prague, Czech Republic.) Again, the silk screen printing process was used to deposit the dielectric layer through a 90T screen mesh. The substrate was placed again into a fan assisted air circulated oven at 120°C for a period of 30 minutes.

**[0067]** Example: Silver traces for use as conductive (not resistive) traces on a body worn monitor circuit substrate were formed from a silver paste that was silk screened onto a Mylar substrate. 45 mm long traces had a measured resistance in a range of 3.5 to 6 ohms, 75 mm traces had a measured resistance in a range of 6.5 to 13 ohms, and 105 mm traces had a measured resistance in a range of 10 to 16 ohms. The deposition of the silver layer was performed via the silk screen printing method in which a 90T silk screen mesh was used. The substrate containing the deposited silver ink was then cured inside a fan assisted air circulated oven at 120°C for a period of 15 minutes.

**[0068]** FIG. 15 diagrammatically depicts an exemplary test setup used to simulate the effect of a patient defibrillation on resistive traces. Defibrillator 1501 was used to apply multiple defibrillation shocks of 360 Joules each to the 100 ohm resistor 1502. The 100 ohm resistor according to this setup simulated a patient's body. Note that most of the defibrillation energy goes into the patient's body by design, to restart the patient's heart. Resistive traces 1503 and 1504 were wired across resistor 1502, also as shown in FIG. 15, in order to simulate the electrical circuit that would be formed between the resistive traces in a body worn monitor situated on a patient undergoing defibrillation. Neon bulbs 1506 were used as part of the protection circuitry that can be used with resistive traces in a body worn monitor. 400 ohm safety resistor 1505 was present as a precaution to limit short circuit current in the event of a test

setup failure. Both the 100 ohm resistor (simulating human skin resistance) and the 400 ohm safety resistor were used in accordance with medical specification AAMI EC-13. Following 3 defibrillation shocks of 360 Joules each, the measured resistance of the 10 k carbon track changed from 10 k to 11 k following the first shock, to 13.1 k following the second shock, and to 13.2 k following the third shock. The measured resistance of the 9.7 k trace changed from 9.7 k to 11.6 k following the first shock, to 13.0 k following the second shock, and finally to 13.2 k, following the third shock. In a subsequent related test, the 100 ohm resistor was replaced by a closer simulation in the form of a fresh (dead) chicken. The setup otherwise remained the same as shown in FIG. 15. In this case, the resistance as measured on each of the test resistive traces changed from 10.7 k to 10.25 k, and from 8.5 k to 9.4 k, following multiple defibrillations. During testing, it was also noted that the change in measured resistance of the resistive traces was generally consistent. It was also noted that as a given resistive trace was increased, the  $(\Delta R \text{ \{caused by defibrillation\}} / R \text{ \{net trace resistance\}})$  can be minimized.

[0069] The screen printing technique for laying down resistive traces was further investigated by printing a plurality of small carbon resistive dots 1601 of about 20 mm in diameter using a 7102 carbon ink applied by a screen printer (not shown). The carbon dots 1601 were laid out on a tray 1602 as shown in FIG. 16A, for baking in an oven. A manually operated squeegee (not shown) was used to apply the resistive dots 1601 to the tray 1602 through a mask (not shown). It was determined that control of thickness during application was one important factor for controlling the distribution of resistance. It was noted that during manual application, the variation of resistance depended upon the distance between the plurality of dots 1601 and the person applying the resistive paste, and that the pressure applied using the squeegee could also affect the final resistance by a factor of two. It was further noted that "even" heating across the tray 1602 was advantageous during oven drying, although this factor was found to have less effect on the final dot resistance distribution. A resistance distribution of the baked and measured dots 1601 is shown in the histogram of FIG. 16B. This testing indicated that production traces laid down on a substrate, such as Mylar, for use in a body worn monitor should preferably be printed using a semi-automatic screen print process, such as by a screen printing mechanical roller process. A digital multimeter ("DMM") with probes placed at each edge of a dot 1601 was used to measure the resistance from one edge of the dot to the other. It was found that uniform application of ink was important to keeping a tight distribution of resistance, with

even heating having a smaller influence on the distribution of the resistance of the test dots. Since a trace with too low a resistance has a greater  $\Delta R/R$ , and higher probability of failing and very high resistance traces result in worse S/N ratio, it is important to have a reasonably tight tolerance on the trace resistance.

[0070] FIG. 5 shows a block diagram representative of one embodiment of the body worn physiological monitor 100. Physiological sensors 501 (such as electrodes 109 in FIG. 1D) can be electrically coupled to electromechanical connector 502 (as by the resistive traces 412 shown in FIG. 4). Connector 502 serves to electrically couple communications and computation module 102 to a disposable electrode module 110 (FIG. 2). Secondary connector 503 can also electrically couple one or more additional sensors, which can be situated both on and off of disposable electrode module 110, to electromechanical connector 502 for electrical coupling along with physiological sensor signals 501 to communications and computation module 102 (shown in FIG. 1) via electromechanical connector 505. Signals received by the communications and computation module 102 can be electrically coupled into communications and computation module 102 via electronic protection circuits 506 and/or filters, such as ESIS filters 507.

[0071] Signals can be limited or clipped in amplitude, as needed, by protection circuit 506, and filtered by filter 507. One or more analog amplifiers 508 can be used to amplify the amplitude limited and filtered signals. In the exemplary body worn ECG monitor, amplifiers 508 can advantageously be differential amplifiers to amplify the difference signal (e.g. the ECG "vector") between two ECG electrodes. The electrical output of amplifiers 508 can be electrically coupled to both PACER circuits 509 and ECG circuits 510. PACER circuits 509 are described further below. ECG circuits 510 perform several functions, including "trace restore", low pass filtering (anti-aliasing), high pass filtering, and amplification (gain). Low pass filtering filters signals according to the Nyquist criterion to avoid aliasing later when the signals are digitized by analog to digital converter (ADC) 516. The high pass filter causes the input to be AC coupled from a roll off frequency of about 0.05 Hz, as specified by industry ECG standards. Gain is required to cause the small pre-amplified potentials from physiological sensors (such as electrodes 109) to more closely match the available dynamic range of the digitizing ADC 516. Note that ADC 516 can be a dedicated ADC chip or can be included in a microcomputer integrated circuit, such as a microcomputer serving as microprocessor 512.

**[0072]** A microprocessor, such as microprocessor 512, is defined herein as synonymous and interchangeable with the terms "microcomputer", "microcontroller", and "microprocessor". Such microprocessors are also interchangeably represented herein as " $\mu$  P" or " $\mu$  C". Further, any microprocessor disclosed herein can be replaced by any integrated device that can perform the function of a microprocessor, such as, but not limited to, a field programmable gate array ("FPGA") programmed to perform the functions of a microprocessor.

**[0073]** Typically, one or more differential amplifiers can be dedicated to particular difference voltages associated with physiological sensors 501 or 504, but it should be noted that one or more amplifiers 508 can also be multiplexed by techniques as known in the art, to serve multiple physiological sensors using a lesser number of amplifiers. Similarly, one or more ADCs 516 can serve two or more signals from physiological sensors 501 or 504 using techniques such as multiplexing in time that is digitizing one physiological sensor difference signal at a time sending a digital result to a next stage one after the other. ECG circuits 510 and PACER circuits 509 are referred to in the plural, since there can be individual circuits for each measured physiological signal, such as for each measured ECG vector.

**[0074]** Electrical power from power source 515 can be regulated by regulator 514 and distributed as regulated voltage 517 to most function blocks (as represented herein by the label "POWER"). Each of these function blocks also has a control ("CTRL") input 511 from microprocessor 512, allowing these circuits to be disabled, when not needed, in order to save battery power. When viewed over time, most of the ECG waveform does not contain useful information since there is significant "dead time" between heart beats. Therefore, for example, from the end of a "T wave" at the end of one heart beat to the beginning of a "P wave" at the beginning of the next heartbeat, circuits can be powered down (in a device "sleep mode") to save on the order of 60% of the energy stored in the power source that would have otherwise been used during this dead time.

**[0075]** FIG. 17 shows an exemplary ECG waveform. In brief, the P wave can be related to the electrical current causing atrial contraction. The QRS complex can be related to ventricular contraction of the left and right ventricles. The Q wave can be related to electrical current traveling through the intraventricular septum, while the R and S waves can be related to the ventricles contracting. The T-wave is due to the re-polarization of the ventricles. Usually, atrial re-polarization occurs atop the QRS complex, and being much smaller than the QRS complex, is

not seen. The ST segment connects the QRS complex to the T-wave. Irregular or missing waves may be indicators of cardiac issues including: ischemic tissue, e.g. due to myocardial infarction, bundle branch block, atrial problems (specifically P-wave abnormalities), pericarditis, and electrolyte disturbance.

**[0076]** Generally, power source 515 can include one or more "button" cells typically disposed on disposable electrode module 110; however, the block diagram of FIG. 6 shows an embodiment of a body worn physiological monitor 100 where power is supplied by a power source located on, or connected to communications and computation module 102 instead of residing within disposable electrode module 110.

**[0077]** Beyond power saving considerations, it can also be desirable in some embodiments of body worn physiological monitor 100 to put the microcontroller and/or other circuits, including particularly digital circuits, into a sleep mode during an ADC conversion cycle to minimize pickup of self generated electrical noise and to minimize power use. Preferably, the A/D circuit can acquire multiple samples and buffer the samples, before awakening the microprocessor, which then can batch-process the data. Buffering can be set to match the patient's heart rate, as there is no significant clinical benefit to analyzing every sample as it is taken.

**[0078]** Turning back to the input circuits, typically amplifiers 508 are differential or instrumentation amplifiers useful to selectively amplify desired difference signals between connector terminals (such as an ECG vector), while rejecting common mode signals (such as interfering signals that appear simultaneously on both connector terminals). Beyond using a differential amplifier, other techniques can be advantageously used to further reduce common mode pickup (CMR) and thus to improve the common mode rejection ratio (CMRR) of the input amplifier stages of body worn physiological monitor 100. CMR is of particular concern with regard to body worn physiological monitor 100 because of the proliferation of potentially interfering electromagnetic fields, such as from 50 Hz or 60 Hz AC power line distribution throughout a hospital. For example, many fluorescent ceiling lamp fixtures generate strong 60 Hz alternating current (AC) electromagnetic fields that can appear as common mode signals on physiological sensors 501, such as ECG electrodes 109.

**[0079]** FIG. 7A shows one embodiment in which body worn physiological sensor 501 comprises a plurality of ECG electrodes 109 and 701. Two electrodes 109 generate an ECG difference potential for patient 703. A third electrode, reference electrode 701 can be electrically coupled to electronics common 704 (or other potential level) and can be used to improve CMR. In this embodiment, the electronics common 704 (shown as the negative terminal of the battery in FIG. 7A) can be directly tied to the patient in the vicinity of electrodes 109. Thus, the electronics common of the electronic circuits in communications and computation module 102 can be made to more closely follow any change in potential in the vicinity of electrodes 109. Reference electrode 701 can be particularly helpful to ensure that inputs 109 remain within a reasonably narrow common mode range, such as by reducing a 60 Hz potential that would otherwise appear to move the electronics common 704 at 60 Hz with respect to electrodes 109.

**[0080]** In another embodiment as shown in FIG. 7B, virtual electrode 702 performs a similar function as previously described with regard to reference electrode 701. In this embodiment, instead of creating a DC-coupled reference electrode, electrode 701 is replaced by the capacitive coupling between flexible printed circuit layer 101 and the patient 703, resulting in a virtual electrode 702 with an AC coupled common. Such AC coupling increases with decreased distance between flexible printed circuit layer 101 and the patient and can advantageously reduce 60 Hz common mode signals (AC signals).

**[0081]** In yet another version of a directly connected electrode 701, as shown in FIG. 8A, electrode 701 can be actively driven by an electrical output from communications and computation module 102. Typically, an operational amplifier (OpAmp) or other type of amplifier can be used to create a "driven lead". Driven lead circuits can be used to further improve CMR over passive electrodes 701 as shown in FIG. 7A. An exemplary circuit suitable for use to drive an electrode 701 is shown in FIG. 8A. Amplifiers (OpAmps) 810 and 811 buffer the high impedance signals from electrode 1 and 2 (exemplary electrodes 109). Difference amplifier 508 conveys the difference signal (such as an ECG vector) as previously described. The two 10 kilo ohm resistors provide an average of the common mode signals appearing simultaneously at the inputs of buffer amplifiers 810 and 811. The inverting low pass filter built around OpAmp 812 inverts the averaged common mode pickup signal (at electrodes 1 and 2) and applies that signal out of phase (180° phase shifted) to a directly connected driven electrode (such as electrode 701). By applying the average common mode signal to the driven electrode,

amplifier 812 effectively suppresses common mode signals at electrodes 1 and 2 within the effective bandwidth of the negative feedback loop by active noise cancellation. In theory, a virtual electrode 702 could be similarly driven, but the voltage requirements to drive a capacitively coupled common electrode are high enough to make a "driven virtual electrode" a less practical option. Thus, it can be seen that a reference electrode can be a passive connection or an actively driven connection.

**[0082]** It can also be desirable to have more than one CMR technique available. For example, in a low noise environment, a lower power reference electrode might be used for CMR. Then if the noise increases to a level where the reference electrode provides insufficient CMR, the body worn monitor can switch to a driven lead more suitable for CMR in a high noise environment. In this embodiment, a particular CMR configuration can be selected by electronic switching. FIG. 8 shows one such exemplary switching block represented as reference electrode switch 801. Microprocessor  $\mu$  P) 512 can control reference electrode switch 801 to select direct connected electrode 701, virtual electrode 702, or directly connected electrode 701 additionally driven by a driven lead circuit 802. It should also be noted that in the embodiment of FIG. 8, when virtual electrode 702 provides sufficient CMR, electrode 701 can be used as a third electrode, thus allowing body worn monitor 100 to simultaneously measure two different heart vectors.

**[0083]** FIG. 9 shows one embodiment of an exemplary defibrillation protection circuit (506) and ESIS filter 507. As shown in FIG. 9, electrodes 109 can be connected via input resistors R91 and R92. Gas discharge tubes, such as neon bulbs L1 and L2, can be used for over voltage protection by firing at a designed voltage to prevent large potentials from appearing at the input leads to amplifier 508. The gas discharge tubes can be disposed on either disposable electrode module 110 or on the communication and computation module 102. Defibrillation protection resistors R91 and R92 can further reside in disposable electrode module 110, such as in the form of the resistance of traces 412.

**[0084]** ESIS filters 507 can be used to satisfy AAMI standard EC13 on Electrosurgical Interference Suppression (ESIS). Standard EC13 addresses the ability of an ECG monitor to display and process ECG signals in a satisfactory manner while connected to a patient on whom an electrosurgical device is being used. Without such suppression, the high RF output of an electrosurgical device can render ECG monitoring impossible and or render the monitor unusable. Resistors R93 to R98 and capacitors C91 to C96 form cascaded low pass filter

sections (e.g. R93-C1). Three cascaded single pole filters are shown on each input leg of amplifier 508 as an example; more or less stages can also be used. It is also not necessary for each section of the cascaded filter to have identical values or roll off points in the frequency domain to create a specific response, e.g., Bessel, Chebychev, or other filter response known to those skilled in the art. Also, ESIS filters are not limited to cascaded single pole filters and can take other forms as known in the art.

**[0085]** Test circuit 906 can provide a relatively sharp transient signal for testing the PACER circuit described below as part of a body worn monitor 100 "power on self test ". Resistors R99 and R100 can pull the output of the differential amplifier 508 allowing the microcontroller (512) to detect which electrode, if any, has detached, much as a "lead failed" detection is accomplished by ECG monitors having leads. Body worn monitor 100 does not use leads, but it is still possible for one or both of the physiological sensors to move free of a patient's body. Such disconnects can occur in situations in which body worn monitor 100 partially moves away from the body to which it is non-permanently affixed. The input impedance at one or both of the electrodes 109 changes in a sensor off (sensor disconnect) event. When a patient is attached, amplifier 508 typically has an output voltage of near zero volts. However, if one of the electrodes 109 comes off, resistors R99 or R100 cause the output of amplifier 508 to move to a most positive output ("positive rail") or to a most negative output ("negative rail"). Note that the negative rail can be a small voltage near zero, in the case of single supply circuit operation, and that both inputs could be pulled to the same rail. Lead-fail detection can also be analyzed to determine when the device is attached to the patient and then to automatically enter full operational mode. Such analysis can be done at a low frequency.

**[0086]** The ESIS filter 507 also can cause a stretching in the time domain of a pacer pulse so that the event is recorded by at least one sample, even though the pacer pulse itself is of small duration compared to the ADC sample rate and the pacer pulse is likely to occur between samples.

**[0087]** FIG. 10 shows an alternative circuit to accomplish over voltage protection, such as is required during defibrillation. In FIG. 10, diodes 1001 prevent the electrode potentials from going much more than one diode voltage drop above Vcc or below ground and resistors R91 and R92 limit current. Using circuit protection, such as gas discharge tubes L1 and L2 (FIG. 9) and/or diodes 1001 (FIG. 10) combined with resistances R91 and R92, typically in the form of

resistive traces 412, a body worn device can survive multiple defibrillation cycles of at least 360 joules.

[0088] PACER circuit 509 detects pacemaker pulses. One reason to detect a pacemaker is to prevent the ECG circuitry from inadvertently registering the regular pulses from a pacemaker as an actual heart rhythm. Separation of a pacemaker signal from signals generated by the heart is important both to generate accurate ECG analysis results as well as to correctly detect the absence of an actual heart rhythm. For example, a pacemaker continues to function even where a human heart has completely failed.

[0089] A pacer event (pacemaker signal) is typically a narrow pulse typically less than 100 microseconds wide. Because of the capacitance between the pacer in a patient and an ECG circuit, an otherwise relatively square pacer pulse as administered at the patient's heart by a pacemaker, can appear to an ECG monitor as a pulse with a negative undershoot and an exponential return to zero that could inadvertently mimic a QRS signal. A pacer signal, however, can be recognized by an analog differentiator and alert microprocessor 512 to the presence of a pacer and to disregard the refractory period of the corresponding R-C recovery due to the pacer signal. The pacer detection circuit or PACER circuit can generate a microprocessor interrupt to inform the microprocessor that a pacer event occurred and to mark a corresponding physiological signal in time as related to a pacer event. PACER circuit 509 can also cause one or more pacer related circuits to automatically power down for power saving, where it is determined that a patient is not using a pacemaker.

[0090] FIG. 11 shows an algorithm useful to determine if the pacer circuit should be enabled. A typical PACER detection circuit uses a significant percentage of the energy available from a power source such as batteries 204. If a PACER signal is not detected, such as at power up of body worn monitor 100, the pacer circuit can be automatically disabled allowing for a longer battery life. Since typical PACER circuits can use several amplifiers (OpAmps), they can consume up to one third of the analog power, therefore securing the PACER circuits when they are not needed (i.e. the patient does not have a pace maker) can cause a significant improvement in battery life. The algorithm also can provide checks to determine if a demand type pace maker begins operation (which might be inactive at power up of body worn monitor 100) by analyzing beat variability. While it can be advantageous to have the body worn device automatically sense the presence of a pacemaker and to enable the PACER detection circuit, the

choice as to whether to enable or disable the PACER circuit can also be done by externally configuring the body worn device. Such external configuration can be done through a hardwired communication connection cable or via communications and computation module 102, in which communications and computation module 102 is a two-way radio transceiver communication device capable of receiving a configuration command sent for a remote radio transceiver. The radio could be 802.11 compliant, but generally would use a lighter-weight (simpler) protocol that can be more energy efficient. A suitable lighter weight protocol could be proprietary, or standards-based, such as ZigBee or Bluetooth. A body worn physiological monitor 100 is particularly well suited for use in hospital environment as part of an integrated wireless monitoring network. The details of such monitoring networks are disclosed in U.S. patent application Ser. No. 11/031,736 entitled, "Personal Status Physiological Monitor System and Architecture and Related Monitoring Methods", which is incorporated by reference herein in its entirety.

**[0091]** FIG. 12 shows a high pass filter (HPF) suitable for use in ECG circuits block 510. An advantage of a 0.5 Hz HPF is faster recovery from DC offsets due to patient movement, defibrillation, electrocautery, etc. However ST segment analysis is negatively impacted if HPF cutoff is greater than about 0.05 Hz. Thus, it is preferable to have the ability to change between a 0.5 and 0.05 Hz cutoff frequency. The high pass filter of FIG. 12 is implemented by a low pass filter configured as an inverting amplifier in a negative feedback circuit to give a net effective high pass transfer function from circuit input to output. The corner frequency of the composite filter can be adjusted by switching in resistor R2'. Alternatively, S1 can be switched at a periodic rate to place a duty cycle on C. Note that the frequency of switching of S1 should be fast with respect to the corner frequency of the anti-aliasing low pass filter. The graphs A-D of FIG. 13 further illustrate the performance of the exemplary filter of FIG. 12. These graphs show normalized amplitude on the vertical axis plotted against frequency on the horizontal axis. FIG. 13, graph A represents a raw input signal. FIG. 13, graphs B and C are Bode Plots representing the high and low-pass filter sections. After applying filter responses B & C to input Data A, filtered data D is the result. The HPF cutoff can be 0.5 Hz or some lower value depending on whether R2' is switching in or if C is duty cycled.

**[0092]** Another method to achieve this frequency change is to use digital filters implemented on Microprocessor 512 to reverse the effects of the 0.5 Hz HPF, then implement a digital HPF at a lower cutoff frequency, 0.05 Hz, for example. The response of the 0.5 Hz filter should be known to implement the inverse filter. This response can be measured using microprocessor 512 to trigger the test circuit 906 to create an impulse,  $H(s)$ . The inverse response is the  $[1-H(s)]$  (FIG. 13, graph E) and this inverse filter can be digitally implemented by methods familiar to those skilled in the art.  $H'(s)$  is the frequency response of the new HPF with lower cutoff frequency, nominally 0.05 Hz. The digital filter for  $H'(s)$  is digitally generated (F) and applied along with  $[1-H(s)]$  (FIG. 13, graph E), resulting in the frequency response displayed in FIG. 13, graph G. A high pass filter suitable for use in ECG circuits block 510 can be implemented in full or in part by software that can run on microprocessor 512.

**[0093]** FIG. 14 shows how a body worn monitor 100 configured as an ECG monitor can be situated on a patient in at least two different orientations to measure different heart vectors. A primary heart vector is measured by orientation from the patient's right shoulder to the left hip, as shown by position 1401. An alternative position 1402 can be more suitable where there is injury or where patient anatomy is such that it causes the preferred position 1401 to be less desirable. Also, body worn monitor 100 can be affixed to the side of patient 703 (similar to a measurement made by a conventional ECG "V" lead) or back of a patient 703 (such as where a patient needs to sleep on their stomach) to monitor still other ECG vectors (not shown). In effect, a body worn monitor 100 can be placed to pick a particular vector that can be traversed by the electrodes 109. For example at least the first three primary heart vectors, i.e. I, II, and III, can be made conveniently available in this manner.

**[0094]** While illustrated with an internal battery, it is important to note that a body worn physiological monitor 100 can be powered by either an internal power source only, an external power source only, or by an internal or an external power source. An internal power source can be a renewable power source, such as a rechargeable battery.

**[0095]** Another type of internal power source is a Peltier device operated in reverse, also called a Seebeck device. Seebeck discovered that a conductor generates a voltage when subjected to a temperature gradient. Thermoelectric couples are solid-state devices capable of generating electrical power from a temperature gradient, known as the Seebeck effect. (By contrast, the Peltier effect refers to the situation where electrical energy is converted into a

temperature gradient.) A Seebeck device "couple" consists of one N-type and one P-type semiconductor pellet. The temperature differential causes electron flow from hot to cold in the N-type couple and hole flow from hot to cold in the P-type couple. To create an electromotive force (EMF), the following connections are made: On the cold side (i.e. the side that is exposed to room temperature) the pellets are joined and on the hot side (i.e. the patient side), the pellets are connected to a load, such as the computation and communication module 102. The open circuit voltage of a Seebeck device is given by  $V = S \Delta T$ , in which  $S$  is the Seebeck coefficient in volts/ $^{\circ}\text{K}$  and  $\Delta T$  is the temperature difference between the hot and cold sides. It is a challenge today to completely power the computation and communication module 102 from a Seebeck device that is of the same size as the computation and communication module 102. Presently, a Seebeck device may only provide supplementary power, but as electronics migrate toward lower power and Seebeck coefficients and thermocouple densities improve, a Seebeck device can be a viable long-term power solution for a patient-worn monitor. Other methods of generating energy, such as mechanical (as is used in some wrist watches) and solar, can also be viable methods for providing a renewable self-contained power source for a body worn monitor.

[0096] Turning to analysis routines suitable for use on a body worn monitor, typically, ECG beat picking, such as by using wavelet or Fourier transforms and/or matched filter analysis in the time domain can be computationally expensive. Modeling the QRS pulse as three triangles with alternating polarities creates a rough matched filter for the QRS pulse. Taking the second derivative results in impulse functions at the peaks of the triangles (where the first derivative is discontinuous), and all other points are zero. The second derivative method also makes the convolution with incoming data extremely efficient as most of the multiplies have a 0 as the multiplicand and requires minimal computation. The result can then be integrated twice to produce a matched-filter output, which can be fed into the beat-picking algorithm that provides fiducial marks. Using a second matched filter that is sinusoidal in shape and with appropriate discriminators, the system can provide indications of Life Threatening Arrhythmias (LTA); that is, Asystole, Vfib, and Vtach. While the accuracy of this system is less competitive with a high-end Arrhythmia solutions such as those provided, for example, by Mortara, the filters can be tuned to err toward false positives and upon a positive LTA response, activate transmission of full waveforms.

[0097] Research has also shown that analysis of the R-R portion of the ECG waveform interval statistics can provide a method to predict atrial flutter. Applying this and other low-computational cost methods can allow a body worn monitor device to begin transmitting full waveforms for either clinical or algorithmic analysis by a more powerful engine, when the probability of other arrhythmias is high. Transmitting only the R-R intervals of ECG waveforms is an example of a lossy data compression method. R-R intervals comprise a string of data and the string of data can also be compressed. Lossless or lossy data compression of the entire waveform can be implemented to save battery life, including not transmitting (or perhaps not even sampling) data between the T and the P wave. Because data compression results in less data to transmit, the power saved may offset the computation cost of the data compression.

[0098] While we have referred often to ECG applications herein, the application of low-intensity computational methods as a power saving measure apply equally well to other types of low power-sensors, including, but not limited to EEG, SPO<sub>2</sub>, temperature, and invasive or non-invasive blood pressure measurements. Whether the body-worn medical-grade monitor performs complex analysis or simply compares a single numeric value to a single numeric limit, the device can function in a low-power radio state until a predetermined threshold is exceeded. A body worn monitor can also periodically send data or send data upon external request. Additionally, external devices can send commands to modify the operating parameters and thresholds.

[0099] Turning to other communication matters, it may be that adverse events occur in which no uplink is available. In a case of no uplink (failed communications), the body worn monitor can buffer time-stamped waveforms corresponding to any adverse events. The buffers can also store waveforms for later analysis in which this storage is triggered by the patient when the patient recognizes a condition, such as chest pain. In the case of an alarm that occurs when there is no uplink, alarms can be configured to be latched until confirmed by a clinician. Preferably, non-continuous data are marked (time stamp, sample number) to allow correlation of non-continuous data with continuous data and data are also marked to indicate when an alarm was initiated for later data analysis, including algorithm performance analysis.

**[00100]** In those instances in which many body worn monitor devices are used in close proximity to one another, there can be concern that the reports from one body worn monitor might be interchanged with reports from another body worn monitor. The body worn monitor presented herein, can be configured with a patient context (i.e. name, room number, patient ID, age, etc) and can maintain that context for as long as the monitor is connected to the patient to avoid such problems. The body worn monitor can determine the status of its connection to the patient via a continuous vital signs monitor, pressure, temperature, galvanic response, or similar input. Upon detection of a loss of connection with a patient, the device can, depending upon different variable settings, either erase the patient context or when re-connected to the patient, require the care giver to confirm the patient context. When the body worn monitor is initially powered up or connected to a patient, it can have a time holdoff for alarms to prevent false alarms (e.g. low heart rate, lead-fail detection) while the system stabilizes.

**[00101]** Regarding firmware updates, where there are large numbers of body worn monitors in a hospital, it can be problematic to keep them all updated with the latest version of firmware. One solution to this problem is to provide a wireless update ability for downloading and installing new firmware and/or configurations into all of the body worn monitors.

**[00102]** While the present invention has been particularly shown and described with reference to the preferred mode as illustrated in the drawings, it will be understood by one skilled in the art that various changes in detail may be effected therein without departing from the spirit and scope of the invention as defined by the following claims. It is further understood that several aspects of the invention, including, but not limited to, defibrillation protection resistors, pacer detect circuit disabling, methods for ECG signal high pass filtering, and various other low power modes are not limited to body worn monitors, and can be used in ECG monitors of any type.

What is claimed is:

1. A body-worn physiological sensor comprising:
  - a computation-communication module;
  - a flexible circuit layer configured to be coupled to a skin surface of a subject to measure physiological signals;
  - an adhesive covering at least a portion of the flexible circuit layer; and
  - a protective covering that protects the adhesive.
2. The sensor of claim 1, in which the flexible circuit layer has traces of determinable electrical resistance.
3. The sensor of claim 2, in which the traces on the flexible circuit layer are configured to electrically couple the computation-communication module to the flexible circuit layer, thereby forming a disposable module connector.
4. The sensor of claim 1, in which the traces on the flexible circuit layer are at least partially covered by a non-removable insulating covering.
5. The sensor of claim 1, wherein the flexible circuit layer further comprises a plurality of openings sized to receive electrode gels.
6. The sensor of claim 1, further comprising a hard-wired communication cable.
7. A body-worn patient monitoring device comprising:
  - a disposable electrode portion comprising:
    - a flexible printed circuit layer made from an insulating material and defining a substrate,
    - at least two electrodes being disposed onto a surface of the substrate,
    - electrical traces defined between the at least two electrodes, and
    - a connection pad;
  - a reusable communication module comprising:
    - a housing containing a processor, and

a wireless communication unit, and in which the reusable communication module is releasably attached to the disposable electrode portion by at least one latching clip; and

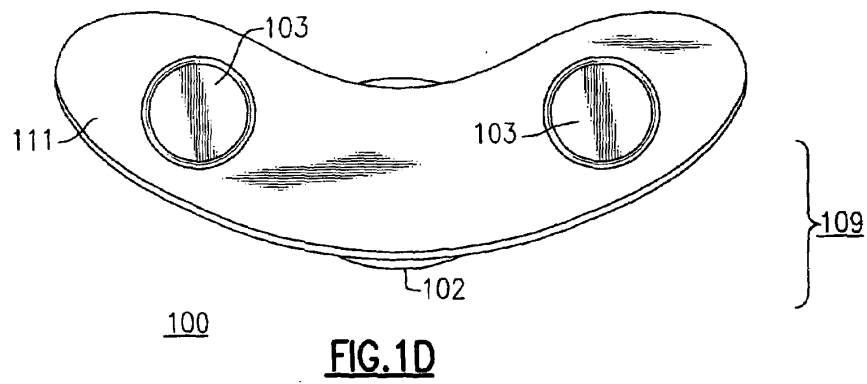
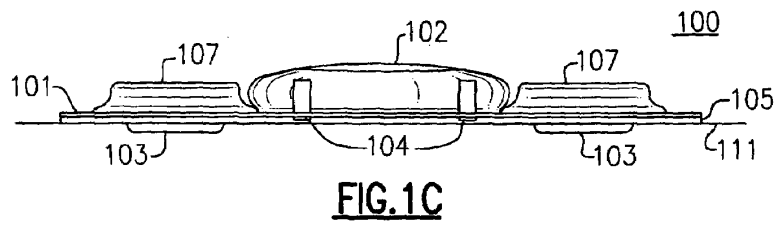
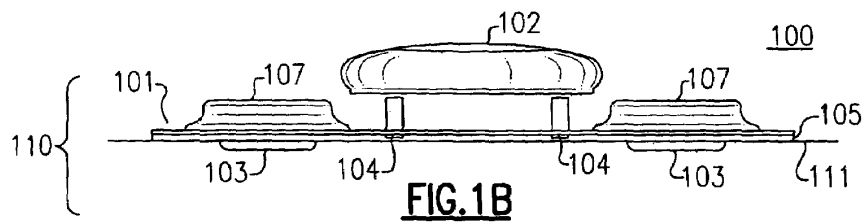
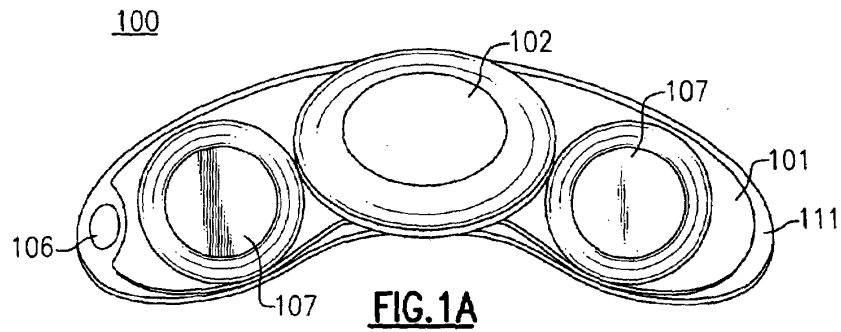
a hard-wired communication cable.

8. The body-worn patient monitoring device of claim 7, wherein the electrodes are integrated into the flexible circuit layer of the disposable electrode portion.
9. The body-worn patient monitoring device of claim 7, wherein the electrodes are snap fitted to the flexible printed circuit layer.
10. The body-worn patient monitoring device of claim 9, wherein the snap is disposed at the end of an extension.
11. The body-worn patient monitoring device of claim 7, wherein the electrical traces are screened onto the flexible printed circuit layer.
12. The body-worn patient monitoring device of claim 11, including an insulating layer applied onto the electrical traces.
13. The body-worn patient monitoring device of claim 12, wherein the insulating layer is a fabric applied over the electrical traces of the flexible printed circuit layer.
14. The body-worn patient monitoring device of claim 13, wherein each electrode includes an electrode gel and a conductive surface defining a half cell.
15. A body-worn physiological sensor comprising:
  - a computation-communication module;
  - a flexible printed circuit layer configured to be coupled to a skin surface of a subject to measure physiological signals;
  - an adhesive covering at least a portion of the flexible printed circuit layer; and
  - a protective covering for the flexible printed circuit layer.

16. The body-worn physiological sensor of claim 15, in which the protective covering includes at least one opening for electrode gels.
17. The body-worn physiological sensor of claim 15, wherein the flexible printed circuit layer includes openings sized to receive electrode gels.
18. The body-worn physiological sensor of claim 15, wherein the protective covering is non removable and made from an insulating material.
19. The body-worn physiological sensor of claim 15, wherein the computation communication module is releasably attached to the flexible printed circuit layer.
20. The body-worn physiological sensor of claim 15, wherein the protective covering covers the adhesive.

### ABSTRACT

A body-worn physiological sensor includes a computation-communication module, and a flexible circuit layer configured to be coupled to a skin surface of a subject to measure physiological signals. An adhesive covers at least a portion of the flexible circuit layer and a protective covering protects the adhesive. The computation-communication module can be releasably attached to the sensor using electrical traces provided on the flexible circuit layer.



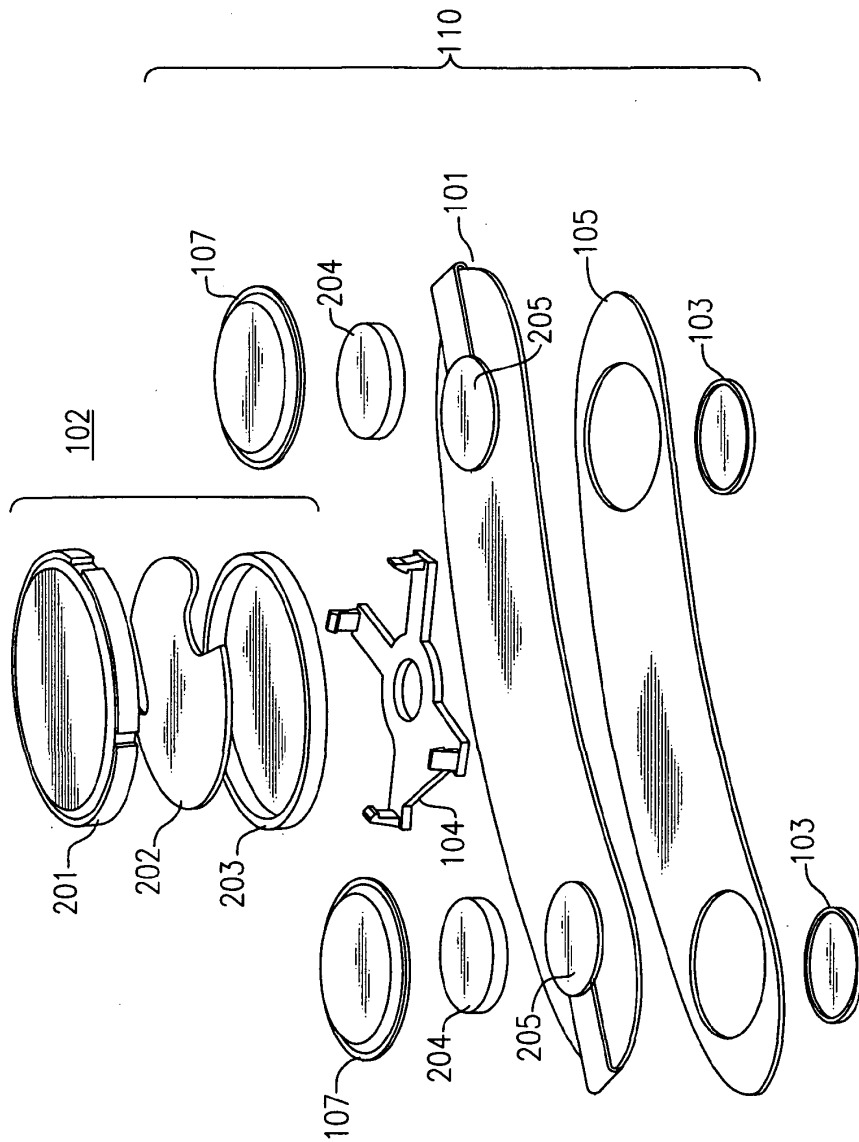
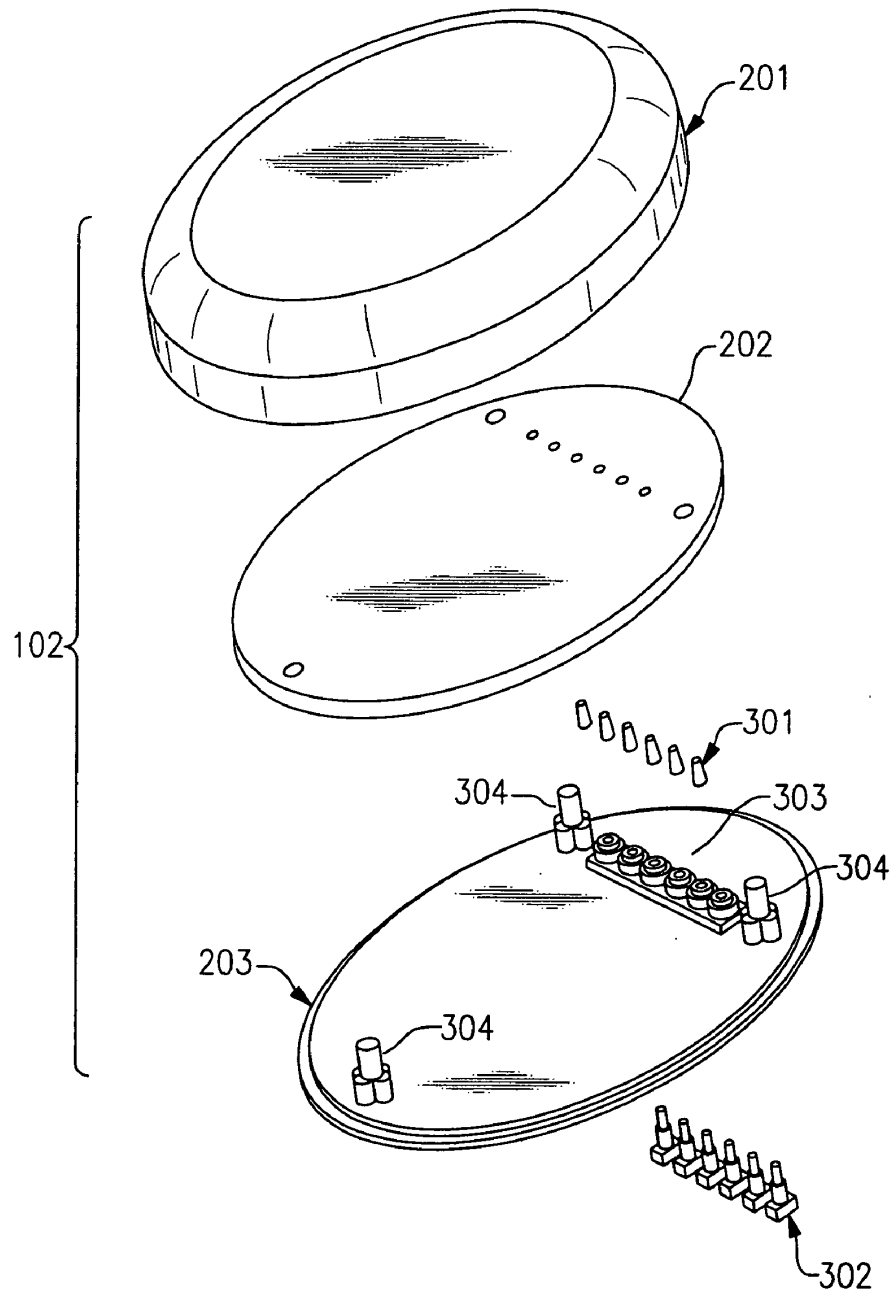


**FIG. 2**

**FIG.3**

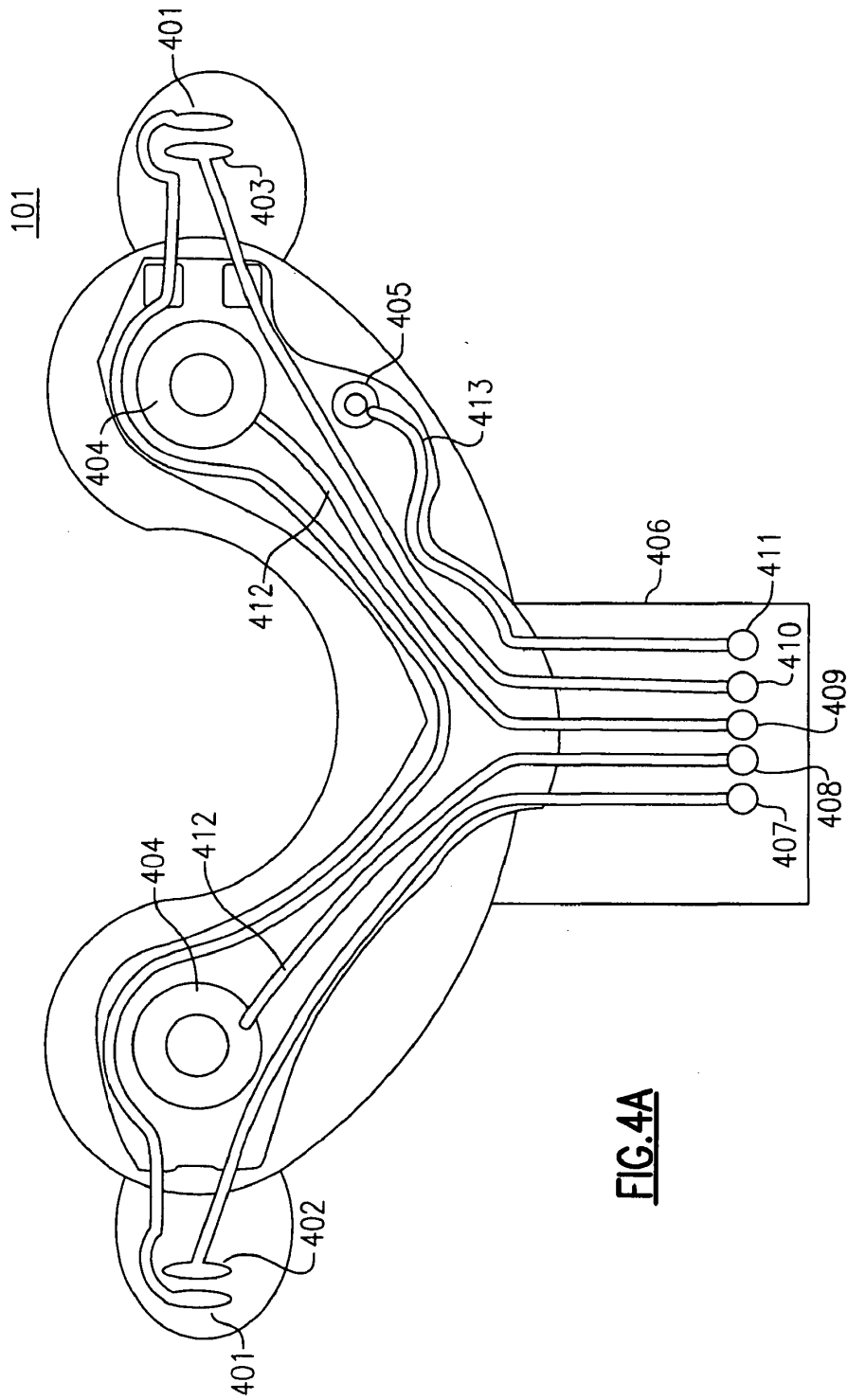


**FIG. 4A**

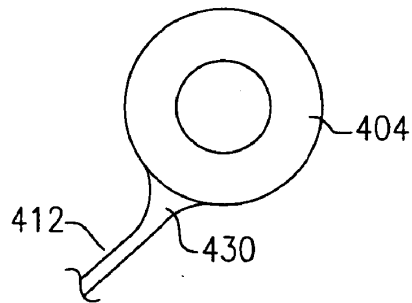


**FIG. 4B**

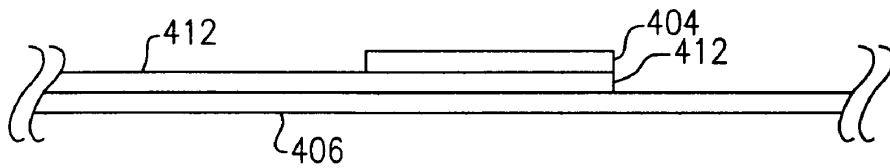


**FIG. 4C**

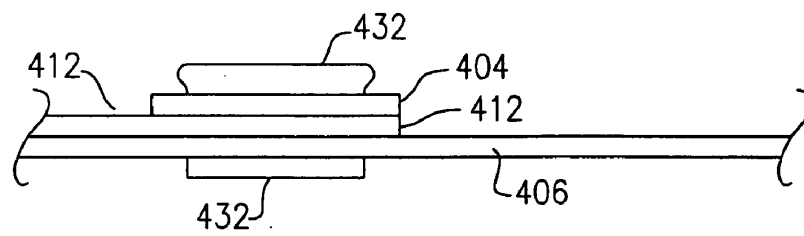


**FIG. 4D**

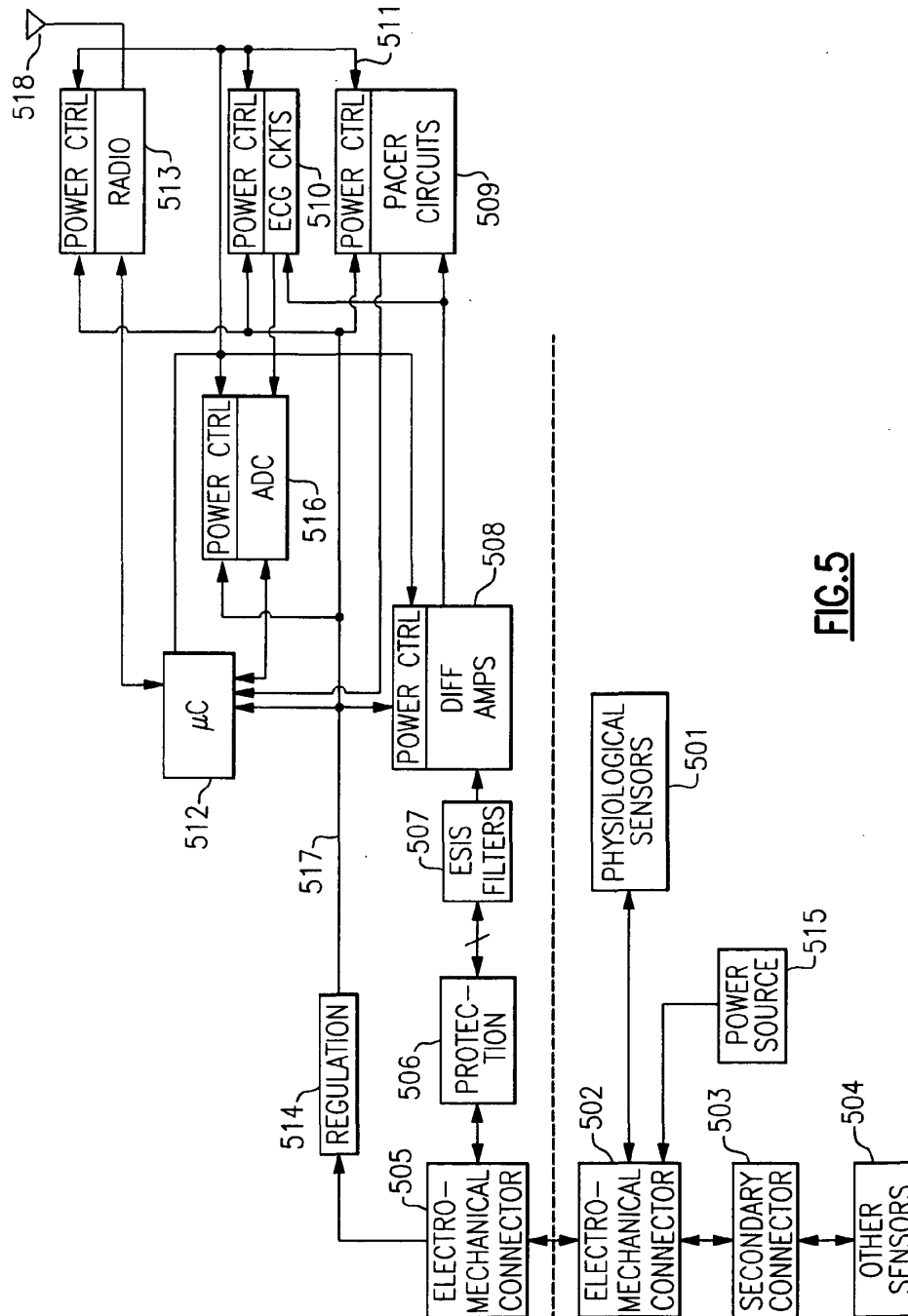
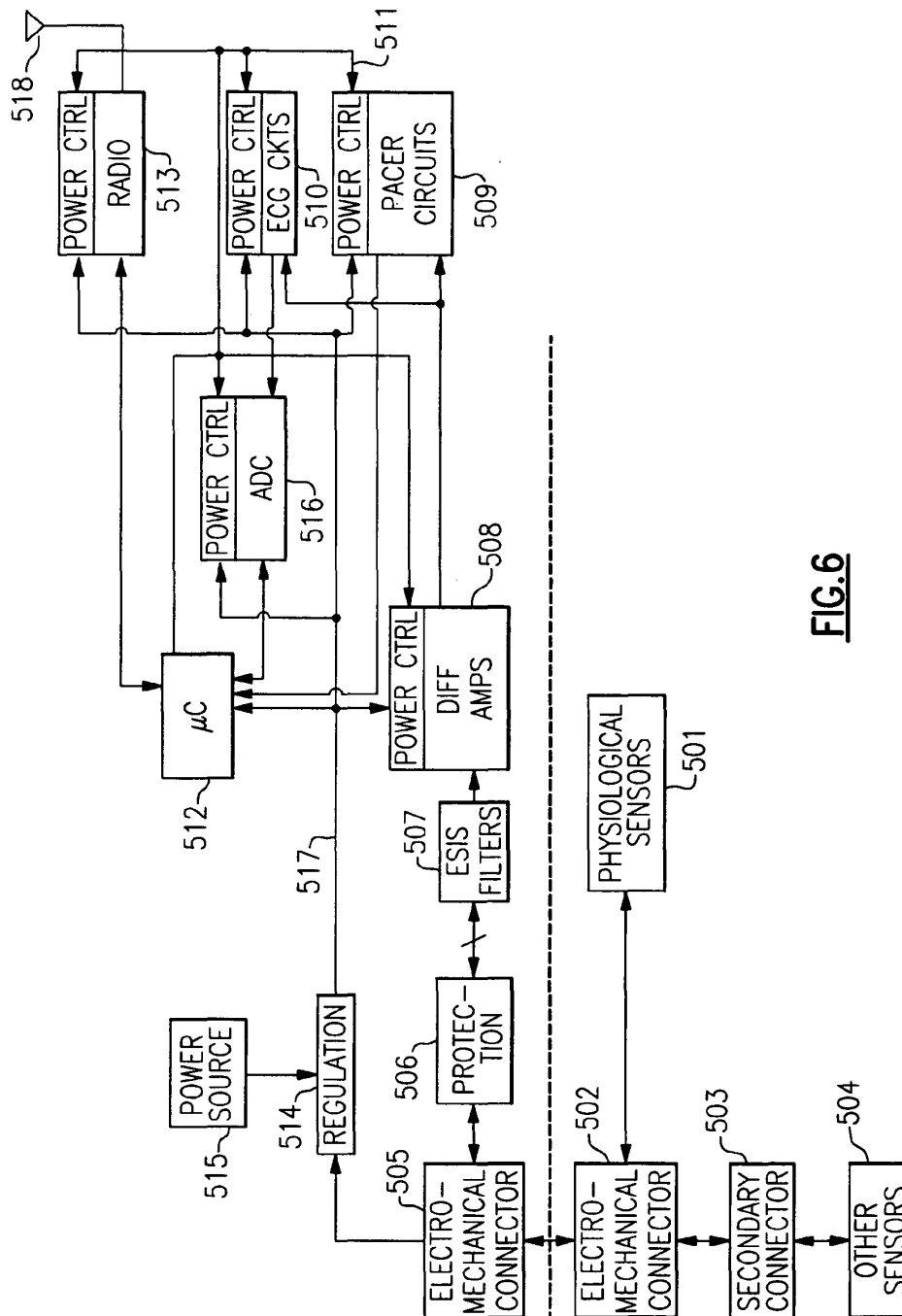
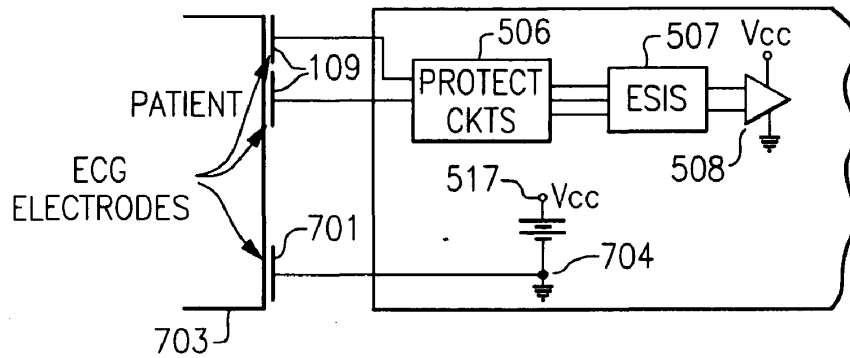
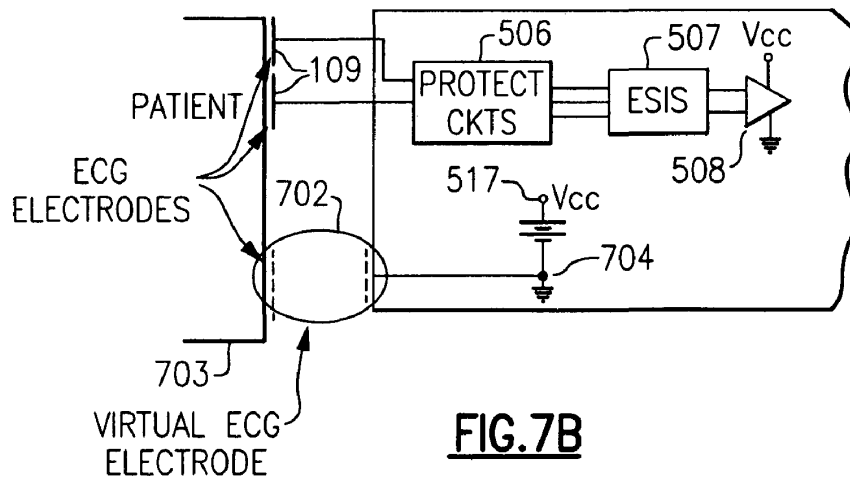


FIG. 5



**FIG. 7A****FIG. 7B**

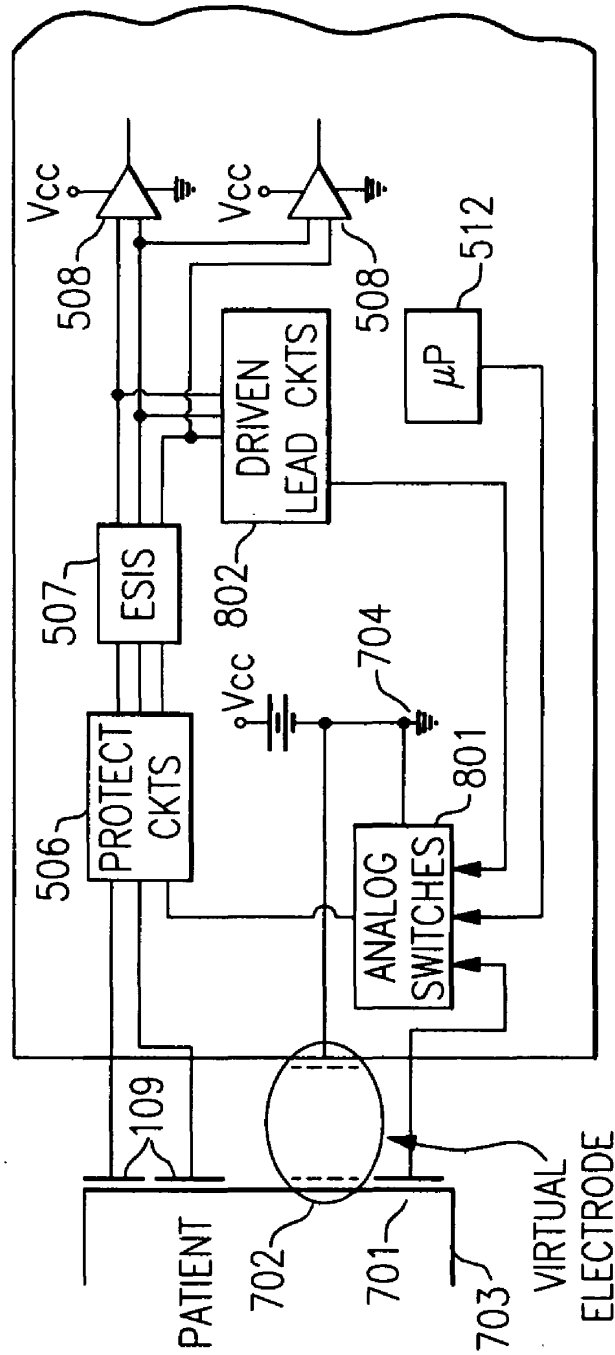
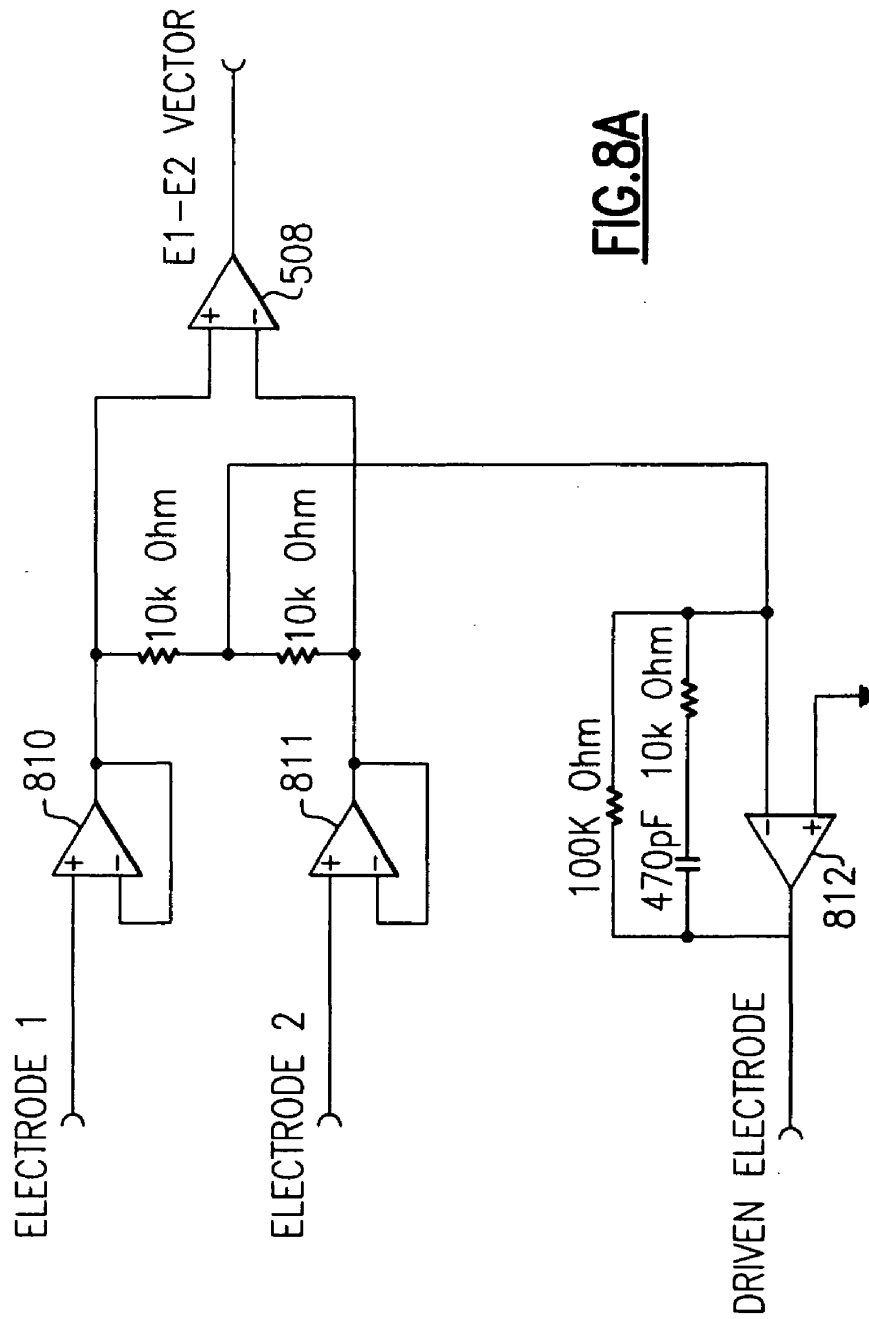


**FIG. 8**

**FIG. 8A**

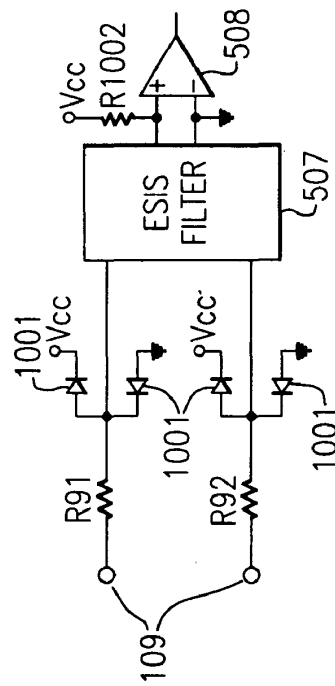
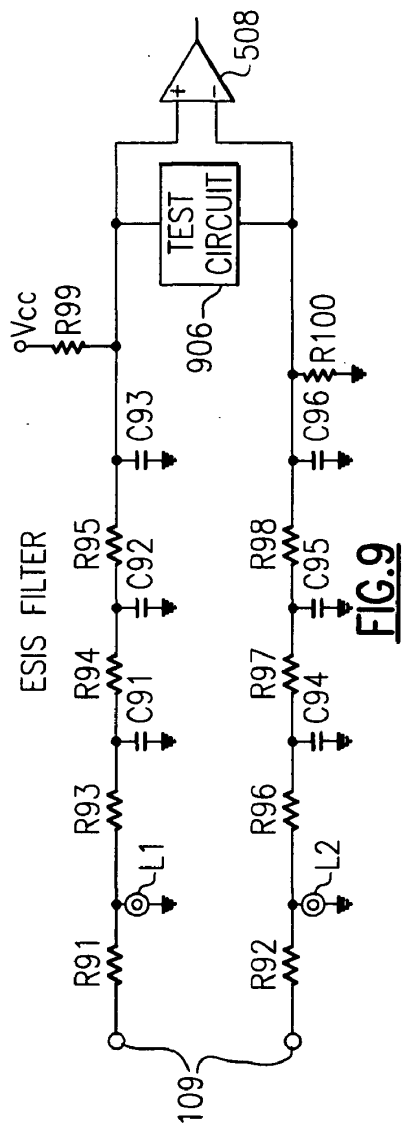
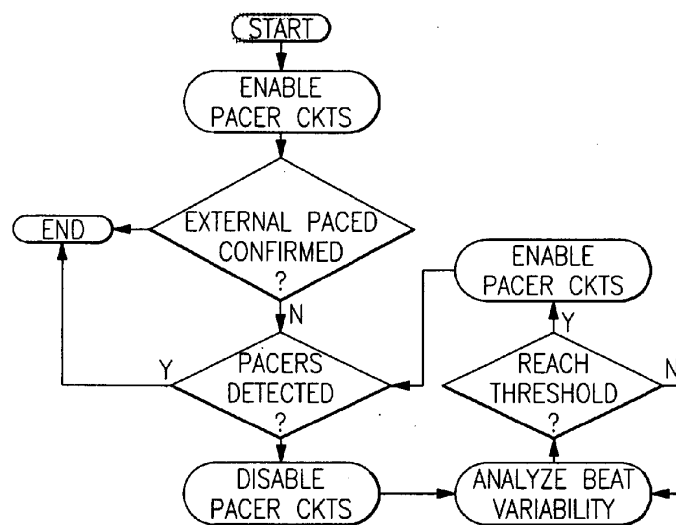
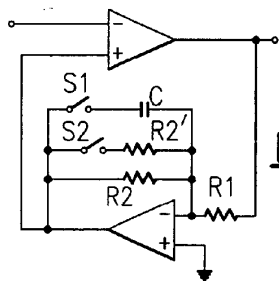
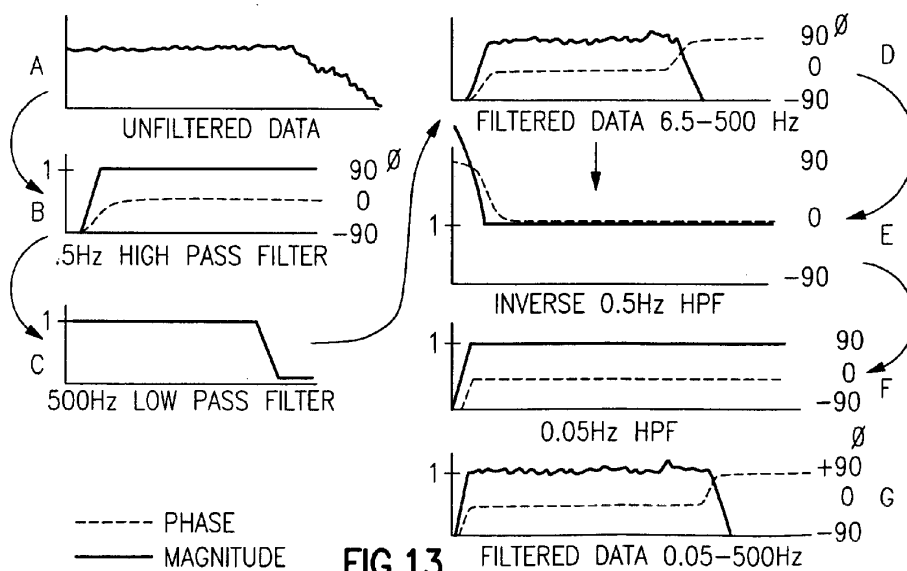


**FIG. 10**

**FIG. 11****FIG. 12****FIG. 13**

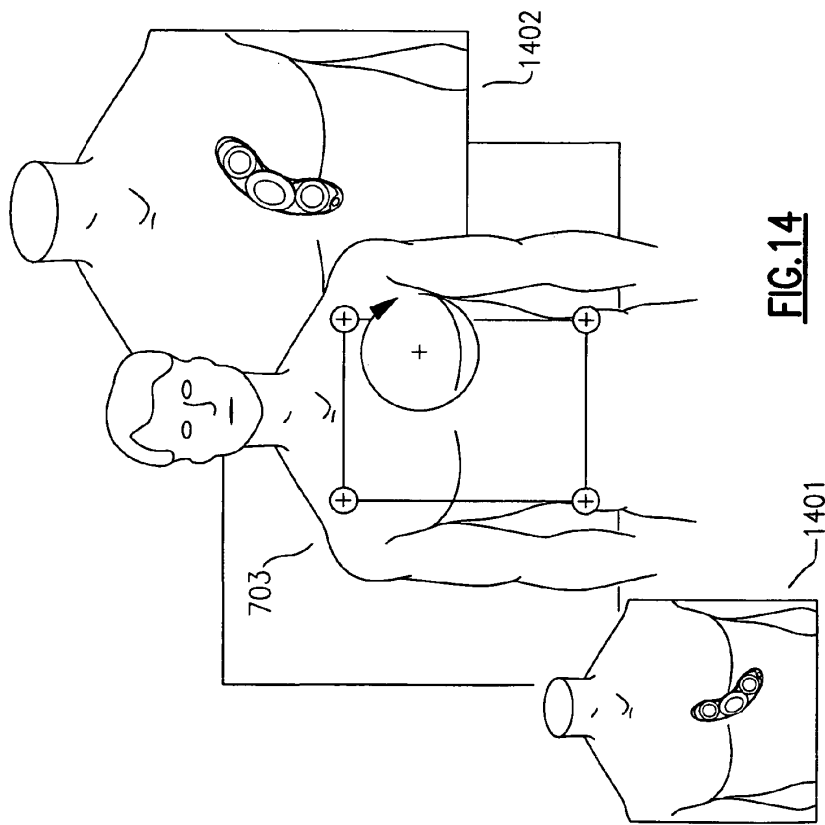


**FIG. 14**

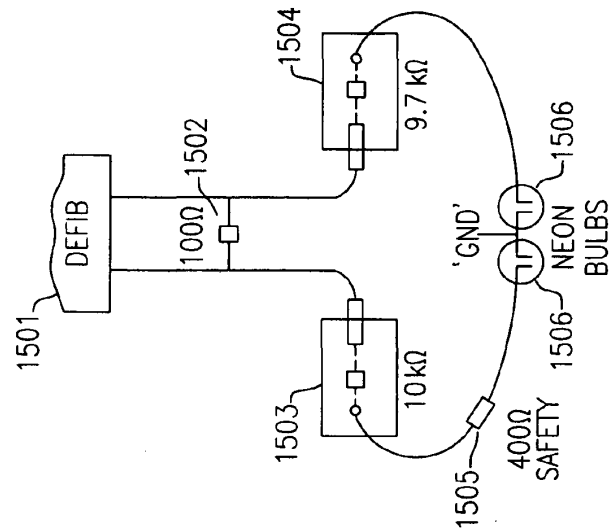
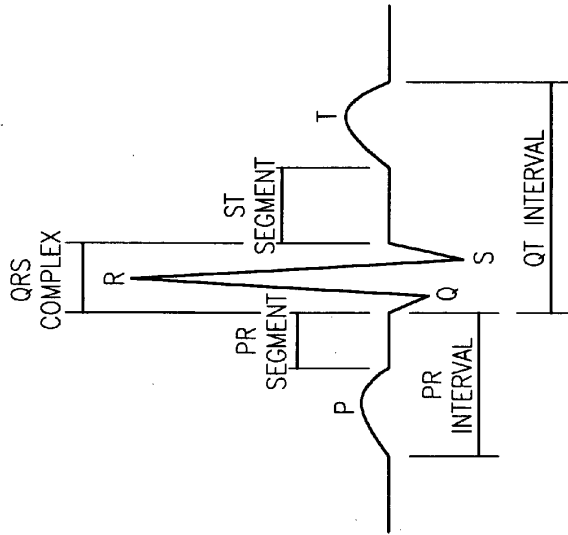
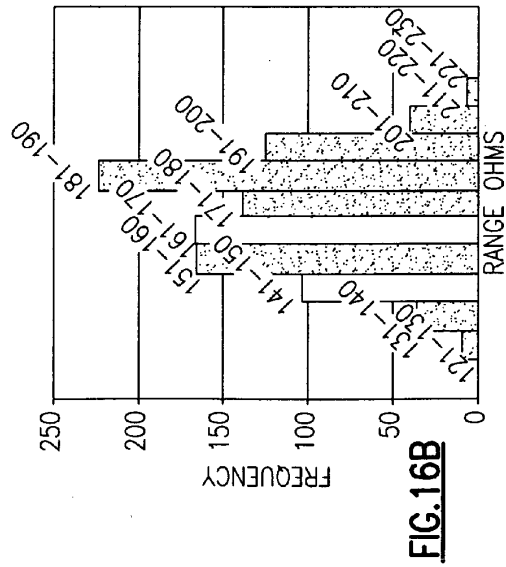
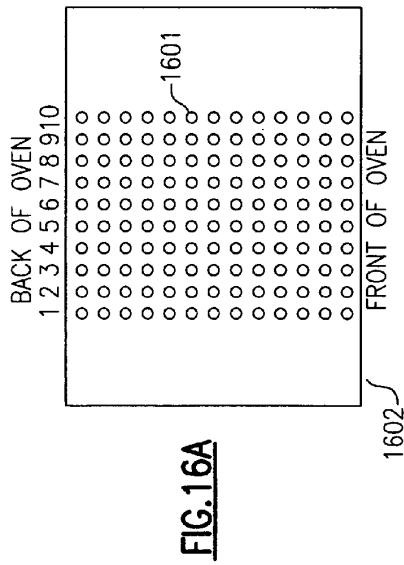


**FIG. 15**



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Steven D. Baker et al. Art Unit: Not Yet Assigned  
Serial No.: Not Yet Assigned Examiner: Not Yet Assigned  
Filing Date: Concurrently Herewith  
Title: BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE  
ELECTRODE MODULE

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

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Dear Sir:

Pursuant to 37 C.F.R. §1.97, Applicants and their legal representatives hereby make of record the references on the attached PTO/SB/08A Form which are known by them and considered warranting disclosure under 37 C.F.R. §1.56. Also, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached Forms (PTO/SB/08A/B and PTO-892). These references were cited during prosecution of parent applications U.S. Serial No. 14/268,666, 14/103,219, 13/488,520 and 11/591,619, copies of each of the references can be found in the PTO file for the parent application.

The above information is presented so that the Patent and Trademark Office may, in the first instance, determine any materiality thereof to the claimed invention. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that these listed references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed (1) no later than three months from the application's filing date or (2) before the mailing date of the first Office Action on the merits and is therefore submitted as both timely and proper. Therefore, it is believed no fees are believed to be due.

It is believed no fees are due. However, in the event of a fee deficiency, the Director is authorized to charge any underpayment or credit any overpayment to our Deposit Account No. 50-3010.

Respectfully submitted,

HISCOCK & BARCLAY, LLP

/Peter J. Bilinski/

January 13, 2015  
Date

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|                                                                                                       |   |    |   | First Named Inventor         | Steven D. Baker       |
|                                                                                                       |   |    |   | Art Unit                     | Not Yet Assigned      |
|                                                                                                       |   |    |   | Examiner Name                | Not Yet Assigned      |
|                                                                                                       |   |    |   | Attorney Docket Number       | 3022036 US05          |
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[illegible][illegible]

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|------------------------|----------------------------------------------------------------------------|
| Application Number     | Not Yet Assigned                                                           |
| Filing Date            | Concurrently Herewith                                                      |
| First Named Inventor   | Steven D. Baker                                                            |
| Title                  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |
| Art Unit               | Not Yet Assigned                                                           |
| Examiner Name          | Not Yet Assigned                                                           |
| Attorney Docket Number | 3022036 US05                                                               |

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| Name                                                                                                                                                                                   | Peter J. Bilinski   | Registration Number | 35,067           |
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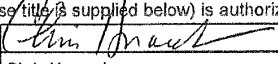
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Welch Allyn, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

|           |                                                                                     |                 |  |
|-----------|-------------------------------------------------------------------------------------|-----------------|--|
| Signature |  | Date (Optional) |  |
| Name      | Chris Horacek                                                                       |                 |  |
| Title     | Vice President - Deputy General Counsel                                             |                 |  |

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 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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| Electronic Patent Application Fee Transmittal |          |                                                                            |        |                      |
|-----------------------------------------------|----------|----------------------------------------------------------------------------|--------|----------------------|
| Application Number:                           |          |                                                                            |        |                      |
| Filing Date:                                  |          |                                                                            |        |                      |
| Title of Invention:                           |          | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |        |                      |
| First Named Inventor/Applicant Name:          |          | Steven D. Baker                                                            |        |                      |
| Filer:                                        |          | Peter J Bilinski/Susanne Pelose                                            |        |                      |
| Attorney Docket Number:                       |          | 3022036 US05                                                               |        |                      |
| Filed as Large Entity                         |          |                                                                            |        |                      |
| Filing Fees for Utility under 35 USC 111(a)   |          |                                                                            |        |                      |
| Description                                   | Fee Code | Quantity                                                                   | Amount | Sub-Total in USD(\$) |
| Basic Filing:                                 |          |                                                                            |        |                      |
| Utility application filing                    | 1011     | 1                                                                          | 280    | 280                  |
| Utility Search Fee                            | 1111     | 1                                                                          | 600    | 600                  |
| Utility Examination Fee                       | 1311     | 1                                                                          | 720    | 720                  |
| Pages:                                        |          |                                                                            |        |                      |
| Claims:                                       |          |                                                                            |        |                      |
| Miscellaneous-Filing:                         |          |                                                                            |        |                      |
| Petition:                                     |          |                                                                            |        |                      |
| Patent-Appeals-and-Interference:              |          |                                                                            |        |                      |

| Description                              | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|------------------------------------------|----------|----------|--------|----------------------|
| <b>Post-Allowance-and-Post-Issuance:</b> |          |          |        |                      |
| <b>Extension-of-Time:</b>                |          |          |        |                      |
| <b>Miscellaneous:</b>                    |          |          |        |                      |
| <b>Total in USD (\$)</b>                 |          |          |        | <b>1600</b>          |

| Electronic Acknowledgement Receipt          |                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 21198338                                                                   |
| <b>Application Number:</b>                  | 14595815                                                                   |
| <b>International Application Number:</b>    |                                                                            |
| <b>Confirmation Number:</b>                 | 9197                                                                       |
| <b>Title of Invention:</b>                  | BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE ELECTRODE MODULE |
| <b>First Named Inventor/Applicant Name:</b> | Steven D. Baker                                                            |
| <b>Customer Number:</b>                     | 88750                                                                      |
| <b>Filer:</b>                               | Peter J Bilinski/Susanne Pelose                                            |
| <b>Filer Authorized By:</b>                 | Peter J Bilinski                                                           |
| <b>Attorney Docket Number:</b>              | 3022036 US05                                                               |
| <b>Receipt Date:</b>                        | 13-JAN-2015                                                                |
| <b>Filing Date:</b>                         |                                                                            |
| <b>Time Stamp:</b>                          | 16:26:19                                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                |

### Payment information:

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| Submitted with Payment                                                                                         | yes         |
| Payment Type                                                                                                   | Credit Card |
| Payment was successfully received in RAM                                                                       | \$ 1600     |
| RAM confirmation Number                                                                                        | 2729        |
| Deposit Account                                                                                                |             |
| Authorized User                                                                                                |             |
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|-------------------------------------------------|------------------------------------------------------------|----------------------------------------|----------------------------------------------------------|------------------|------------------|
| Document Number                                 | Document Description                                       | File Name                              | File Size(Bytes)/ Message Digest                         | Multi Part /.zip | Pages (if appl.) |
| 1                                               | Transmittal of New Application                             | 2015-01-13-Application-Transmittal.pdf | 429710<br>7414e643f25c3bbdae3cf306fc120aa7fb048e<br>a85  | no               | 1                |
| <b>Warnings:</b>                                |                                                            |                                        |                                                          |                  |                  |
| <b>Information:</b>                             |                                                            |                                        |                                                          |                  |                  |
| 2                                               | Miscellaneous Incoming Letter                              | 2015-01-13-Fee-Transmittal.pdf         | 427864<br>046e8a748c94bbac1b892604d07c92fd574<br>fd65d   | no               | 1                |
| <b>Warnings:</b>                                |                                                            |                                        |                                                          |                  |                  |
| <b>Information:</b>                             |                                                            |                                        |                                                          |                  |                  |
| 3                                               | Application Data Sheet                                     | 2015-01-13-ADS.pdf                     | 2614164<br>caf02a2f0b6fa1578cc37647141258093021<br>c717  | no               | 7                |
| <b>Warnings:</b>                                |                                                            |                                        |                                                          |                  |                  |
| <b>Information:</b>                             |                                                            |                                        |                                                          |                  |                  |
| This is not an USPTO supplied ADS fillable form |                                                            |                                        |                                                          |                  |                  |
| 4                                               |                                                            | 2015-01-13-Specification.pdf           | 11249690<br>f4912565a48734d252428a50cf6a6b27eea4<br>7195 | yes              | 31               |
|                                                 | <b>Multipart Description/PDF files in .zip description</b> |                                        |                                                          |                  |                  |
|                                                 | <b>Document Description</b>                                |                                        | <b>Start</b>                                             | <b>End</b>       |                  |
|                                                 | Specification                                              |                                        | 1                                                        | 27               |                  |
|                                                 | Claims                                                     |                                        | 28                                                       | 30               |                  |
|                                                 | Abstract                                                   |                                        | 31                                                       | 31               |                  |
| <b>Warnings:</b>                                |                                                            |                                        |                                                          |                  |                  |
| <b>Information:</b>                             |                                                            |                                        |                                                          |                  |                  |
| 5                                               | Drawings-only black and white line drawings                | 2015-01-13-Drawings.pdf                | 356043<br>536896f9fd11c699f572a3112292cd062b9c<br>4caf   | no               | 14               |
| <b>Warnings:</b>                                |                                                            |                                        |                                                          |                  |                  |
| <b>Information:</b>                             |                                                            |                                        |                                                          |                  |                  |

|                                                 |                                                    |                                         |                                                     |    |    |
|-------------------------------------------------|----------------------------------------------------|-----------------------------------------|-----------------------------------------------------|----|----|
| 6                                               | Transmittal Letter                                 | 2015-01-13-IDS.pdf                      | 269740<br>b70a8ed987bb3f237ce3c01259d9e677695ac995  | no | 1  |
| <b>Warnings:</b>                                |                                                    |                                         |                                                     |    |    |
| <b>Information:</b>                             |                                                    |                                         |                                                     |    |    |
| 7                                               | Information Disclosure Statement (IDS) Form (SB08) | 2015-01-13-PTO-SB-08A.pdf               | 341663<br>75206edb2385f048d4f4bb7e02da16edbc240631  | no | 1  |
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| 8                                               | Information Disclosure Statement (IDS) Form (SB08) | 2015-01-13-PTO-SB-08A-B-and-PTO-892.pdf | 1076591<br>32e8c1dfc8bf5c67e1a91b09aa5782ba5f61b659 | no | 10 |
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| <b>Information:</b>                             |                                                    |                                         |                                                     |    |    |
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| 9                                               | Miscellaneous Incoming Letter                      | 2015-01-13-Certification-Statement.pdf  | 397627<br>f972f068c895a5147246d18f175dd5ac74d7bfd6  | no | 1  |
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| <b>Information:</b>                             |                                                    |                                         |                                                     |    |    |
| 10                                              | Oath or Declaration filed                          | 2015-01-13-Declaration.pdf              | 1282519<br>9af836bb5b1178bdb37bc78aca34ba4fd59f3962 | no | 3  |
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| <b>Information:</b>                             |                                                    |                                         |                                                     |    |    |
| 11                                              | Power of Attorney                                  | 2015-01-13-POA.pdf                      | 1001591<br>59f6d0d608f1868050b8458d535e277d3b55ba0c | no | 2  |
| <b>Warnings:</b>                                |                                                    |                                         |                                                     |    |    |
| <b>Information:</b>                             |                                                    |                                         |                                                     |    |    |
| 12                                              | Fee Worksheet (SB06)                               | fee-info.pdf                            | 35443<br>d2f8aa1a7c9b9b09ca5524a34ff6c3ccaa5e88b    | no | 2  |
| <b>Warnings:</b>                                |                                                    |                                         |                                                     |    |    |
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**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.

|                                                                                                                                       |                                   |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| U.S. PATENT DOCUMENTS |              |            |                    |       |          |                               |
|-----------------------|--------------|------------|--------------------|-------|----------|-------------------------------|
| EXAMINER<br>INITIAL   | DOCUMENT NO. | DATE       | NAME               | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
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|                                                                                                                                                                                                                                             |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| EXAMINER                                                                                                                                                                                                                                    | DATE CONSIDERED |
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|                                                                                                                                       |                                   |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
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| U.S. PATENT DOCUMENTS |              |            |                    |       |          |                               |
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| EXAMINER<br>INITIAL   | DOCUMENT NO. | DATE       | NAME               | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
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| U.S. PATENT DOCUMENTS |                 |            |                   |       |          |                               |
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|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| U.S. PATENT DOCUMENTS |                 |            |                 |       |          |                               |
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|                       | 2007/0069887 A1 | 03/29/2007 | Welch et al.    |       |          |                               |
|                       | 2007/0270678 A1 | 11/22/2007 | Fadem et al.    |       |          |                               |
|                       | 2007/0293781    | 12/20/2007 | Sims et al.     |       |          |                               |
|                       | 2009/0043185    | 02/12/2009 | McAdams et al.  |       |          |                               |
|                       | 2009/0131759    | 05/21/2009 | Sims et al.     |       |          |                               |

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| EXAMINER                                                                                                                                                                                                                                    | DATE CONSIDERED |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                 |

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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                   | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| U.S. PATENT DOCUMENTS |              |            |                   |       |          |                               |
|-----------------------|--------------|------------|-------------------|-------|----------|-------------------------------|
| EXAMINER<br>INITIAL   | DOCUMENT NO. | DATE       | NAME              | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
|                       | 2010/0145202 | 06/10/2010 | McLaughlin et al. |       |          |                               |
|                       | 2010/0160762 | 06/24/2010 | McLaughlin et al. |       |          |                               |
|                       | 2010/0324390 | 12/23/2010 | McLaughlin et al. |       |          |                               |

| FOREIGN PATENT DOCUMENTS |              |             |         |       |          |             |    |
|--------------------------|--------------|-------------|---------|-------|----------|-------------|----|
|                          | DOCUMENT NO. | DATE        | COUNTRY | CLASS | SUBCLASS | TRANSLATION |    |
|                          |              |             |         |       |          | YES         | NO |
|                          | 0209804 A2   | 01/28/1987  | EP      |       |          |             |    |
|                          | 0770349 A1   | 05/02/1997  | EP      |       |          |             |    |
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|                          | 11042214     | 02//16/1999 | JP      |       |          | ✓           |    |
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|                          | 9959460 A2   | 11/25/1999  | WO      |       |          |             |    |
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|                          | 2008142365   | 11/27/2008  | WO      |       |          |             |    |
|                          | 2009056859   | 05/07/2009  | WO      |       |          |             |    |

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| EXAMINER                                                                                                                                                                                                                                    | DATE CONSIDERED |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                 |

Date: June 7, 2012

Sheet 6 of 6

Customer No.: 88750

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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US02    | Application Number:<br>13/488,520 |
|                                                                                                                                       | Applicant: Steven D. Baker et al. | Confirmation No.: 9601            |
|                                                                                                                                       | Filing Date: June 5, 2012         | Group Art Unit: Not Yet Assigned  |

| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) |  |                                                                                                          |
|------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------|
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|                                                                        |  | International Search Report/Written Opinion for PCT/US07/83156 dated May 15, 2008 (16 pages).            |
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\*Substitute Disclosure Statement Form (PTO-1449)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

|                                                                                                                                   |                                   |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US01    | Application Number:<br>11/591,619 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 7955            |
|                                                                                                                                   | Filing Date: November 1, 2006     | Group Art Unit: 3762              |

| U.S. PATENT DOCUMENTS |              |            |                    |       |          |                               |
|-----------------------|--------------|------------|--------------------|-------|----------|-------------------------------|
| EXAMINER<br>INITIAL   | DOCUMENT NO. | DATE       | NAME               | CLASS | SUBCLASS | FILING DATE<br>IF APPROPRIATE |
|                       | 5,515,735    | 5/14/1996  | Sarihan            |       |          |                               |
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|                       | 2004/0252031 | 12/16/2004 | Taylor             |       |          |                               |
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|                       | 2005/0216334 | 9/29/2005  | Mehrabani-Farsi    |       |          |                               |
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|                       | 2009/0043185 | 2/12/2009  | McAdams et al.     |       |          |                               |
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|                       | 2009/0131759 | 5/21/2009  | Sims et al.        |       |          |                               |
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|                       | 2010/0145202 | 6/10/2010  | McLaughlin et al.  |       |          |                               |
|                       | 2010/0160762 | 6/24/2010  | McLaughlin et al.  |       |          |                               |
|                       | 2010/0324390 | 12/23/2010 | McLaughlin et al.  |       |          |                               |
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| <b>FORM 1449*</b><br><b>INFORMATION DISCLOSURE STATEMENT</b><br><br><b>IN AN APPLICATION</b><br>(Use several sheets if necessary) | Docket Number:<br>3022036 US01    | Application Number:<br>11/591,619 |
|                                                                                                                                   | Applicant: Steven D. Baker et al. | Confirmation No.: 7955            |
|                                                                                                                                   | Filing Date: November 1, 2006     | Group Art Unit: 3762              |

| FOREIGN PATENT DOCUMENTS |                |            |         |       |          |             |    |
|--------------------------|----------------|------------|---------|-------|----------|-------------|----|
|                          | DOCUMENT NO.   | DATE       | COUNTRY | CLASS | SUBCLASS | TRANSLATION |    |
|                          |                |            |         |       |          | YES         | NO |
|                          | WO 2008/142365 | 11/27/2008 | WO      |       |          |             |    |
|                          | WO 2009/056859 | 5/7/2009   | WO      |       |          |             |    |
|                          |                |            |         |       |          |             |    |
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| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) |  |  |
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| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant. |                 |

|                                   |                                       |                                                            |             |
|-----------------------------------|---------------------------------------|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>11/591,619 | Applicant(s)/Patent Under<br>Reexamination<br>BAKER ET AL. |             |
|                                   | Examiner<br>NICOLE F. LAVERT          | Art Unit<br>3762                                           | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name            | Classification |
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| * | B | US-5,309,918 A                                   | 05-1994         | Schraag, Martin | 600/508        |
| * | C | US-2002/0106709 A1                               | 08-2002         | Potts et al.    | 435/14         |
| * | D | US-2003/0001742 A1                               | 01-2003         | Eshelman et al. | 340/573.1      |
| * | E | US-2003/0055460 A1                               | 03-2003         | Owen et al.     | 607/5          |
| * | F | US-6,623,312 B2                                  | 09-2003         | Merry et al.    | 439/729        |
| * | G | US-2005/0137489 A1                               | 06-2005         | Jackson et al.  | 600/515        |
| * | H | US-2005/0245839 A1                               | 11-2005         | Stivoric et al. | 600/549        |
| * | I | US-2006/0074284 A1                               | 04-2006         | Juola et al.    | 600/372        |
| * | J | US-2006/0136001 A1                               | 06-2006         | Ortega et al.   | 607/009        |
| * | K | US-2006/0183434 A1                               | 08-2006         | Westra et al.   | 455/078        |
| * | L | US-2007/0270678 A1                               | 11-2007         | Fadem et al.    | 600/372        |
|   | M | US-                                              |                 |                 |                |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
|---|---|--------------------------------------------------|-----------------|---------|------|----------------|
|   | N |                                                  |                 |         |      |                |
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**NON-PATENT DOCUMENTS**

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|-------------------------------------------------------------------------------------------|
|   | U |                                                                                           |
|   | V |                                                                                           |
|   | W |                                                                                           |
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\*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.

|                                   |                                       |                                                            |             |
|-----------------------------------|---------------------------------------|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>13/488,520 | Applicant(s)/Patent Under<br>Reexamination<br>BAKER ET AL. |             |
|                                   | Examiner<br>NICOLE F. LAVERT          | Art Unit<br>3762                                           | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name         | Classification |
|---|---|--------------------------------------------------|-----------------|--------------|----------------|
| * | A | US-2008/0139953 A1                               | 06-2008         | Baker et al. | 600/509        |
|   | B | US-                                              |                 |              |                |
|   | C | US-                                              |                 |              |                |
|   | D | US-                                              |                 |              |                |
|   | E | US-                                              |                 |              |                |
|   | F | US-                                              |                 |              |                |
|   | G | US-                                              |                 |              |                |
|   | H | US-                                              |                 |              |                |
|   | I | US-                                              |                 |              |                |
|   | J | US-                                              |                 |              |                |
|   | K | US-                                              |                 |              |                |
|   | L | US-                                              |                 |              |                |
|   | M | US-                                              |                 |              |                |

**FOREIGN PATENT DOCUMENTS**

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|---|---|--------------------------------------------------|-----------------|---------|------|----------------|
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**NON-PATENT DOCUMENTS**

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|-------------------------------------------------------------------------------------------|
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|   | 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.

|                                                                                                    |                        |                       |
|----------------------------------------------------------------------------------------------------|------------------------|-----------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>(Not for submission under 37 CFR 1.99) | Application Number     | Not Yet Assigned      |
|                                                                                                    | Filing Date            | Concurrently Herewith |
|                                                                                                    | First Named Inventor   | Steven D. Baker       |
|                                                                                                    | Art Unit               | Not Yet Assigned      |
|                                                                                                    | Examiner Name          | Not Yet Assigned      |
|                                                                                                    | Attorney Docket Number | 3022036 US05          |

#### CERTIFICATION STATEMENT

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

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

**OR**

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

☐ See attached certification statement.

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

☒ A certification statement is not submitted herewith.

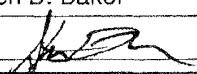
#### SIGNATURE

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

|            |                     |                     |            |
|------------|---------------------|---------------------|------------|
| Signature  | /Peter J. Bilinski/ | Date (YYYY-MM-DD)   | 2015-01-13 |
| Name/Print | Peter J. Bilinski   | Registration Number | 35,067     |

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

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN  
APPLICATION DATA SHEET (37 CFR 1.76)**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Title of<br/>Invention</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE<br/>ELECTRODE MODULE</b> |
| <p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input type="checkbox"/> The attached application, or</p> <p style="margin-left: 100px;"><input checked="" type="checkbox"/> United States application or PCT international application number <u>14/103,219</u><br/>filed on <u>December 11, 2013</u>.</p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.</p> <p style="text-align: center;"><b>WARNING:</b></p> <p>Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.</p> |                                                                                       |
| <p><b>LEGAL NAME OF INVENTOR</b></p> <p>Inventor: <u>Steven D. Baker</u> Date (Optional): <u>16 Dec 2013</u></p> <p>Signature: </p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |
| <p><small>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</small></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN  
APPLICATION DATA SHEET (37 CFR 1.76)**

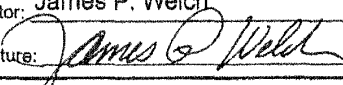
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| <b>Title of<br/>Invention</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>BODY WORN PHYSIOLOGICAL SENSOR DEVICE HAVING A DISPOSABLE<br/>ELECTRODE MODULE</b> |
| <p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input type="checkbox"/> The attached application, or<br/><input checked="" type="checkbox"/> United States application or PCT international application number <u>14/103,219</u><br/>filed on <u>December 11, 2013</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.</p> <p style="text-align: center;"><b>WARNING:</b></p> <p>Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.</p> |                                                                                       |
| <p><b>LEGAL NAME OF INVENTOR</b></p> <p>Inventor: <u>Eric T. McAdams</u> Date (Optional): <u>18 December 2013</u></p> <p>Signature: <u>/Eric T. McAdams/</u></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                       |
| <p><small>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</small></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN  
APPLICATION DATA SHEET (37 CFR 1.76)**

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| <b>LEGAL NAME OF INVENTOR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| <p>Inventor: <u>James P. Welch</u> Date (Optional): <u>1/28/2014</u></p> <p>Signature: <u></u></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
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