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Application Number	Unassigned
Filing Date	Herewith
First Named Inventor	Curt C. von BADINSKI
Title	WEARABLE COMPUTING DEVICE
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	984SPMO0048US12

SIGNATURE of Applicant or Patent Practitioner

Signature	/Steve Y. Cho/	Date (Optional)	2021-11-04
Name	Steve Y. Cho	Registration Number	44612
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☐ *Total of _____ forms are submitted.			

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 163435
- OR
- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

- ☒ The address associated with the above-mentioned Customer Number
- OR
- ☐ The address associated with Customer Number:
- OR

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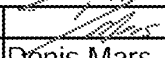
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Proxy, 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	Denis Mars		
Title	CEO of Proxy, Inc.		

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.

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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	
	Filing Date	
	First Named Inventor	Curt C. von BADINSKI
	Art Unit	
	Examiner Name	
	Attorney Docket Number	984SPMO0048US12

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	1589547		1926-06-22	Novack	
	2	2048878		1936-07-28	Moldenhauer	
	3	3022648		1962-02-27	Thaler	
	4	3653051		1972-03-28	WU	
	5	3684125		1972-08-15	Laurizio	
	6	4407295		1983-08-04	Steuer, et al.	
	7	4541207		1985-09-17	Antonson	
	8	5191891		1993-03-09	Righter	

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	9	5382778		1995-01-17	Takahira et al.	
	10	5490523		1996-02-13	Isaacson, et al.	
	11	5832296		1998-11-03	Wang, et al.	
	12	6101843		2000-08-15	Nagano	
	13	6255800		2001-07-03	Bork	
	14	6277079		2001-08-21	Avicola, et al.	
	15	6495283		2002-12-17	Yoon, et al.	
	16	6502906		2003-01-07	Chen	
	17	6546749		2003-04-15	Canty	
	18	7161484		2007-01-09	Tsoukalis	
	19	7375494		2008-05-20	Daniel, et al.	

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	20	7427979		2008-09-23	Park, et al.	
	21	7444001		2008-10-28	Roberts, et al.	
	22	7517222		2009-04-14	Rohrbach, et al.	
	23	7526927		2009-05-05	Pinto	
	24	7637746		2009-12-29	Lindberg, et al.	
	25	8157161		2012-04-17	Yach	
	26	8270914		2012-09-18	Pascolini, et al.	
	27	8346327		2013-01-01	Campbell, et al.	
	28	8373656		2013-02-12	Hou, et al.	
	29	8421748		2013-04-16	Tanaka	
	30	8457654		2013-06-04	Roskind	

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	31	8515506		2013-08-20	Ridder, et al.	
	32	8554297		2013-10-08	Moon, et al.	
	33	8570372		2013-10-29	Russell	
	34	8583167		2013-11-12	Chun	
	35	8599572		2013-12-03	Neudecker, et al.	
	36	8626249		2014-01-07	Ungari, et al.	
	37	8638190		2014-01-28	Want, et al.	
	38	9076589		2015-07-07	Wright, et al.	
	39	9110505		2015-08-18	Mastandrea, Jr.	
	40	9148717		2015-09-29	Shaffer	
	41	9197270		2015-11-24	Ying, et al.	

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	Attorney Docket Number	984SPMO0048US12	

	42	9203463		2015-12-01	Asrani, et al.	
	43	9313609		2016-04-12	Prencipe	
	44	9335790		2016-05-10	Stoller	

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	1	20020156352		2002-10-24	Eggers	
	2	20030142065		2003-07-31	Pahlavan	
	3	20050038348		2005-02-17	Avicola, et al.	
	4	20060046709		2006-03-02	Krumm, et al.	
	5	20060142968		2006-06-29	Han, et al.	
	6	20070100218		2007-05-03	Sweitzer, et al.	

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	7	20070123756		2007-05-31	Kitajima, et al.	
	8	20080045806		2008-02-21	Keppler	
	9	20080048036		2008-02-28	Matsumoto, et al.	
	10	20090306485		2009-12-10	Bell	
	11	20100100004		2010-04-22	van Someren	
	12	20100156624		2010-06-24	Hounsell	
	13	20110038511		2011-02-17	Takiguchi	
	14	20110057901		2011-03-10	Raty, et al.	
	15	20110070480		2011-03-24	Hahn, et al.	
	16	20110070829		2011-03-24	Griffin et al.	
	17	20110312311		2011-12-22	Abifaker et al.	

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	Attorney Docket Number	984SPMO0048US12	

	18	20120016793		2012-01-19	Peters, et al.	
	19	20120130203		2012-05-24	Stergiou et al.	
	20	20120218184		2012-08-30	Wissmar	
	21	20120220835		2012-08-30	Chung	
	22	20120254809		2012-10-04	Yang et al.	
	23	20120293107		2012-11-22	Ajagbe; Adebowale	
	24	20120317024		2012-12-13	Rahman et al.	
	25	20130027341		2013-01-31	Mastandrea	
	26	20130044215		2013-02-21	Rothkopf et al.	
	27	20130069583		2013-03-21	Lemelman et al.	
	28	20130088186		2013-04-11	Hsieth	

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	29	20130108907		2013-05-02	Bhardwaj et al.	
	30	20130144176		2013-06-06	Lec	
	31	20130217326		2013-06-22	Symons	
	32	20130167221		2013-06-27	VUKOSZAVLYEV et al.	
	33	20130191789		2013-07-25	Calman et al.	
	34	20130226486		2013-08-29	Henderson; Kris; et al.	
	35	20130261771		2013-10-03	Ten Kate	
	36	20130271069		2013-10-17	Partovi	
	37	20130163326	A1	2013-10-31	Hunter, et al.	
	38	20140065956		2014-03-08	Yang, et al.	
	39	20140102136		2014-04-17	Warren	

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	40	20150037616		2015-02-05	Wyatt et al.	
	41	20150277559		2015-10-01	Vescovi et al.	
	42	20150303722		2015-10-22	Li	
	43	20150349556		2015-12-03	Mercando et al.	
	44	20150380961		2015-12-31	Tseng et al.	
	45	20160013602		2016-01-14	Strisower et al.	

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FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	103109462	CN	A	2013-05-15	Mastandrea, et al.		
	2	103403627	CN	A	2013-11-20	Weast et al.		
	3	103441306	CN	A	2013-12-11	Yu et al.		

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	4	204440426	CN	U	2015-07-01	Lyu, et al.		
	5	204732935	CN	U	2015-10-28	Shi		
	6	2660680	EP	A1	2013-11-06	Turkiewicz, et al.		
	7	2004078028	WO	A2	2004-09-16	Avicola, et al.		
	8	2009124076	WO	A1	2009-10-08	Petersen, et al.		
	9	2011053235	WO	A1	2011-05-05	Wissmar, et al.		
	10	2012024889	WO	A1	2012-03-01	Wang		
	11	2013093638	WO	A3	2013-06-27	Beadle, et al.		
	12	2013163326	WO	A1	2013-10-31	Hunter et al.		

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	Examiner Name		
	Attorney Docket Number	984SPMO0048US12	

1	European Office Action for application EP14866234.4 mailed April 28, 2021.
2	SAMEDAYFLASH, "SET OF 10 2GB/4GB/8GB/16GB WOODEN BAMBOO FLASH DRIVE - BULK PACK O USB 2.0 WOOD BAMBOO STICK DESIGN - WOOD USB FLASH DRIVE", "www.etsy.com/listing/248051205/set-10-2gb4gb8gb16gb-wooden-bamboo?ref+m", 6/2/2016, Publisher: Elsy, Published in: US
3	LEEF, "LEEF MAGNET USB 3.0 FLASH DRIVE", "www.leefco.com/magnet-copper", 6/2/2016, Publisher: Leef Group Limited, Published in: US

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EXAMINER SIGNATURE

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

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	Examiner Name		
	Attorney Docket Number	984SPMO0048US12	

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Steve Y. Cho/	Date (YYYY-MM-DD)	2021-11-04
Name/Print	Steve Y. Cho	Registration Number	44612

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

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

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

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Proxy, Inc.
Application No./Patent No.: Unassigned Filed/Issue Date: Herewith
Titled: WEARABLE COMPUTING DEVICE
Proxy, Inc., a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 052419, Frame 0426, or for which a copy thereof is attached.

- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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[Page 1 of 2]

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[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

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

/Steve Y. Cho/

11/04/2021

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Curt C. von BADINSKI et al.

Application No.: Unassigned

Filed: Herewith

For: WEARABLE COMPUTING

DEVICE

Customer No.: 163435

Confirmation No.: Unassigned

Examiner: Unassigned

Art Unit: Unassigned

INFORMATION DISCLOSURE
STATEMENT UNDER
37 CFR §1.97 and §1.98

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Sir:

The references cited on attached form PTO/SB/08A and PTO/SB/08B are being called to the attention of the Examiner. The documents cited in the attached form PTO/SB/08 are not supplied because they were previously cited by or submitted to the Patent Office in prior applications serial no. 14/556,062 filed November 28, 2014, 15/444,217 filed February 27, 2017, and 17/013,348 filed on September 4, 2020 and relied upon in this application for an earlier filing date under 35 U.S.C. §120.

It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the “references cited” on any patent to issue therefrom.

As provided for by 37 CFR §1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

Applicant believes that no fee is required for submission of this statement.

However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 50-4713. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,

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WEARABLE COMPUTING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 17/013,348, filed 09/04/2020, which is a continuation of U.S. patent application Ser. No. 16/224,686, filed 12/18/2018, now U.S. Pat. No. 10,768,666 issued 09/08/2020, which is a divisional of U.S. patent application Ser. No. 15/444,217, filed 02/27/2017, now U.S. Pat. No. 10,156,867 issued 12/18/2018, which claims the benefit of U.S. patent application Ser. No. 14/556,062, filed 11/28/2014, now U.S. Pat. No. 9,582,034 issued 02/28/2017, and U.S. Provisional Application Ser. No. 62/006,835, filed 06/02/2014, entitled WEARABLE COMPUTING DEVICE and U.S. Provisional Application Ser. No. 61/910,201, filed 11/29/2013, entitled FINGER RING DEVICE FOR ACTIVITY MONITORING OR GESTURAL INPUT. The disclosures of each of the above applications are herein incorporated by reference for all purposes.

FIELD OF THE INVENTION

[0002] This invention is in the field of wearable electronic devices.

BACKGROUND OF THE INVENTION

[0003] Wearable electronics are an emerging technology with many applications for the wearer. They can improve lifestyles, ease access to technology and help monitor activity within the wearer's body. However, many current wearable electronics are bulky and can be intrusive or interfere with a person's daily life. In this regard, the wearer may not be comfortable wearing the device for extended periods of time.

SUMMARY OF THE INVENTION

[0004] This invention overcomes the disadvantages of the prior art by providing a wearable computing device (WCD) in the shape of a ring. The wearable computing device can be worn for extended periods of time and can take many measurements and perform various functions because of its form factor and position on the finger of a user.

[0005] One aspect of the disclosure provides a wearable computing device, comprising: an interior wall; an exterior wall; a flexible printed circuit board disposed between the interior wall

and the exterior wall, at least one component disposed on the flexible printed circuit board; and wherein at least one of the interior wall and the exterior wall defines a window that facilitates at least one of data transmission, battery recharge, and status indication.

[0006] In one example, the window comprises an internal window defined by the interior wall.

[0007] In one example, the window comprises an exterior window defined by the exterior wall.

[0008] In one example, the window comprises a plurality of exterior windows defined by the exterior wall.

[0009] In one example, the plurality of exterior windows comprises a first exterior window and a second exterior window, wherein the first exterior window facilitates battery charging and the second exterior window facilitates data transmission.

[0010] In one example, at least one concentrated photovoltaic cell, an antenna, and at least one LED are accessible via the window.

[0011] Another aspect of the disclosure provides a wearable computing device, comprising: an internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing.

[0012] In one example, the external housing portion comprises a substantially transparent external potting.

[0013] In one example, the at least one component comprises at least one LED configured to emit at least one of visible light, infrared radiation, and ultraviolet radiation through the external potting.

[0014] In one example, the at least one component comprises a concentrated photovoltaic cell configured to receive concentrated light through the transparent external potting.

[0015] In one example, the flexible printed circuit board includes a plurality of stiffener elements configured to engage with a corresponding plurality of flanges disposed on the internal housing portion.

[0016] Another aspect of the disclosure provides a wearable computing device, comprising: an external housing portion; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the external housing; at least one component disposed on the flexible printed circuit board; and an internal housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the external housing.

[0017] In one example, the internal housing portion comprises a substantially transparent internal potting.

[0018] In one example, the at least one component comprises at least one LED configured to emit at least one of visible light, infrared radiation, and ultraviolet radiation through the internal potting.

[0019] In one example, the at least one component comprises a concentrated photovoltaic cell configured to receive concentrated light through the transparent internal potting.

[0020] In one example, the flexible printed circuit board includes a plurality of stiffener elements configured to engage with a corresponding plurality of flanges disposed on the external housing portion.

[0021] Another aspect of the disclosure provides a system, comprising: a wearable computing device, including a housing and a photovoltaic element disposed at least partially within the housing; and a base assembly, the base assembly including a concentrated light source directed at the photovoltaic element.

[0022] In one example, the wearable computing device includes at least one ferrous element disposed within the housing, and wherein the base assembly includes at least one magnetic element disposed therein.

[0023] In one example, the concentrated light source is arranged circumferentially around the wearable computing device when the wearable computing device is engaged with the base assembly.

[0024] In one example, the concentrated light source comprises at least one of a laser diode and a light emitting diode (LED).

[0025] In one example, a housing of the WCD defines an opening through which the WCD is configured to receive concentrated light.

- [0026] In one example, the base assembly comprises an optical element for focusing concentrated light emitted from the concentrated light source.
- [0027] In one example, the optical element comprises a lens and is selected from the group consisting of concave, convex, plano-concave, plano-convex.
- [0028] In one example, the WCD comprises at least one transparent potting configured to allow concentrated light to pass therethrough.
- [0029] In one example, the WCD is ring-shaped and the base assembly comprises at least one post configured to engaged with a finger space of the WCD.
- [0030] In one example, the photovoltaic cell comprises a plurality of photovoltaic cells.
- [0031] Another aspect of the disclosure provides an enclosure for a wearable computing device, the enclosure comprising: a base defining a receptacle for receiving the wearable computing; a lid configured to engage with the base to substantially enclose the wearable computing device, the lid having an optical element configured to direct incident electromagnetic radiation to a photovoltaic cell disposed on the wearable computing device to allow charging thereof
- [0032] In one example, the lid includes a plurality of vent holes that prevent overheating within the enclosure.
- [0033] In one example, the optical element comprises a lens.
- [0034] In one example, the lens has a focal length and wherein a distance between a central portion of the lens and the photovoltaic cell is greater than or less than the focal length.
- [0035] Another aspect of the disclosure provides a timepiece system, comprising: a timepiece having a substantially planar under surface; and a timepiece computing device adhered to the planar under surface, the timepiece computing device being substantially cylindrical and comprising: a processor; a memory; and at least one sensor.
- [0036] Another aspect of the disclosure provides a wearable computing device system, comprising: a wearable computing device; an attachment frame coupled to the wearable computing device; and an optical element removably coupled to the attachment frame, wherein the optical element is configured to direct electromagnetic radiation to a photovoltaic cell disposed on a surface of the wearable computing device to allow for charging of the wearable computing device.

[0037] In one example, the attachment frame is removably coupled to the wearable computing device.

[0038] In one example, the attachment frame engages with an inward-facing surface of the wearable computing device.

[0039] Another aspect of the disclosure provides a method of identifying an authorized user of a wearable computing device, comprising: illuminating a portion of a skin surface of the user; imaging the portion of the skin surface of the user to generate at least one first image; generating a reference capillary map corresponding to the user based at least in part on the at least one image.

[0040] In one example, the method further includes rotating the wearable computing device during the illuminating and imaging steps.

[0041] In one example, the method further includes imaging the portion of the skin surface of the user to generate at least one second image; and comparing the at least one second image to the reference capillary map in order to authenticate the user.

[0042] Another aspect of the disclosure provides a method of navigating, comprising: gesturing in a first direction while wearing a wearable computing device; comparing the first direction to a predetermined direction in a predetermined set of directions; providing feedback based on the comparison of the first direction of the predetermined direction.

[0043] In one example, the gesture comprises pointing a finger and the first direction comprises a first heading.

[0044] Another aspect of the disclosure provides a method of regulating temperature, comprising: measuring a skin temperature of a user via a first temperature sensor; measuring an ambient temperature via a second temperature sensor; comparing the skin temperature to a predetermined threshold temperature; and adjusting the ambient temperature based in part on the comparison.

[0045] In one example, measuring the skin temperature comprises measuring the skin temperature via a first temperature sensor disposed at an inward facing surface of a wearable computing device.

[0046] In one example, measuring the ambient temperature comprises measuring the ambient temperature via a second temperature sensor disposed at an outward facing surface of the wearable computing device.

[0047] Another aspect of the disclosure provides a method for controlling appliances, comprising: identifying a position of a first appliance in a room; gesturing a first gesture in a direction of the first appliance; identifying the direction of the first direction via a wearable computing device; issuing a controlling command to the first appliance based in part on the identified direction of the gesture.

[0048] Another aspect of the disclosure provides a method of generating an alert, comprising: authenticating a first wearer of a first wearable computing device as a first authenticated user; transmitting first biometric data associated with the first wearer; associating the first biometric data with a first profile associated with the first wearer of the first wearable computing device; comparing the first biometric data with a group profile comprising aggregated biometric data from a plurality of distinct wearers of a plurality of distinct wearable computing devices; and generating an alert if the first biometric data falls outside of a predetermined threshold set by the aggregated biometric data.

[0049] In one example, the biometric data comprises at least one of heart rate; ECG profile; blood sugar, and blood pressure.

[0050] In one example, the plurality of distinct wearers share a common trait, resulting in their aggregation into the group profile.

[0051] In one example, the common trait comprises at least one of: age, gender, profession, and location.

[0052] Another aspect of the disclosure provides a method of determine a sampling rate of a wearable computing device, comprising: determining an activity level of a wearer of a wearable computing device based at least in part on data from at least one sensor disposed onboard the wearable computing device; comparing the activity level to a predetermined activity threshold; and increasing a first sensor sampling rate if the activity level is above a predetermined activity threshold.

[0053] In one example, the method further includes decreasing the first sensor sampling rate if the activity level is below a predetermined activity threshold.

[0054] In one example, the predetermined activity threshold comprises an acceleration measurement.

BRIEF DESCRIPTION OF THE DRAWINGS

[0055] The invention description below refers to the accompanying drawings, of which:

[0056] FIGS. 1A-C are perspective views of a WCD in accordance with some embodiments;

[0057] FIG. 2 is an abstract functional diagram illustrating example components within the WCD in accordance with some embodiments;

[0058] FIGS. 3A-C are views of windows of a WCD with example components exposed in accordance with some embodiments;

[0059] FIG. 4 is an exploded view of a WCD illustrating a battery and a flexible circuit which are configured to fit inside the housing of the WCD in accordance with some embodiments;

[0060] FIG. 5 is a perspective view of the flexible circuit of FIG. 4 in accordance with some embodiments;

[0061] FIG. 6 is an exploded view of a WCD with an alternative charging mechanism in accordance with some embodiments;

[0062] FIG. 7 is a perspective view of an alternative design of a WCD in accordance with some embodiments;

[0063] FIG. 8 is an exploded view of the WCD of FIG. 7 illustrating another alternative charging mechanism in accordance with some embodiments;

[0064] FIGS. 9A-B are example screenshots illustrating a user interface of a mobile application in accordance with some embodiments;

[0065] FIGS. 10A-F are perspective views of a wearable computing device (WCD) according to one or more aspects of the disclosure;

[0066] FIG. 11 is a cross section of a WCD according to another aspect of the disclosure;

[0067] FIGS. 12A-E are views of a WCD according to another aspect of the disclosure;

[0068] FIGS. 13A-B are views of a WCD according to another aspect of the disclosure;

[0069] FIGS. 14A-C are views of a WCD according to one or more aspects of the disclosure;

[0070] FIG. 15 is a perspective view of a base assembly and WCD according to one or more aspects of the disclosure;

[0071] FIG. 16A is a schematic view of a WCD showing components used for identifying the wearer of the WCD;

[0072] FIGS. 16B-C are perspective views of a skin surface according to one or more aspects of the disclosure;

- [0073] FIGS. 17A-C are perspective views according to one or more aspects of the disclosure;
- [0074] FIGS. 18A-B are embodiments employing the navigational features of the WCD;
- [0075] FIGS. 19A-D are various embodiments for controlling environments of a user according to one or more aspects of the disclosure;
- [0076] FIG. 20 is a perspective view of the hand of a user employing a two-factor authentication technique according to one or more aspects of the disclosure;
- [0077] FIGS. 21A-D illustrate embodiments for charging according to one or more aspects of the disclosure;
- [0078] FIGS. 22A-B illustrate embodiments according to one or more aspects of the disclosure;
- [0079] FIGS. 23A-B illustrate WCDs performing proximity functions according to one or more aspects of the disclosure;
- [0080] FIGS. 24A-B illustrate gesture inputs according to one or more aspects of the disclosure;
- [0081] FIG. 25 is a perspective view of a WCD 2000 employing a reset function;
- [0082] FIGS. 26A-C are views of a WCD including an LED indicator according to one or more aspects of the disclosure;
- [0083] FIG. 27 is flow chart depicting a method of communicating with a near field communication (NFC) device according to one or more aspects of the disclosure;
- [0084] FIG. 28 depicts a method of monitoring activity according to one or more aspects of the disclosure;
- [0085] FIG. 29 depicts a method of determining whether a user is wearing gloves according to one or more aspects of the disclosure;
- [0086] FIG. 30 depicts a method of securing data onboard the WCD according to one or more aspects of the disclosure;
- [0087] FIG. 31 depicts a WCD with a pair of LED indicators disposed at an inward-facing portion of the WCD;
- [0088] FIGS. 32A-C are alert embodiments according to one or more aspects of the disclosure;

[0089] FIGS. 33A-C are sampling embodiments according to one or more aspects of the disclosure; and

[0090] FIG. 34 is a diagrammatic representation of a machine in the example form of a computer system within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed.

DETAILED DESCRIPTION

[0091] The present disclosure describes a wearable computing device (WCD) that enables a wearable fitness monitor(s)/computer(s) which is suitable for prolonged usage with accurate results. The WCD can be in the form of a ring that can be worn on the finger of a human (or animal) user. Although the WCD of the present disclosure is depicted as a ring that can be worn on the finger of a user, other shapes, designs, and form factors can be utilized for the WCD. For example, the WCD can be in the form of a wrist band, bracelet, necklace, earring, or any other type of wearable accessory. In this regard, references to the finger of a user in the present application can be considered to apply to other portions of a human body depending on the form of the WCD, such as wrist, neck, ear, etc.

[0092] The term “coupled” as used herein means connected directly to or connected through one or more intervening components or circuits. Any of the signals provided over various buses described herein may be time-multiplexed with other signals and provided over one or more common buses. Additionally, the interconnection between circuit elements or software blocks may be shown as buses or as single signal lines. Each of the buses may alternatively be a single signal line, and each of the single signal lines may alternatively be buses, and a single line or bus might represent any one or more of a myriad of physical or logical mechanisms for communication (e.g., a network) between components. The present embodiments are not to be construed as limited to specific examples described herein but rather to include within their scope all embodiments defined by the appended claims.

[0093] FIG. 1A is a perspective view 100 of a WCD 110 illustrating an exterior window 120 in accordance with some embodiments, and FIG. 1B is a perspective view 102 of the WCD 110 of FIG. 1A illustrating an interior window 130.

[0094] As previously mentioned, it is recognized in the present disclosure that conventional wearable fitness monitors such as clip-on devices, wristbands, or watch-type monitors still often

suffer from inaccuracy mainly because they lack constant and consistent ways to read from the body areas they aim to monitor. It can also be an extra burden for the person to remember and wear such conventional fitness monitors each time the person perform exercises in order to create an accurate history tracking the exercise activities.

[0095] Accordingly, the present embodiments of the WCD 110 can function as fitness monitors/computer which is suitable for prolonged usage so as to create accurate results. In addition or as an alternative to fitness monitoring, as will be discussed in more detail below, the WCD 110 can function as a remote input device through, for example, gesture recognition. In some embodiments, the WCD 110 can further function as a sleep monitor, a heart rate sensor, a cardiac monitor a body temperature detector, or the like. It is noted that, for those embodiments which can function as a cardiac monitor (e.g., that measures electrocardiogram (EKG)), it may be necessary to establish a closed loop (e.g., for the electrical measurement of EKG) across the heart. As such, in some of those embodiments, a separate conductive pad can be coupled to the WCD 110 so that a user can pinch the pad with fingers on an opposite hand,

[0096] Specifically, in some embodiments of the present disclosure, the WCD 110 can be worn by the user (e.g., on a finger) for fitness, physical activity, biological data monitoring as well as for gestural input or other suitable purposes. As shown in FIGS. 1A and 1B, the WCD 110 can include the exterior window 120 on its exterior wall for input/output data transmission and reception, battery recharge, or status indication. The WCD 110 can also include the interior window 130 on its interior wall for various monitoring or sensing activities. The form factor of the WCD 110 allows it to be worn for prolonged hours with constant and consistent contact with the skin area, thereby creating a more reliable and extended recording (e.g., as compared to aforementioned conventional fitness monitors) of the user's fitness activity, physical exercise, as well as health information such as heart rates and body temperature. More implementation details regarding the WCD 110 are discussed below.

[0097] FIG. 1C is a perspective view of an alternative WCD design 112 of the WCD 110 of FIG. 1A in accordance with some embodiments. As shown in FIG. 1C, the WCD 112 includes a second exterior window 124 in addition to a first exterior window 122. The two exterior windows 122 and 124 can include spacing between the two windows 122 and 124 so that the mechanical strength of the housing structure of the WCD 112 may be stronger than that of the WCD 110, which is shown to include one single exterior window 120. Further, in some

embodiments, radio antennas (e.g., Bluetooth) or other sensitive circuitry can be positioned in the second exterior window 124 away from the first exterior window 122 so that quality of reception may be improved.

[0098] FIG. 2 is an abstract functional diagram 200 illustrating example components within the WCD (e.g., WCD 110) in accordance with some embodiments. As shown in diagram 200, the WCD 110 can include a processor module 210, a plurality of sensor modules 220, a status indicator module 230, a power generation and management module 240, a communication module 250, a memory 260, and miscellaneous modules 270 (e.g., a real-time clock (RTC) crystal oscillator as illustrated in FIG. 2). The WCD 110 can also include a battery module 280 that provides electrical power for the WCD 110. In some embodiments, the battery 280 can be of a lithium-polymer type or a zinc-polymer type. It is noted that modules illustrated in diagram 200 are for purposes of facilitating a better understanding of the present embodiments; other suitable modules may be included in the WCD 110 and are not shown for simplicity. As used herein, the term “components” is considered to generally include any of the modules depicted and/or described in FIG. 2, as well as any other modules described herein.

[0099] It is noted that the aforementioned modules are intended for purposes of enabling the present embodiments, rather than limiting. As such, a person of ordinary skill in the art will understand that the present disclosure covers apparent alternatives, modifications, and equivalents (e.g., combining or separating the modules) made to the techniques described herein. For example, in some embodiments, a portion of the communication module 250 (e.g., the Bluetooth Chip as shown in FIG. 2) can be combined into the processor module 210. For another example, one or more modules herein can be combined into one to form a system-on-the-chip (SOC).

[0100] The processor module 210 can have generic characteristics similar to general purpose processors or may be application specific integrated circuitry that provides arithmetic and control functions to the WCD 110. The processor can be any type of processor, such as a processor manufactured by Atmel, Freescale, Nordic Semiconductor, Intel®, AMD®, or an ARM® type processor. The processor module 210 can include a dedicated cache memory (not shown for simplicity). The processor module 210 is coupled to all modules 220-270 in the WCD 110, either directly or indirectly, for data and control signal transmission.

[0101] The memory 260 may include any suitable type of storage device including, for example, ROM, such as Mask ROM, PROM, EPROM, EEPROM, NVRAM, such as Flash memory; Early stage NVRAM, such as nvSRAM, FeRAM, MRAM, or PRAM, or any other type, such as, CBRAM, SONOS, RRAM, Racetrack memory, NRAM, Millipede memory, or FIG. Other types of data memory can be employed as such are available in the form factor desired.

[0102] In addition to storing instructions which can be executed by the processor module 210, the memory 260 can also store data generated from the processor module 210. It is noted that the memory 260 can be an abstract representation of a generic storage environment. According to some embodiments, the memory 260 may be comprised of one or more actual memory chips or modules. In some embodiments, the memory 260 can function as a temporary storage (e.g., for firmware updates, and/or for avoiding accidental malfunctions (such as so-called “bricking”)).

[0103] In accordance with one or more embodiments, the sensor modules 220 can include various sub-modules for the WCD 110 to perform different monitoring or sensing activities. A view 302 of the interior window (e.g., window 130) of a WCD (e.g., WCD 110) with example components exposed is shown in FIG. 3B. As shown in the example of FIG. 3B, the sensor modules 220 can include a temperature sensor 320 a, a red light emitting diode (LED) 320 b, a light sensor 320 c, and an infra-red LED 320 d. Among the sensors in the sensor modules 220, those sensors (e.g., sensors 320 a-320 d) which are directly related to biological sign monitoring can be configured and positioned in a way that is close to the skin (e.g., facing the interior window 130 of the WCD 110). Although not shown in FIG. 3B for simplicity, the sensor modules 220 can further include sensors that are not directly related to biological sign monitoring; some examples of these sensors include accelerometers, gyroscopes, vibration, sensors (e.g., a magnetometer or a digital compass), or other suitable sensors (e.g., for gesture recognition). The magnetometer can measure the strength and/or direction of a prevailing magnetic field. In this regard, the magnetometer can be used during global positioning and/or navigation. In particular, the magnetometer can be used to measure a directional heading when the WCD is in motion and can supplement position data where the WCD is out of communication range. In one or more embodiments, the accelerometers in the sensor modules 220 can detect movements in multiple (e.g., 3) dimensions or axes. The accelerometer can

measure force of acceleration of the WCD and can measure gestures performed by a user while wearing the WCD. In other examples, the accelerometer can detect acceleration of the user while wearing the WCD. This can permit tracking of activity level, such as steps taken or number of laps swum in a pool.

[0104] The temperature sensor can be any type of sensor that detects temperature, such as a thermistor, PTC, NTC, etc. In another example, the temperature sensor can use IR light emitted from an object to calculate a surface temperature of the object in a manner clear to those of ordinary skill in the art.

[0105] Together, the processor module **210** and the sensor modules **220** can enable the WCD **110** to perform multiple functions including, for example, pedometer, sleep monitor (e.g., which monitors sleep quality), heart rate sensor, pulse oximetry, skin (and in select embodiments, ambient) temperature. In addition, some embodiments of the WCD **110** can further function as a gesture input device. In particular, the present embodiments recognize that the WCD **110** can detect finger motions or gestures which may be difficult for conventional fitness sensors to detect, such as a tap, a snap, a knock on the table, and the like. In some embodiments, the WCD **110** can utilize the accelerometer to measure the activity level (e.g., arm movement) in conjunction with the measured heart rate to determine if the user is walking horizontally, running, swimming, or climbing stairs. Other activities can be identified by the WCD **110** may include biking or sleeping.

[0106] In some embodiments, the WCD **110** can also be programmed to learn particular gestures or physical exercise from the user using, for example, a training mode. For example, the user can instruct (e.g., using a computer or a mobile device of the user) the WCD **110** to enter the training mode and perform the gesture or physical exercise; the WCD **110** can record the readings from the sensor modules **220**, recognize patterns therefrom, and store the result in, for example the memory **260**, so that such gesture or exercise can be recognized by the WCD **110** after the training. The WCD **110** can be configured (e.g., via a mobile application running on a mobile device of the user) so that the recognized gestures can perform functions designated by the user, such as clicks, swipes, unlocks, or media player controls. In one embodiment, the WCD **110** can include near field communication (NFC) chips so that certain functions (e.g., unlocking a smart phone) can be performed when the WCD **110** touches upon or otherwise be detected by another NFC device. In some embodiments, the unlocking function of the WCD **110** can also

unlock a user device (e.g., a phone) via the communication module 250 (e.g., Bluetooth) by the WCD 110 transmitting a proper unlock code.

[0107] Moreover, the WCD 110 can function as a key or a control device for keyless access to home, automobile, or other suitable user authentication processes. The WCD 110 can also be integrated with games and game consoles so that it can function as an input device to those games and consoles. In some embodiments, the WCD 110 can be adapted for use in medical and home health monitoring, or as a transportation safety device (e.g., that broadcasts emergency messages to relevant authorities). Additional examples of sensors/functionalities of the WCD 110 can include an inertial measurement unit (IMU) (e.g., for more complex gesture recognition), a near-infrared (NIR) spectrometer (e.g., for measuring light absorption and deriving blood glucose/blood alcohol/CO₂ content), a Galvanic skin response sensor (e.g., for measuring sweat/nervousness), an electrocardiogram (ECG or EKG), and so forth.

[0108] In some embodiments, the processor module 210 can determine (e.g., based on identified physical activities, routine pattern, and/or time) a frequency at which one or more sensors in the sensor modules 220 should operate. Because it is recognized in the present disclosure that the heart rate of a human being typically does not vary too widely (e.g., beyond a certain percentage of what has been previously measured), in some embodiments, the WCD 110 can automatically adjust the sensor modules 220 (e.g., to slow down) so as to save power. More specifically, some embodiments of the WCD 110 can include a phase-locked loop or logic to predict the pulse width by determining lower and upper ranges in which the heart rate is predicted to be, thus only powering up the sensor modules 220 at the time of the predicted heartbeats. For one example, if the WCD 110 determines that the user is at sleep (e.g., based on the heart rate, the body temperature, together with the movements detected by the accelerometer and/or the vibration detector), the WCD 110 can slow down its heart rate detection frequency (e.g., from 1 measurement per second to 1 measurement per 10 seconds) and skip the measurement of several heartbeats because it is unlikely that the heart rate will change drastically during that period. Conversely, if the WCD 110 determines that the user is performing a high intensity physical exercise, the WCD 110 can increase the frequency of monitoring and recording of the sensor modules 220.

[0109] In accordance with one or more embodiments, the WCD 110 also includes various modules coupled to the processor module 210 for, by way of example but not limitation,

input/output data transmission, battery recharge, or status indication. A view **300** of the exterior window (e.g., window **120**) of a WCD (e.g., WCD **110**) with example components exposed is shown in FIG. 3A. As shown in the example of FIG. 3A, the modules configured to face the exterior window **120** of the WCD **110** can include parts from the status indicator module **230**, the power generation and management module **240**, and the communication module **250**.

[0110] Specifically, one embodiment of the WCD **110** includes the status indicator module **230** coupled to the processor module **210** to indicate various statuses. In some embodiments, the status indicator module **230** includes a light emitting diode (LED) **330**, such as shown in FIG. 3A. The LED **330** can be a single red/green/blue (RGB) LED. In other embodiments, the status indicator module **230** can include other suitable types of indicator devices including, for example, a single color LED, an electrophoretic ink (or “e-ink”) display, a persistent display, or the like. In accordance with some embodiments, the WCD **110** can utilize the indicator module **230** (e.g., via the RGB LED **330** through the exterior window **130**) to visually communicate with the user. For example, a red color can be displayed (e.g., for a predetermined period of time) by the LED **330** that the WCD **110** needs to be recharged, and a green color can be displayed to indicate that the WCD **110** is fully charged. For another example, a blue color can be displayed when the communication module **250** is in use. In one or more embodiments, the user can program a fitness goal (e.g., a target heart rate) to the WCD **110** so that, for example, a green color can be displayed when the heart rate is below the target, a yellow color can be displayed when the target is reached, and a red color can be displayed when the heart rate is above a certain percentage of the set target. Some embodiments of the WCD **110** include the communication module **250** for wireless data transmission. Particularly, in some embodiments, the communication module **250** includes one Bluetooth chip and a Bluetooth antenna **350**, such as shown in FIG. 3A. One or more embodiments of the WCD **110** also provides the capability of storing activity logs (e.g., in the memory **260**). More specifically, fitness activities, exercise histories, as well as recorded biological signs such as heart rate and body temperature, can be stored onboard in the memory **260** of the WCD **110**. Each data entry in the activity logs can be time-stamped using, for example, an onboard real-time clock (e.g., which may be included in miscellaneous modules **270**). For power saving and other purposes, the activity log can be downloaded (e.g., via the communication module **250**) when requested by the user. In other embodiments, the activity log can be pushed (e.g., via email or other suitable means) by the

WCD 110 to a user device at a time designated by the user. In some embodiments, the memory 260 can store up to a full week worth of activity logs.

[0111] The WCD 110 can include the power generation and management module 240 for recharging the battery 280 and for providing electrical power to various modules 210-270 in the WCD 110. Particularly, in some embodiments, the power generation and management module 240 includes one or more concentrated photovoltaic (CPV) cells 340, such as shown in FIG. 3A. The CPV cells 340 can be high-efficiency tandem solar cells and can be attached on the flexible printed circuit (e.g., circuit 415, 515). Because the small form factor of the embodiments of the WCD 110, CPV cells 340, which can absorb more light energy from a wider spectrum of light than the traditional solar cells, are used. In some embodiments, multiple (e.g., 3) CPV cells 340 can be configured in series to provide sufficient voltage and/or current for charging the battery 280.

[0112] According to some embodiments, the WCD can include one or more sensing or imaging devices that can be any type of device capable of detecting electromagnetic radiation, such as visible light, IR, NIR, UV, etc. In one example, the device is an imaging device, such as a CMOS or CCD camera.

[0113] According to some embodiments, the WCD 110 can be placed or docked into a charging station for recharging.

[0114] In some embodiments, the power generation and management module 240 can include electromagnetic induction charging coil so that a WCD (e.g., ring 610) can be charged using an inductive charger. FIG. 6 shows an exploded view 600 of such alternative embodiment of WCD with the inductive charging mechanism including the charging coil 640, as well as battery 680, housing 612, and rigid-flex PCBA 615. However, it is noted that there may be a need to manufacture the inductive charging coil 640 in different sizes that correspond to different ring sizes. Further, it is noted that the efficiency of the electromagnetic induction charging mechanism may be adversely affected by the adoption of a metallic housing. Additionally or alternatively, to avoid multiple sized coils mounted to the edge of the ring, the coil can be placed on the inner or outer sides of the ring by positioning the coil beneath a window in the metal housing of the ring.

[0115] In order to achieve optimal power management of the WCD, one or more of the components can be selected to minimize power usage. For example, a processor, memory, or any

other component can be selected based on rated power usage. In one example, it may be desirable to select components that draw current on the order of microamps in order to extend the battery life of the WCD and to allow the WCD to perform health/activity monitoring functions between charging sessions.

[0116] In still some other alternative embodiments, the power generation and management module 240 can include thermoelectric generator (TEG) modules so that a WCD (e.g., WCD 710, 810) can be charged by the difference between the body temperature and the ambient temperature. FIG. 7 is a perspective view 700 of such alternative design, and FIG. 8 is an exploded view 800 of the WCD 710 of FIG. 7. Also shown in FIGS. 7 and 8 is an alternative design of the housing for the WCD where the ring includes an outer ring 812 a, an inner ring 812 b, and insulators 814 a and 814 b. However, it is noted that utilizing TEGs for charging the battery may be less than ideal since the difference between body temperature and ambient temperature might not be great enough to fully charge the battery, and that in many occasions (e.g., during sleep), the temperature difference needed for TEG to generate electricity may quickly disappear (e.g., since the WCD 710, 810 may be covered inside the comforter).

[0117] The battery can be any type of battery, such as a rechargeable battery. The battery can be a thin, flexible lithium ceramic chemistry battery. In another example, the battery can be a circular formed lithium polymer or lithium ion battery. The battery can provide power to any of the components described above. In one example, the battery can be a lithium cell integrated directly with the flexible PCB described above. Other implementations can integrated the battery directly onto the housing to reduce the volume of space taken up by battery packaging.

[0118] The WCD can also include one or more polymer or piezo actuators for providing appropriate haptic or physical feedback and alerts to a user while the user is wearing the ring. The piezo actuator can also provide audible feedback to a user.

[0119] As previously mentioned, the WCD 110 can be used with a software application (e.g., a mobile phone application for the Apple iOS or the Google Android OS) which can run on the user's computing device (e.g., a mobile device such as a smart phone). Specifically, the software application can facilitate the mobile device of the user to couple to the WCD 110 (e.g., via the communication module 250) for data communication, such as downloading activity logs, changing configuration and preferences, training the WCD. The software application can also generate a user interface showing the results or readings from the health and fitness tracking

performed by the WCD 110. FIG. 9A is an example screenshot illustrating such user interface 1000 displaying fitness monitoring readings in accordance with some embodiments.

[0120] Further, the WCD 110 can be used for gesture input, and the software application can facilitate the user to customize gesture input and control. FIG. 9B is an example screenshot illustrating such user interface 1100 displaying sensor readings (e.g., for calibration purposes) in accordance with some embodiments. In one or more embodiments, the WCD 110 can also be used directly with other Bluetooth enabled devices such as electronic locks or keyless car entry. In other examples, the WCD 110 can also control other devices via a smartphone and other Wireless LAN enabled devices such as home automation systems.

[0121] FIG. 3C is a view 304 of two exterior windows of an alternative WCD (e.g., WCD 112 of FIG. 3C) with example components exposed in accordance with some embodiments. The components 330, 340, and 350 shown in FIG. 3C function similarly to those components described in FIG. 3A. However, some components (e.g., antenna 350) can be positioned to face a different exterior window than the exterior window the rest of the components face. This may increase the mechanical strength of the housing structure of the ring, and/or may reduce signal interference among the components.

[0122] FIG. 4 is an exploded view 400 showing an exemplary WCD 410 (e.g., WCD 110) illustrating a battery 480 and a flexible circuit 415 which are configured to fit inside a housing 412 of the WCD 410. It is recognized by the present disclosure that a human being's finger can come in various different sizes and so should the WCD 410. In order to reduce the cost of manufacturing different sizes of printed circuits, in some embodiments, the modules 210-270 (of FIG. 2) are formed on a flexible or rigid-flex printed circuit (FPC) board, an example 500 of which is shown as FPC 515 in FIG. 5. In particular, one or more embodiments provide that the FPC 515 and the battery 480 are not specific to a ring size, and that the same circuitry and/or battery can fit a multitude of sizes.

[0123] According to some embodiments, the WCD 410 provides a desirable form factor for a user to wear it for a prolonged period of time. The edges and the shape of the WCD 410 can be configured in a way that is comfortable and ergonomic; for example, the finished parts of the embodiments are to be free from burrs and sharp edges. The material which forms the housing portion of the WCD 410 can include medical grade metallic alloys that reduce the likelihood of

allergic reactions. Examples of the housing material include stainless steel, tungsten carbide, titanium alloy, silver, platinum or gold.

[0124] In the examples shown in FIG. 4, the U-shape of the ring housing 412 allows for the flexible PCB 415 to be inserted into the edge of the WCD 410. The windows (e.g., windows 120, 130) on the walls of the WCD 410 can align with the operating circuitry to allow, for example, battery charging, Bluetooth connection, and user feedback LED/micro display on the outer wall, and biological feedback sensors (e.g., pulse oximetry, temperature sensor) on the inner wall. In one or more embodiments, the WCD 410 can be completely sealed using potting epoxy. The sealing epoxy can be transparent to allow light to pass through for the CPVs and sensors. In some embodiments, the WCD 410 can be potted with two different compounds. In these embodiments, the body of the WCD 410 can be filled with clear material, and the edge of the WCD 410 can be filled with an opaque material so that different colors can be incorporated (e.g., as a decorative element). It is noted that sealing the assembly using potting epoxy can also bring the additional benefit of making the WCD 410 completely or almost completely waterproof as well as increasing the structural rigidity of the WCD 410.

[0125] Internal Housing/External Potting

[0126] FIG. 12A is a perspective view and FIG. 10B is a side view of a WCD 1200 according to one or more aspects of the disclosure. The WCD 1200 can be in the shape of a ring and can be worn on any of the five fingers (including the thumb) of (typically) a human user. In this regard, the WCD 1200 can define an interior diameter d_i and exterior diameter d_e . The interior diameter d_i can be defined as the distance between opposing points on the interior surface of the ring, with the interior surface being the portion of the WCD facing the finger of a user while the device is worn by the user. The interior surface of the WCD can generally define a finger space for receiving the finger of the user. The exterior diameter d_e can be defined as the diameter between opposing points on the exterior surface of the ring, with the exterior surface being the portion of the WCD opposed to the interior surface and facing away from the finger of the user.

[0127] The interior diameter d_i and exterior diameter d_e can be any size to accommodate any finger size. In one example, d_e is determined by d_i plus a thickness of any components and/or flexible circuit boards disposed within the WCD. Additionally, although depicted as being circular, the finger space of the WCD 1200 can be any shape, such as ovular, elliptical, or the

like, to accommodate users with atypical finger profiles. In these examples, the dimensions of the interior and/or exterior diameter may be measured according to other variables, such as length, width, major diameter, minor diameter, etc. By way of non-limiting example, the WCD interior diameter d_1 (the diameter generally defining the ring size) can be in an approximate range of 12 mm to 24 mm so as to accommodate finger sizes ranging from a small child to a larger adult, and on any acceptable finger, including the thumb. The exterior diameter d_2 can also be any reasonable size or shape, and can define an approximate range of between 18 mm and 30 mm. Likewise, the thickness between diameters d_1 and d_2 can vary widely, but can typically reside in an approximate range of 1.5 mm to 3 mm. The width WR of the WCD along the direction of finger extension (finger longitudinal direction) is widely variable, and can be selected, in part to accommodate internal and external components. In a non-limiting example, the width WR is in a range of approximately 3 mm to 8 mm.

[0128] The WCD 1200 can include an overall housing 1210 that includes an internal housing 1212 and an external potting or encapsulant 1214. Together, the internal housing 1212 and external potting 1214 combine to form the overall form factor of the WCD 1200, in addition to providing a housing for one or more electronic components stored within the housing 1210 of the WCD 1200, as will be described in greater detail below.

[0129] The internal housing 1212 can be formed of any material, such as a nonconductive material, a conductive material, a ferrous material and/or a nonferrous metal, composite material (e.g. carbon-fiber and/or glass fiber composite) a dielectric material, or a combination of any of the above. In one example, the material of the inner housing 1212 is conductive and nonferrous, such as aluminum, titanium, or stainless steel. In other examples, the internal housing can be formed of a polymer, such as plastic. The external potting 1214 can be formed of any material, solid or gelatinous, that can provide resistance to shock and/or vibration and can prevent moisture and/or debris from entering the housing 1210 of the WCD 1200, such as silicone, epoxy, polyester resin or any other polymer.

[0130] In one example, the external potting 1214 can be transparent. In this regard, the transparent external potting can allow electromagnetic radiation, such as visible, IR, or UV light sources from inside the housing 1210 to pass through the external potting 1214 without the need of a window or discontinuity in the external potting 1214 and without changing the optical properties of the radiation. In the same vein, electromagnetic radiation sources, such as visible,

IR, or UV light, external to the housing can pass through the external potting 1214 and can be detected by, sensed by, or fall incident upon internal components of the WCD 1200 without the need for a window or discontinuity in the housing and without changing the optical properties of the radiation. In another example, the external potting 1214 can be tinted. The tint can be cosmetic and can prevent the internal components of the WCD to be visible by the user. In this regard, depending on the tint, optical properties of light passing therethrough may be slightly changed. For example, certain colors of the light can be filtered and can result in decreased power transmission. The above description regarding external potting 1214 can be applied to any of the pottings described below.

[0131] The internal housing 1212 can define a window 1216. In one example, the internal housing is formed of a material that completely or partially prevents light (or other electromagnetic radiation) from passing through the internal housing 1212. In this regard, the internal housing 1212 can define the window 1216 to allow for such radiation to pass through the housing 1212. As shown, the window 1216 can be generally elliptical-shaped, but can be any other suitable shape according to other examples, such as rectangular, circular, ovular, etc. Since the window 116 is defined by the internal housing 1212, the window 1216 can face the finger of the user while the user is wearing the WCD 1200, which can provide many advantageous features and implementations, as will be described in greater detail below.

[0132] FIG. 10C is a front view of the WCD and FIG. 10D is a cross section of the WCD 1200 along the line A-A of FIG. 10C. As shown, the internal housing 1212 can have a generally U-shaped internal surface 1212 a to accommodate one or more internal components and can define a pair of flanges 1212 b and 1212 c. The external potting 1214 can extend between the flanges 1212 b and 1212 c of the internal housing to provide an internal space 1220 to accommodate one or more components. By virtue of the external potting 1214, the internal space 1220 defined by the internal surface 1212 a and the external potting 1214 can be hermetically sealed, thereby preventing debris, dust, moisture, or any other unwanted fluids or materials from interacting with the internal components of the WCD 1200. Although not depicted, the internal components can reside within the internal space 1220, and the external potting 1214 can be disposed immediately atop the components to provide the seal.

[0133] FIG. 10E is a perspective view of the internal housing 1212 without external potting 1214. As shown, the internal surface 1212 a defines a generally U-shaped surface for receiving the components.

[0134] FIG. 10F is a perspective view of the internal housing 1212 with a portion of the external potting 1214 removed and showing one or more components 1230 and printed circuit board (PCB) 1240. The components and PCB can be constructed as flex circuits, thereby allowing the components 1230 and PCB 1240 to be geometrically configured within the ring shaped internal space 1220. The PCB 1240 can be any type of flexible material clear to those of skill, such as polyimide, PEEK, etc. Additionally, the PCB could be rigid-flex whereby panels of RF4 are connected together with a flexible substrate.

[0135] As shown, the PCB 1240 and the components 1230 can be disposed within the internal space 1220 generally defined by the internal surface 1220 a and the flanges 1220 b-c. The PCB 1240 can define one or more folding regions 1242 that allow the PCB 1240 to conform to the circumference and/or perimeter of the internal surface 1212 a. The PCB 1240 can extend around at least a portion, or up to an entire circumference, of the internal surface 1212 a. In one example, the size of the internal diameter d_i of the WCD can determine the portion of the internal surface 1212 a around which the PCB 1240 extends. Illustratively, for a larger ring size and a larger internal diameter d_i , the PCB 1240 can extend only a portion (an arc) of the overall circumference, while for smaller ring sizes a greater portion (arc) of the circumference can be employed to accommodate PCB 1240 and the internal components 1230. The adjacent portions of PCB can form an arc angle therebetween by virtue of the folding regions disposed therebetween, allowing for the PCB to be conform to the internal surface 1212 a.

[0136] External Housing/Internal Potting

[0137] FIG. 11 is a cross section of a WCD 1300 according to another aspect of the disclosure and illustrative embodiments. In this example, the WCD 1300 includes a housing 1310 that includes an external housing 1312 and an internal potting or encapsulant 1314. The external housing 1312 includes an internal surface 1312 a that has a generally C-shaped cross section—but alternate cross section shapes, such shapes with an external notch or groove. The external housing includes flanges 1312 b-c that extend toward each other, beyond portions of the internal surface 1312 a, to define a partially enclosed internal space 1320. In an assembled state, the WCD 1300 can include a battery 1330, a PCB 1340, and components 1350, which can be at

least partially or completely disposed within the partially enclosed internal space 1320. The internal potting 1314 can extend between the flanges 1312 b-c and can seal the partially enclosed internal space 1320. The components can be encapsulated by the internal potting 1314. The PCB 1340 and components 1350 can extend along an inner circumference of the internal surface 1312 a.

[0138] Illustratively, the external housing 1312 can be formed of the same materials as the internal housing 1212 described above, and the internal potting 1314 can be formed of the same materials as the external potting 1214 described above. As also described above, the internal potting 1314 can be transparent and the external housing 1312 can define one or more windows according to one or more aspects of the disclosure.

[0139] FIG. 12A is a cross section of a WCD according to another aspect of the disclosure and illustrative embodiment. In this example, the WCD 1400 includes a housing 1410, internal surface 1412 a, an internal or external housing 1412, an internal or external potting 1414, an internal space 1420, a battery 1430, a flexible circuit 1440, and one or more components 1450. This example is similar to the examples described above with respect to FIGS. 10 and 13, except the addition of a stiffener element 1442 and the flanges 1412 b-c extend further into the space 1420 toward one another such that the flanges 1412 b-c overlap with the stiffener element 1442.

[0140] FIG. 12B is a perspective view of the PCB and stiffener element of FIG. 12A. As shown in FIG. 12B, the stiffener element 1442 extends beyond an overall width w of the PCB 1440 and extends wider than a distance between flanges 1412 b-c. The stiffener element is disposed between folding regions 1444. The PCB 1440 can include one or more stiffener elements 1442 attached thereto, and the elements 1442 can be disposed periodically (in separated intervals) along a length l of the PCB 1440. As shown in FIG. 12C, the stiffener element 1442 can be disposed underneath the flexible circuit 1440, e.g., on a face of the flexible circuit 1440 opposed to the face on which the components 1450 are disposed, and can be permanently or semi-permanently attached thereto. The stiffener element can be implemented in any of the configurations described, and in particular, with either the internal housing/external potting arrangement or the external housing/internal potting arrangement.

[0141] The stiffener element 1442 can be formed of any material, such as polyamide or thin FR4, depending on construction of the PCB 1440. In particular, the material of the stiffener can be chosen to be more or less flexible than the PCB 1440. In one example, the stiffener element

1442 can be a polyamide stiffener disposed on a back surface of a flexible PCB. In another example, the stiffener element **1442** can be FR4 and can be substantially flush with respect to the flanges **1412 b-c**. In this regard, the stiffener element can extend substantially the distance between flanges **1412 b-c** and may not deform upon insertion into the space **1420**. The stiffener element can include surface features disposed on an edge thereof, with the edge facing one of the flanges **1412 b-c**. The surface features can include a sawtooth profile (e.g., intersecting straight lines at acute angles), or any other type of feature capable of providing an interference fit between flanges **1412 b-c**.

[0142] FIG. 12D shows a cross section of the WCD at a point in time during assembly/manufacture when the PCB **1440** is being inserted into the internal space **1420** and prior to the application of potting **1414**. As shown, the stiffener **1442** contacts the flanges **1412 b-c** of the housing **1410** by virtue of the width w of the stiffener element **1442**. Upon an application of force, the PCB **1440** and stiffener **1442** assembly can be inserted into the internal space **1420**. In this regard, the stiffener element has a predetermined flexibility that allows for a certain amount of flexion, as shown in FIG. 12D. The flexion allows for the flexible circuit **1440** to be inserted within the internal space **1420** and can prevent the flexible circuit **1440** from being removed or from accidentally falling out once inserted. In this regard, the flexible circuit **1440** is held in place within the space **1420** by virtue of the width of the stiffener element **1442** and the distance between the flanges **1412 b-c**. Once inserted, the potting **1414** can be applied free of the concern of improper positioning of the flexible circuit **1440**.

[0143] FIG. 12E is a cross section of the WCD of after a potting material **1414** has been applied subsequent to the WCD of FIG. 12D.

[0144] Inner/Outer Bands

[0145] FIG. 13A depicts a perspective view of a WCD **1500** according to another aspect of the disclosure. In this example, the WCD includes a housing **1510** that includes an internal housing **1512** and an external housing **1514**. The internal housing **1512** can be similar to the internal housing described above with respect to internal housing **1212**, and the external housing can be similar to the external housing described above with respect to external housing **1312**. The internal housing **1512** can include one or more windows **1516** that can allow electromagnetic radiation (e.g. visible and near-visible light) to pass therethrough, allowing it to

fall incident upon components disposed within the housing **1510** and allowing EM radiation sources (e.g. visible light, RF, IR, etc.) within the housing to exit the housing.

[0146] FIG. 13B is an exploded view of the WCD **1500**. As shown, the WCD can include internal housing and external housing **1512** and **1514**. The WCD can further include a PCB **1540** and components **1550**. Once the housings **1512-1514** are assembled and the PCB **1540** and components **1550** are assembled within space defined between the housings **1512-1514**, potting layers **1502** and **1504** can be applied to seal the WCD at both sides thereof to ensure a secure seal.

[0147] Inner/Outer Bands With U Shaped Window

[0148] FIG. 14A is an exploded view of a housing **1610** and a PCB of a WCD according to one or more aspects of the disclosure. The WCD **1600** comprises a housing **1610** with an integral inner wall and outer wall **1612** and **1614**. The housing can be made of any material, such as any material described above with respect to the internal/external housing structures. In this example, the inner and outer walls **1612**, **1614** each define a window in the shape cutaway portions **1616**. The cutaway portions are bounded on three sides by the walls **1612** and **1614** and unbounded at the other side thereof. The cutaway portions **1616** can be aligned with one another to ensure transmission of radiation into/out of the housing **1610**. The space **1620** between the inner and outer walls **1612**, **1614** can receive a PCB **1640**, battery, components, etc.

[0149] FIG. 14B is a cross section of FIG. 14A along line B-B. As shown, the inner and outer walls **1612**, **1614** are directly connected by a floor **1618**. The space **1620** is defined by the space between the inner and outer walls **1612**, **1614** and the floor **1618**.

[0150] FIG. 14C is a perspective view of the WCD with potting material **1630**. As described above, the PCB, battery, and components can be disposed within the space. Once disposed therein, a potting **1630** can be provided atop the components and within the cutaway portion **1616**. The potting **1630** can be transparent to allow for transmission of light through the cutaway portions **1616**.

[0151] FIG. 15 is a perspective view of a base assembly **1750** and WCD **1700** according to one or more aspects of the disclosure. As shown, the WCD **1700** is in the shape of a ring and the base assembly **1750** includes a post **1754** for receiving the ring. The post **1754** can be cylindrical and can be sized and shaped according to an internal diameter of the WCD in order for the WCD to be received on an external surface of the post. The first opening **1752** of the base assembly

1750 is formed on a portion of the post 1754 such that, when the WCD 1700 is stored on the post, the second opening 1712 can be aligned with the first opening 1752 to ensure alignment of the CPV and the concentrated light source. The base assembly can receive/transmit power and/or data via external input/output 1795, which can be a DC power input, a USB input connection or any other acceptable connection/form factor.

[0152] In some examples, the WCD can be adapted to uniquely identify the wearer of the WCD using, for example biometric features unique to the user.

[0153] FIG. 16A is a schematic view of a WCD 2100 showing components used for identifying the wearer of the WCD. As shown, the WCD 2100 can include one or more infrared illumination sources 2110 and an infrared CMOS imaging device 2120. The finger 2190 can extend through the finger space of the WCD and the IR source 2110 can illuminate a portion of the skin of the finger 2190. The IR CMOS imaging device 2120 can receive light that has been reflected from the skin surface and produce an image of the skin of the finger 2190. As shown, the IR source 2110 and the imaging device 2120 are positioned near the interior surface of the WCD, e.g., the surface facing the skin of the finger. The IR illumination can pass through a window provided on the interior housing or can pass through a transparent potting material.

[0154] During the imaging process, the WCD 2100 can be rotated about an axis passing through the center of the finger space and along the longitudinal direction of the finger. In this regard, the imager 2120 can capture a larger swath of the skin surface than if the WCD 2100 were held stationary with respect to the finger during the imaging process.

[0155] At the time of first use, or any time thereafter, the user can generate a reference capillary map in order to identify himself/herself as the authorized user of the WCD. As described above and illustrated in FIGS. 16B-C, the user can rotate the WCD around the finger to capture image data of an analyzed section of skin 2192 and on or more capillaries 2194 of the user currently wearing the WCD. The image data can correspond to an overall analyzed section of the skin 2196 of the wearer. The image data of the capillaries can be used to generate a reference capillary map of the wearer, which can be stored in the memory, such as flash memory or EEPROM, of the WCD.

[0156] When the same user puts the WCD on his or her finger after generation of the reference capillary map, the WCD can capture image data of the wearer's skin surface that can be compared to the reference capillary map stored in the memory. In this regard, the user need not

rotate the device around the finger. Instead, the WCD can compare a subset of the gathered image data to a corresponding subset of reference capillary map. If there a match, within a predetermine error tolerance, the WCD can uniquely identify the wearer as an authorized user of the WCD and as the unique individual who generated the reference capillary map. Once authorized, the wearer can have access to certain functions, features, data, or other content that is not otherwise available without authorization. In another example, the identification can be a step in a transaction or other type of authorization, such as an electronic payment, bank transaction, etc. If the gathered data does not match the reference capillary map, then the user may be prevented from accessing certain features on the WCD.

[0157] Illustratively, the comparison process between sensed capillaries and some or all of the capillary map can be implemented using basic pattern recognition algorithms (processes) instantiated in the electronics of the WCD. Such processes can rely on edge detection and similar techniques that should be clear to those of skill in the art and can be sourced from various commercial vendors of biometric recognition software.

[0158] In another example, the illumination can include NIR illumination and can project radiation into the skin of the finger. The reflected NIR illumination can then be analyzed to determine one or more characteristics of the blood, such as blood alcohol levels, blood glucose levels, and blood oxygenation levels. In this regard, the WCD analyzes the reflected radiation to identify wavelengths that were absorbed from the projected radiation by the blood of the user. Techniques and processed used in conjunction with commercially available venous oximeters (for example) can be employed to undertake certain readings.

[0159] FIG. 17A is a perspective view of a user employing ECG monitoring according to one or more aspects of the disclosure. In this example, the user can wear the WCD 2200 on a first finger 2210 of first hand 2220, and can touch a second finger 2230 of a second hand 2240 to an exterior surface of the WCD 2200. This can provide an electric pathway 2250 through the body, as shown in FIG. 17B, allowing for the transmission of electrical current between distant portions of the body.

[0160] FIG. 17C is a perspective view of a WCD that can employ ECG monitoring according to one aspect of the disclosure. In this example, the WCD 2200 includes an internal/external housing 2250 with a conductive pad 2260. The conductive pad 2260 can be electrically isolated from the external/internal housing 2250 of the WCD, thereby providing

distinct and isolated electrical contacts on the WCD. The internal/external housing 2250 can be in electrical communication with the first finger 2210 of the first hand, while the conductive pad 2260 can be in electrical communication with the second finger 2230 of the second hand. In this regard, an electrical path 2250 is formed through the respective hands 2220, 2240 and through the rest of the user's body, particularly through the chest. In this regard, the WCD can take various electrical measurements of the user, such as ECG. The ECG measurement can include measurements of the various waveforms, such as P-U waveforms. The WCD can store such ECG data in a memory and/or can communicate the data to a wirelessly connected mobile device. In another example, the WCD can employ electrically isolated internal and external housings, such as those described above. In this regard, the conductive pad may not be utilized, and the user can wear the WCD on a first finger and apply the second finger anywhere on the external housing.

[0161] The WCD can also serve as a monitor for those who are mobility impaired or who are prone to falls, such as disabled persons and/or retired persons. The accelerometer onboard the WCD detect a fall of the user via a sudden change in acceleration data. The WCD, in conjunction with a mobile device and/or one or more base stations positioned around the home of the user, can determine the position of the user within the house. For example, the mobile device can employ GPS capabilities, and either the mobile device or the base stations can use GPS in combination with WiFi signal strengths to determine the location of the user within the house. The WCD can then issue an alert, either directly or indirectly (via the mobile device or base station) to a third party that a fall has occurred. The alert can be a phone call, text message, e-mail, or any other type of communication. The third party can then take appropriate measures to aid the fallen user.

[0162] The WCD can also monitor heart rate and/or temperature, in addition to the other monitored characteristics described above. If any of the monitored characteristics is abnormal, e.g., measured parameters outside of a predetermined threshold range, an alert can be sent to a third party. In some examples, the third party can be a medical health professional, such as a doctor, nurse, caretaker, etc. It is noted that, for those embodiments which can function as a cardiac monitor (e.g., that measures electrocardiogram (EKG)), it can be necessary to establish a closed loop (e.g., for the electrical measurement of EKG) across the heart. As such, in some of those embodiments, a separate conductive pad or other skin-contacting structure/probe can be coupled to the WCD so that a user can pinch the pad with fingers on an opposite hand.

[0163] Since the WCD has the form factor of a ring, the WCD is designed to be worn over long periods of time by a user with little to no discomfort or interference. In this regard, the WCD can monitor the above-described, monitored characteristics over long periods of time (e.g. weeks, months, etc.), and determine trends in the data. For example, the WCD can measure heart rate over a long period of time and determine a unique resting heart rate for a user. If the user's heart rate deviates from the resting heart rate, the WCD can be arranged to issue an alert to a third party. In one specific example, the WCD can use appropriate processes to analyze both the trends of monitored characteristics, as well as current accelerometer data. In this way, if a person's heart rate deviates from a resting heart rate, but the accelerometer indicates that the user is exercising and/or engaging in strenuous activity that provides an equivalent workout, then the WCD may not issue an alert in this circumstance.

[0164] FIG. 18A is a perspective view of the hand of a user in various positions employing the navigational features of the WCD. As described above, the WCD can communicate with a mobile device through one or more wireless communication protocols. The mobile device can include a processor and a memory and can execute a map application/process that can provide turn-by-turn walking or driving directions to the user based on the user's GPS location. A portion of those directions can include information regarding heading, distance to travel at that heading, waypoints, and the direction of next turn. By way of the wireless communication, the mobile device can communicate one or more of pieces of information relating to directions, such as the heading. Once the heading is received by the WCD, the WCD can give feedback to the user regarding the actual heading measured by the onboard magnetometer and the heading set forth in the direction information. In one example, the feedback can be haptic or physical feedback provided by one or more actuators, such as the actuators **670** described above.

[0165] FIG. 18A depicts a user's hand in various positions of navigation, each hand including a WCD worn thereon. In this example, the heading provided by the mobile device is the heading **2335**, which represents the direction in front of the hand position **2330**. In this regard, if the user gestures, e.g., points a ring finger, in the direction of the correct heading, the WCD **2300** can give feedback to the user indicating the correct heading. The feedback can include, for example, an LED indicator **2310** showing a green visible light. In the example of hand position **2320**, the finger is gesturing in a direction to the left of the correct course **2325**. In this way, the WCD **2300** can provide feedback to correct the heading of the user. Such feedback can include

illumination of an LED indicator showing (e.g.) a red visible light. Similarly, hand **2340** is gesturing in direction **2345**, which is to the right of the correct/appropriate direction. The WCD can provide (e.g.) a blue indicator informing the user to change heading.

[0166] FIG. 18B is a flow chart **2300B** depicting a method of providing feedback to a user according to one or more aspects of the disclosure. At block **2310B**, a user can establish a communication link between a WCD and a mobile device. At block **2320B**, the user can generate or request a set of directions at the mobile device, including information/data regarding heading, distance to travel at that heading, and the direction of next turn. At block **2330B**, the mobile device can transmit at least one of the information items/datum regarding heading, distance to travel at that heading, and the direction of next turn. At **2340B**, the WCD can take a measurement of heading by measuring a heading associated with an explicit gesture by the user's finger donning the ring. Such gesture can include pointing in a proposed heading of travel. At block **2350B**, the WCD can compare the measured or proposed heading to the correct heading provided by the mobile device. At **2360B**, the WCD can provide feedback to the user based on the comparison at **2350B**, e.g., if the user is gesturing in the correct direction, a green LED indicator may appear. In other examples, if the gesture is in a direction that does not correspond with the correct direction, a (e.g.) blue or red indicator can appear. In one specific example, indicators representing left and right course alterations can be different so a user can easily discern a correct direction of travel.

[0167] FIG. 19A is a schematic diagram of a system **2400** for controlling an environment of a user according to one or more aspects of the disclosure. As shown, the WCD can be connected, wired or wirelessly, to one or more appliances in the home of a user. The system **2400** can include a WCD **2410**, a thermostat **2420**, a wireless access point (e.g., WiFi router) **2430**, and a mobile device **2440**. The WCD can be wirelessly connected (e.g., link **2415**) to both the thermostat and the mobile device by any type of wireless communication protocol, such as Bluetooth. The access point can be wirelessly connected to the thermostat and the mobile device by any type of wireless communication protocol, such as WiFi. It is noted that a wide range of commercially available appliances, thermostats, lighting controllers, home controllers, and the like, can interface with the WCD using WiFi or another conventional/proprietary communication protocol, as described further below.

[0168] The WCD 2410 can include one or more temperature sensors. In one example, the WCD can include at least one internal facing temperature sensor 2410 a and an at least one outward facing temperature sensor 2410 b, as shown at FIG. 19B. The inward facing temperature sensor 2410 a can be near the skin of a user when the user is wearing the ring, and can therefore measure the skin temperature of the user. The outward facing temperature sensors 2410 b can be disposed away from the finger of the user, and can therefore be arranged to measure an ambient temperature of the room in which the user currently resides with sufficient thermal isolation from the user's hand and his/her body heat. In particular, in order to ensure accurate ambient temperature measurements, the WCD can employ a combination of multiple light sensors 2410 c and outward facing temperature sensors 2410 b. In this regard, the temperature sensor 2410 b associated with the light sensor 2410 c that receives the most light can be the most accurate, as it is most likely that this sensor is furthest from the finger or palm of the user. In another example, the WCD can employ multiple outwardly facing temperature sensors 2410 b and compare the temperature values of each to the inward facing sensor 2410 a. The WCD can then select the most accurate temperature value from the outward facing sensors.

[0169] Based on the measured skin temperature and measured ambient temperature, the WCD can automatically adjust the thermostat 2420 to alter the ambient temperature of the room. In this regard, if a user's skin temperature is too high, the WCD can instruct the thermostat 2420 to lower the ambient temperature. Similarly, if the user's skin temperature is too cold, the WCD can instruct the thermostat 2420 to raise the temperature. The WCD 2410 can instruct the thermostat (and/or an HVAC controller) directly, e.g., via a direct wireless link 2415, or indirectly, e.g., via one or more of the mobile device 2440 and the access point 2430. The WCD can also use historic temperature data to develop trend temperature data.

[0170] In another example illustrated in FIG. 19C, the WCD can be part of a system 2400C for controlling home appliances. The system 2400C can include a WCD 2410C, one or more home appliances 2420C, and an access point 2430C. Such home appliances 2420C can include, for example, a television, lights, speakers, microwave, range, stove, oven, etc. Each of the home appliances can include an antenna that allows the respective home appliances to communicate wirelessly with one or more access points 2430C. In one example, the appliances can include a ScenSor DW 1000 chip provided by DecaWave. In this way, the locations of the appliances in the room can be determined to an accuracy of approximately 10 cm. The location of the WCD

2410C can also be determined, using the above-referenced chip, or by using signal strengths of one or more base stations.

[0171] Having established the position of one or more home appliances and the user in a room, the user can make a gesture to control such home appliances 2420C. For example, the user can point at the TV (while wearing the WCD) in order to turn it on/off. Knowing the position of the user and the position of the TV, the direction of the gesture and the type of gesture can indicate what action to take on which device. The accelerometer and/or magnetometer on the WCD can be used to create a vector to the object to control, and a wireless packet can be sent to a wireless access point to control the respective appliance.

[0172] FIG. 19D is a flow chart depicting a method 2400D of controlling home appliances according to one or more aspects of the disclosure. At block 2410D, the locations of one or more home appliances in a room and/or house can be ascertained/determined. As described above, the appliances can include a processor configured to identify location within a room. At block 2420D, the location of the WCD is determined. At block 2430D, the user can make a gesture toward a home appliance to exert control over the home appliance. Such gesture can include a snap, a point, etc. At block 2440D, the accelerometer and/or magnetometer on the WCD can be used to create a vector to the object to control. At block 2450D, a wireless packet can be sent to a wireless access point to control the respective appliance. The access point can then issue the command to the respective appliance.

[0173] FIG. 20 is a perspective view of the hand of a user employing a two-factor authentication technique according to one or more aspects of the disclosure.

[0174] As shown, the user 2500 is wearing a WCD 2510 and is approaching a locked door 2520 with an access node 2530 associated therewith. The access node 2530 can be a wireless access node of a conventional or custom arrangement, and can communicate wirelessly according to any type of wireless protocol, such as WiFi or Bluetooth. As the user approaches the door 2520, the WCD 2510 can initiate a communication link, e.g., Bluetooth or WiFi, with the access node 2530. In this way, the WCD and the access node can engage in one or more handshaking or query procedures to verify the WCD. For example, the access node 2530 can detect a MAC address, IP address, or other alphanumeric identifier associated with the WCD and compare it to a list of authorized users. Such network-based communication processes should also be clear to those of skill.

[0175] Once the MAC address or other identifier is verified, the user can engage in a pre-defined gesture 2550 to complete the authentication procedure. The gesture 2550 can be any type of hand and/or finger motion that can be performed by the user. In this regard, the accelerometer or magnetometer can detect the gesture 2550 performed by the user and provide the gesture information to the access node. If the provided gesture information corresponds with an authorized gesture stored at or accessible by the access node, then the user may be granted authorization and the door can be unlocked. The authorized gesture can be a general authorized gesture for all users, or can be a specific gesture authorized only for the particular MAC address.

[0176] In addition to a door, the method above can be used to gain access to other features, such as unlocking a mobile phone, unlocking a car door, starting a car. The authentication technique above is advantageous in that it can eliminate extraneous authentication devices, such as key fobs for a car, a door, keypads for entry control, etc., and can provide a secure two-factor authentication technique to avoid unwanted access. More generally any type of keyless entry system (e.g. a keypad, card-reader, keyless lock, etc.) can be equipped with appropriate communication interfaces (RF, IR, etc.) to communicate with the WCD and operate based on a gesture and/or proximity of the user using the techniques described above. The WCD can also be employed generally in this manner to activate or deactivate a residential or commercial alarm system—substituting, for example, for a key fob used for this purpose.

[0177] FIG. 21A is a schematic view of a charging apparatus for charging the WCD according to one or more aspects of the disclosure. As shown, a mobile device 2610 can be received within a case 2620. The mobile device 2610 can be electrically connected to the case 2620 via a port 2610 a on the mobile device 2610 and a connector 2620 a on the case 2620. As shown in phantom, the case 2620 can include an integrated battery 2630 within the case that can charge the mobile device via the connector or can charge a WCD, as will be described in greater detail below.

[0178] The integrated battery can be connected to an antenna 2640 disposed on or within the case 2620 that can emit an RF signal, as shown in the block diagram in FIG. 21C. The RF signal can have a power of less than 500 mW and a frequency of 13.56 MHz. The RF signal can be emitted in all directions around the case such that it can be received by a WCD in proximity to the case.

[0179] FIG. 21B shows a WCD 2650 including an RF antenna 2660 and charging circuitry 2670. The RF antenna 2640 can be disposed within the housing 2680 and can receive the RF signal emitted by the case 2620 and convert it to a current that can be used to charge the WCD battery (not shown). This can advantageously allow the user to charge the WCD without removing the WCD from the finger. As shown in FIG. 21D, the charging can occur whenever the WCD is in close proximity to the case, such as when a user talking on the phone or merely handling the phone. In another implementation, the case can utilize inductive charging to charge the WCD. In this regard, the case can include an induction coil subjected to a predetermined current to produce a magnetic field. A corresponding induction coil within the housing of the WCD can be subjected to the magnetic field to produce a current that can charge the onboard battery in accordance with known electromagnetic principles.

[0180] FIG. 22A is a pictorial diagram and FIG. 22B is a block diagram of a WCD employing flash storage according to one or more aspects of the disclosure. As described above, the WCD 2700 can include a housing 2710, an antenna 2720, and an integrated circuit (IC) 2730 including a flash memory 2740. The IC and the flash memory can be disposed within the housing 2710. The flash memory 2740 can be powered by a battery 2750 and connected to the IC 2730, which can be implemented as a system-on-a-chip (SoC) IC 2760. The IC can include Bluetooth Low Energy (BLE) capability to allow for communication with another device. The flash memory can be used to store data, or can be used in any of the authentication techniques described above. The WCD can transmit data stored on the flash memory to another device 2780 via the BLE connection, or can receive data and store the data on the flash memory.

[0181] FIG. 23A is a schematic diagram of one or more WCDs performing proximity functions according to one or more aspects of the disclosure. The WCD can detect a strength of an RF signal received by its antenna, and calculate a distance to the source of the RF signal using a Received Signal Strength Indicator (RSSI). In one example, the RF signal can be from a mobile device, an access point, or another WCD. The use of RSSI can have many applications in proximity detection. For example, the WCD can be placed on a child and can be connected to mobile device held by a parent. If the WCD travels a predetermined distance from the mobile device, the WCD can issue an alert to the mobile device, thereby alerting the parent that the child has wandered too far. In another example, the parent can wear a first WCD and the child can wear a second WCD. The first WCD can alert the parent that a child has wandered too far.

[0182] A single user can wear a first WCD 2800 on a first finger on a first hand and a second WCD 2810 on a second finger on a second hand. In this regard, the user can measure the relative distance between the first and second fingers using an RSSI via a wireless link 2830 between the WCDs 2800, 2810, such as a BLE connection. This can be used to measure an approximate dimension of an object held in both hands or to estimate a mid-air measurement.

[0183] In some examples, a first user can wear a first WCD 2800 and a second user can wear a second WCD 2810. The RSSI can be collected over a period of time and the processor can analyze the data to develop trends or statistics. For example, the RSSI data can indicate that the first and second users have spent a certain amount of time together and can serve as a relationship monitor.

[0184] The WCD can also detect when the first user and second user are holding hands. FIG. 23B is a schematic diagram of one or more WCDs 2800, 2810 performing proximity functions according to one or more aspects of the disclosure. Similar to the ECG monitoring techniques described above, a circuit can be formed when the users hold hands 2840 (with the respective hands wearing the WCDs). The circuit can be used to transmit data and/or electrical impulses between the respective WCDs via the circuit. The WCDs can collect data regarding the length of time that the users are holding hands and, in combination with the amount of time spent together, monitor the relationship of the two users. In addition, the WCD can collect data regarding communication between the users, e.g., e-mail, social media, etc. Based on all of the above factors, the WCD can develop a relationship score between respective WCD users, with a higher relationship score indicating more and more frequent interactions.

[0185] FIG. 24A is a flow chart depicting a method of initiating gesture input according to one or more aspects of the disclosure. The WCD can be used to perform one or more commands, or to instruct another device, such as a mobile device, to perform one or more commands. Such commands can include, initiate sleep state of WCD, initiate sleep mode or default mode of WCD, powering off/on of the WCD, turning on/off an LED light of the WCD, powering on/off of a mobile device, placing a phone call on the mobile device, etc. The user can establish one or more custom gestures to initiate any of the commands above. For example, the user can select a command to be customized from a number of commands. Once selected, the user can perform a custom gesture to be associated with that command. In some examples, the user can perform the

custom gesture multiple times to allow the WCD to better identify the gesture and to develop error tolerances for registering the gesture.

[0186] At block 2910, the user can perform a first gesture. In this example, the user can perform a finger snap. At block 2920, WCD can register the gesture, via the accelerometer and/or the magnetometer. At block 2930, the accelerometer can send an interrupt signal to the processor. At block 2940, the processor can wake from a sleep or default system state. At block 2950, the processor can monitor the accelerometer for a second gesture, at which point the user can perform a second gesture. If the second gesture matches a gesture in the gesture command database, then the WCD can perform the associated command. If not, the WCD can return to the sleep state.

[0187] FIG. 24B is a chart 2900B showing an exemplary graph of acceleration vs. time as measured by the accelerometer of the WCD. As shown at peak 2910B, the gesture can only be registered if it reaches a predetermined acceleration threshold. If the gesture performed at 2910 meets the threshold, it can proceed to block 2930 where the interrupt procedure is performed.

[0188] FIG. 25 is a perspective view of a WCD 3000 employing an illustrative reset function and associated procedure/process. As shown, the WCD 3000 can be removed from the finger of the user in order to initiate a system reset of the WCD. In one example, the system reset can be initiated by spinning about a rotation axis R at a predetermined speed. The predetermined speed can be any value, and in one example is a rotational velocity. Upon performing the reset procedure at the predetermined speed, operation of the WCD 3000 can be interrupted and the onboard components of the 3000 can power off, and revert to factory default settings. Additionally, a series of movements can initiate a rest, such as putting the ring on a table and turning it over several times.

[0189] FIG. 26A is a perspective view of a WCD including an LED indicator according to one or more aspects of the disclosure. As shown, the WCD 3100 can include an internal/external housing 3112 and an internal/external potting 3114. The WCD can include an LED 3120 that can be visible through the internal/external potting 3114.

[0190] FIGS. 31B and 31C are cross sections along line C-C of a WCD employing an LED indicator according to one or more aspects of the disclosure. As described above, the WCD 3100 can have an internal and/or external potting 3114 that can be transparent. This allows light sources within the housing to pass through the potting without changing, or with minimal change

to, the optical properties of the light. In this way, a light source **3120**, such as an LED, can be disposed on the PCB **3140** and can be powered at least partially by battery **3130**. The LED can be encapsulated by the potting **3112** and can project light through the potting **3112**. As shown in FIG. 26B, the LED **3120** can include a vertical LED, while **31C** depicts a right angle LED. The vertical LED can project light along direction **L1**, while the right angle LED can project light along direction **L2**. When light is projected along **L2**, the light can travel around a circumference of the finger of the user. Note that, according to aspects of the disclosure, the potting can be generally adapted in whole or in part to condition, filter or modify the wavelengths and/or projection qualities of light by for example, embedding lensmatic components, applying light-diffusive additives, light attenuating filter materials, etc.

[0191] FIG. 27 is flow chart depicting a method **3200** of communicating with a near field communication (NFC) device according to one or more aspects of the disclosure.

[0192] In some examples, the WCD can enable or disable NFC or change the functionality of a NFC device. For example, the WCD can itself engage in NFC with another computing device, or the WCD can be connected via wireless link to a computing device that engages in NFC with a different computing device. In certain existing NFC devices, NFC will connect and begin transmitting data as soon as it is queried. In the present example, NFC is enabled or begin transmitting data exclusively upon performing of a pre-determined gesture. However, a variety of other transmission processes can be implemented—for example a periodic chirp or handshake request by the WCD for communication with appropriate devices.

[0193] At block **3210**, a NFC capable device is provided. The device can be any type of device, such as a laptop, tablet, mobile device, or dedicated NFC device.

[0194] At block **3220**, the WCD initiates a connection with the NFC device. The connection can be a direct connection via NFC, or an indirection connection via an intermediate device. At this point, no data has yet been transmitted between the WCD and the NFC device.

[0195] At block **3230**, a user performs a predetermined gesture that is registered by the WCD. The gesture can be any type of gesture, such as a point, a snap, waving the hand, etc.

[0196] At block **3240**, data transmission begins between the NFC device and the WCD.

[0197] In other examples, the user can perform another gesture to cease NFC communication. The gesture can be the same gesture as described above or a different gesture. Additionally, the user can remove the ring to disable the NFC. Upon donning the ring the user

will be prompted by the application on the mobile device to re-authenticate by entering a PIN, whereby the proper PIN results in re-enabling the NFC functionality.

[0198] In yet another example, the WCD device employing NFC can be configured on the fly to map to different data sets stored thereon. For example, the WCD device employing NFC can employ data thereon to make purchases, e.g., account information, data to access a building, e.g., a key fob, and data thereon to board public transportation, e.g., smart card, metro card, etc. A user can perform a predetermined different gesture for each of the above data sets to access the data. Once accessed, the WCD device employing NFC can initiate a link with another computing device to initiate a transaction, to open a door, or to board public transportation, etc.

[0199] FIG. 28 depicts a method 4200 of monitoring activity according to one or more aspects of the disclosure.

[0200] At block 4210, a user can don or place the WCD onto the finger to secure it in the wearing position.

[0201] At block 4220, a user can perform any number of daily activities, such as running on a treadmill, walking, exercising, typing, etc.

[0202] At block 4230, the WCD, contemporaneous with block 3220, can use one or more sensors to sense the activities of the user. For example, the sensors can detect location, speed, acceleration, orientation, heart rate, etc.

[0203] At block 4240, the WCD, or another computing device, can generate an entry in an activity log at the conclusion of a detected activity. If the activity detected by the sensors has a profile that has not yet been identified, the WCD can prompt the user to identify the activity. For example, the user can identify profiles such as "Run in Central Park," "Typing," "Run on Treadmill," etc. The WCD can associate the identity provided by the user with the activity profile identified by the sensors and store the identified activity in the WCD memory, or any other memory. Later, if the user performs the same activity and the WCD detects the activity profile as being similar to a saved activity, the WCD can identify the activity while the user is performing the activity and save the activity in the activity log. Each of the activities performed can be saved in the overall activity log and can be stored in a memory on the WCD, or other device, for later viewing.

[0204] FIG. 29 depicts a method 4300 of determining whether a user is wearing gloves according to one or more aspects of the disclosure. At block 4310, a user is provided while wearing the WCD, where such user may or may not be wearing gloves.

[0205] At block 4320, one or more light sensors on board the WCD can detect surrounding ambient light. Such light sensors could include, for example, a CPV or other light sensitive element.

[0206] At block 4330, one or more additional measurements maybe made. Such additional measurements can include, for example, an ambient temperature measurement and or a proximity measurement, e.g., detecting proximity of an object to the WCD via reflected electromagnetic radiation in the form of IR light.

[0207] At block 4340, a measured ambient temperature and ambient light measurements are compared to predetermined thresholds. If the ambient temperature measurement is above a certain predetermined temperature threshold and the ambient light measurement is below a certain threshold, it can be determined that the user is wearing a glove over the WCD.

[0208] At block 4350, a measured proximity and ambient light measurements are compared to respective predetermined thresholds. If the proximity measurement is below a certain distance threshold (e.g., determines an item is in close proximity to the WCD) and the ambient light measurement is below threshold, it can determined that the user is wearing a glove over the WCD. In any of the above examples, an intensity of LED indicators of the WCD can be adjusted according to a detected ambient light using an appropriate algorithm or process that compares the ambient light to a scale and adjusts a desired driving current/voltage for the LEDs according to a predetermined formula (e.g. a proportional adjustment using an adjustment coefficient) or scale (e.g. a lookup table). For example, where there is abundant ambient light (e.g., detected ambient light above a predetermined threshold), the intensity of the LED indicators can be increased. In the same way, where there is little ambient light (detected ambient light below a predetermined threshold), the intensity of the LED indicators can be decreased.

[0209] In one example, the WCD can detect whether it is removed and or installed on the finger of the user. In this regard, as mentioned above, the WCD can have inward-facing light sensors, CPV, or temperature sensors. When a user installs a ring on his finger the measure of ambient light may decrease or the temperature may increase. Such changes in ambient light

and/or temperature can be detected by one or more sensors onboard the WCD and a determination can be made that the user has removed and or installed the ring on his finger.

[0210] FIG. 30 depicts a method 4400 of securing data onboard the WCD according to one or more aspects of the disclosure. At block 4410, a user may don the WCD on the finger. At block 4420, a user may execute an application on a mobile device, or other computing device, that can be previously associated and authenticated with the WCD. At block 4430, the user can enter an authorization code into the application running on the mobile device, such as a PIN code. At block 4440 the mobile device may transmit the authorization code to the WCD by any means of communication, such as, wired, wireless, Bluetooth, NFC, etc. At block 4450, the user wearing the WCD can now be again authenticated and associated with the WCD and can be granted access to certain functions and/or data storage of the WCD. At block 4460 a user may remove the WCD. At block 4470 the WCD can detect that it is removed such as bio detection (including e.g., biometric identification) techniques described above with respect to inward facing sensor changes, temperature changes, or heart rate decreasing to zero. At block 4480, the authorization code previously stored on the WCD can be automatically deleted upon detection of removal to avoid unauthorized access to such information by a subsequent wearer or other querying party. Further or alternatively, additional information can be automatically deleted upon removal of the WCD, for example any data and or instructions stored on the onboard memory of the WCD such as personal information, banking information, confidential information, or other sensitive data.

[0211] FIG. 31 depicts a WCD 4600 with a pair of LED indicators 4610-4620 disposed at an inward-facing portion of the WCD. As shown, the WCD 4600 can include a pair of transparent regions 4640-4650 and an opaque region 4630. The LEDs 4610-4620 can be positioned under the transparent regions 4640-4650 to allow light from the LEDs to exit the WCD. In one example, the LEDs 4610-4620 can create a subtle diffuse glow to the skin to provide a desirable visual effect to user. In another example, a user feedback LED can be placed at an inward facing surface and a second can be placed at an outward facing surface of the WCD. Depending on the circumstances, one of the LEDs may be disabled to save battery life. For example, LEDs that are facing away from a user e.g. facing down or away from user's line of sight, may be disabled. As described above, the WCD can determine its orientation based on onboard sensors, such as the magnetometer, accelerometer, GPS, etc.

[0212] FIG. 32A is a system for generating and managing alerts according to one or more aspects of the disclosure. As shown, the system can include a WCD 4710A, one or more networks 4720A, and one or more server computers 4730A according to one or more aspects of the disclosure. The WCD 4710A can communicate directly and/or indirectly with the server 4730A via the network 4720A. In this regard, data generated and/or stored at the WCD 4710A can be transmitted to the server 4730A and vice versa. In one example, such data can include biometric data pertaining to a user wearing the WCD that is detected and stored by the WCD.

[0213] FIG. 32B depicts a block process diagram for generating and managing alerts according to one or more aspects of the disclosure and FIG. 32C is a flow chart depicting a method for generating and managing alerts according to one or more aspects of the disclosure.

[0214] At block 4710C, and as shown at process block 4710B, the user is authenticated with respect to the WCD. In this regard, a single user can be associated with a single WCD and can be associated with a predetermine identifier, such as an alphanumeric number. If the user is not authenticated or the authentication process is not conclusive, the WCD may invite the user to retry authentication at block 4715C until the user is successfully authenticated. In some examples, the WCD may timeout the authentication process, lock the WCD, or place the WCD in safe mode in the event of too many unsuccessful authentication attempts as a security measure.

[0215] The user can be authenticated according to any of the authentication methods described in the present application, such as via a unique capillary map, a unique ECG profile, etc.

[0216] If the user is authenticated, biometric data can be transmitted to the server at block 4720C. The captured biometric data 4720B can be transmitted to the server via network 4720A, 47222B

[0217] Once received at the server, the biometric data can be aggregated, sorted, categorized, or profiled at block 4730C and as shown at process block 4730B. In this regard, a profile (corresponding to the alphanumeric identifier) may be created at a database at the server that stores data for a particular user. The profile can store transmitted biometric data, as well as other data, such as user gender, height, weight, age, family history, disease information, location, etc.

[0218] In some examples, identifying information may be removed from the data and/or not transmitted to allow for anonymity and/or to comply with regulations regarding transmission of

medical data. The transmitted biometric data can be normalized in order to comply with predetermined data requirements in order to be added to the profile. In one example, a minimum amount of data may be required in order to be considered viable for association with the profile. The biometric data of a single profile can be aggregated, or in other examples multiple profiles can be aggregated simultaneously.

[0219] Aggregation of the user's biometric data into a single profile allows for the profile to be visualized or analyzed according to any number of methods. For example, a timeline can be created showing biometric data over a period of time. The data can also be synthesized or analyzed to calculate trend data, or other mathematical features.

[0220] Although only one WCD is depicted, it is contemplated that a plurality of WCDs can exist, with each WCD corresponding to a distinct user (and distinct alphanumeric identifier) and therefore resulting in a plurality of distinct profiles at the server. Accordingly, each of the distinct users/WCDs may be authenticated separately according to the methods described herein.

[0221] At block 4740C, once the transmitted data has been associated with the user profile, the updated profile can be correlated with one or more other profiles stored at the server as shown as process block 4740B. The profiles may be correlated according to any number of correlation standards, such as correlating users with similar traits such as age, gender, location, profession, or by any other data stored at the server. In some examples, one or more of the traits can be used to make such a correlation. The biometric data from the one or more users that are correlated with one another can be combined to form a group profile. The group profile can be the aggregation, average, range, or sum of individual profiles that form the group profile. For example, for a particular group profile, a range of resting heart can be generated by taking the maximum and minimum values of resting heart from the individual profiles. In other examples, an average (and standard deviation or standard deviation of the mean) can be generated for each trait, such as average resting heart rate, average active heart rate, average blood pressure, average blood sugar, average skin temperature, ECG profiles, as well as any other features capable of being detected by the WCD as described above.

[0222] At block 4750C, transmitted biometric data can be compared to the established values from the group profile. In this way, if a user's heart rate deviates by a predetermined threshold (such as by predetermined magnitude or standard deviation), an alert can be generated at process block 4750B. The comparison process can occur at the server after transmission of the biometric

data. In another example, the group profile data can be transmitted to the WCD for comparison at the WCD. This advantageously allows the comparison to be made where the WCD cannot establish a network link. The group profile can be updated on a continuous basis or a predetermined time interval or at each transmission of biometric data.

[0223] At block 4760C, the alert is transmitted to the WCD and displayed to the user at process block 4760B. The alert can indicate that the user's biometric data has deviated from the profile group and may advise the user to seek medical attention. In another example, the server can directly contact a medical health professional. In the example where block 4750C occurs at the WCD, transmission of alert information from the server may not be necessary.

[0224] The alert at the WCD can be any type of audio or visual indicator, such as an LED, haptic feedback, audible alarm, etc. The indicator may also invite the user to rest, make an appointment with a medical health professional, recommend a particular medication, or suggest certain physical activities that may health condition that caused the alert.

[0225] As shown in FIG. 32B, the authentication 4710B, aggregation 4730B, and correlation 4740B can occur at server 4730A, which can include a process, memory, and any other features of a general purpose computer. The authentication 4710B, aggregation 4730B, and correlation 4740B can access a database stored at the memory, where profiles, group profiles, and biometric data can be stored.

[0226] FIG. 33A is a method for variable sampling according to one or more aspects of the disclosure. As described above, the processor module of the WCD can determine (e.g., based on identified physical activities, routine pattern, and/or time) a frequency at which one or more sensors in the sensor modules should operate.

[0227] At block 4810A, one or more sensors of the WCD may take one or more measurements. For example, the WCD can detect temperature, heart rate, acceleration, as described above.

[0228] At block 4820A, the WCD can calculate an activity level of a user. For example, the WCD can compare to a number of stored activity profiles (as described above) stored by the user, or can compare the sensor measurements to sensor threshold values corresponding to different activities, such as sitting, running, sleeping etc. In one example, the WCD detect acceleration values over time to generate an activity level for a particular time period.

[0229] At block 4830A, the WCD may compare the identified activity level to a predetermine activity threshold value. In one example, the WCD may categorize the detected activity as either a high level activity or a low level activity. High level activities can include running, swimming, biking etc., while low level activities may include sitting, standing still, or sleeping.

[0230] At block 4840A, the WCD can set a first sample rate for high level activities and at block 4850A, the WCD can set a second sample rate for low level activities. The first sample rate can be a shorter time interval than the second sample rate, resulting in more data being detected and generated during a set amount of time while the user is active. This allows for increased power efficiency of the WCD while also providing the advantage of generating more data when a user is more active, thereby providing added biometric data for later analysis.

[0231] In another example, the sample rate can be scaled according to activity level. For example, the sample rate can be scaled to be directly proportional to heart rate. This results in a shorter time interval for sampling (more frequent data gather) for running than for walking.

[0232] As activity level changes, the method above can be repeated a plurality of times at certain intervals in order to quick or abrupt activity changes.

[0233] FIG. 33B and C are graphs depicting one or more aspects of the sample method of FIG. 33A. As shown in FIG. 33B, the WCD may determine a user is engaging in a high level activity by detecting acceleration values that are above a predetermined threshold value. In this regard, a shorter time interval (more frequent data gathering) can be set. As shown in FIG. 33C, the user is engaging in a low level activity since the acceleration values are below a predetermined threshold. A longer sample rate (less frequent data gathering) can be set in this instance.

[0234] FIG. 34 a diagrammatic representation of a machine in the example form of a computer system 4900 within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed. Specifically, FIG. 34 shows a diagrammatic representation of a machine in the example form of a computer system within which instructions (e.g., software or program code) for causing the machine to perform any one or more of the methodologies discussed herein may be executed. In alternative embodiments, the machine operates as a standalone device or may be connected (e.g., networked) to other machines. In a networked deployment, the machine may operate in the

capacity of a server machine or a client machine in a server-client network environment, or as a peer machine in a peer-to-peer (or distributed) network environment.

[0235] The machine may be a server computer, a client computer, a personal computer (PC), a tablet PC, a set-top box (STB), a personal digital assistant (PDA), a cellular telephone, a smartphone, a web appliance, a network router, switch or bridge, or any machine capable of executing instructions (sequential or otherwise) that specify actions to be taken by that machine. Further, while only a single machine is illustrated, the term “machine” shall also be taken to include any collection of machines that individually or jointly execute instructions to perform any one or more of the methodologies discussed herein.

[0236] The example computer system includes a processor (e.g., a central processing unit (CPU), a graphics processing unit (GPU), a digital signal processor (DSP), one or more application specific integrated circuits (ASICs), one or more radio-frequency integrated circuits (RFICs), or any combination of these), a main memory, and a non-volatile memory, which are configured to communicate with each other via a bus. The computer system may further include graphics display unit (e.g., a plasma display panel (PDP), a liquid crystal display (LCD), a projector, or a cathode ray tube (CRT)). The computer system may also include alphanumeric input device (e.g., a keyboard), a cursor control device (e.g., a mouse, a trackball, a joystick, a motion sensor, a touch screen, or other pointing instrument), a storage unit, a signal generation device (e.g., a speaker), and a network interface device, which also are configured to communicate via the bus.

[0237] The storage unit includes a non-transitory machine-readable medium on which is stored instructions embodying any one or more of the methodologies or functions described herein. The instructions may also reside, completely or at least partially, within the main memory or within the processor (e.g., within a processor's cache memory) during execution thereof by the computer system, the main memory and the processor also constituting machine-readable media. The instructions may be transmitted or received over a network via the network interface device.

[0238] While machine-readable medium is shown in an example embodiment to be a single medium, the term “machine-readable medium” should be taken to include a single medium or multiple media (e.g., a centralized or distributed database, or associated caches and servers) able to store instructions. The term “machine-readable medium” shall also be taken to include any medium that is capable of storing instructions for execution by the machine and that cause the

machine to perform any one or more of the methodologies disclosed herein. The term “machine-readable medium” includes, but not be limited to, data repositories in the form of solid-state memories, optical media, magnetic media, or other non-transitory machine readable medium.

[0239] Conclusion

[0240] It should be clear that the WCD arrangements described according to various aspects of the disclosure provide a highly versatile and useful item of wearable electronics that is comfortable and convenient to wear, conveniently charged, and weatherproof for all-purpose and all-condition wearing. Various options for style and appearance can be implemented, as well as a variety of storage options. The functions and structure of the device lend themselves to both a ring version and a wrist-worn version. All versions are designed for long-life with minimal maintenance, and are adaptable to interoperate with a variety of networked devices including computers, smartphones, home controllers, security systems, and virtually any other device capable of communicating over a wireless link—including another WCD or TCD.

[0241] The foregoing has been a detailed description of illustrative embodiments of the invention. Various modifications and additions can be made without departing from the spirit and scope of this invention. Features of each of the various embodiments described above may be combined with features of other described embodiments as appropriate in order to provide a multiplicity of feature combinations in associated new embodiments. Furthermore, while the foregoing describes a number of separate embodiments of the apparatus and method of the present invention, what has been described herein is merely illustrative of the application of the principles of the present invention. For example, as used herein various directional and orientational terms such as “vertical”, “horizontal”, “up”, “down”, “bottom”, “top”, “side”, “front”, “rear”, “left”, “right”, and the like, are used only as relative conventions and not as absolute orientations with respect to a fixed coordinate system, such as the acting direction of gravity. Note also, as used herein the terms “process” and/or “processor” should be taken broadly to include a variety of electronic hardware and/or software based functions and components. Moreover, a depicted process or processor can be combined with other processes and/or processors or divided into various sub-processes or processors. Such sub-processes and/or sub-processors can be variously combined according to embodiments herein. Likewise, it is expressly contemplated that any function, process, application, and/or processor here herein can be implemented using electronic hardware, software consisting of a non-transitory computer-

readable medium of program instructions, or a combination of hardware and software. Also, while a variety of visible and near-visible radiation sources are described as LEDs, it is expressly contemplated that other types of sources can be employed according to aspects of the disclosure—for example plasma discharge sources and bioluminescent sources, as well as sources that are based upon developing technologies. Electronic circuits and RF components can similarly be based on alternate and/or developing technologies. Accordingly, this description is meant to be taken only by way of example, and not to otherwise limit the scope of this invention.

We claim:

1. A wearable electronic device comprising:
a body part made of a material, having an inner surface and an outer surface,
wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part,
an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and
a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.
2. The wearable electronic device according to claim 1, wherein the material is a titanium material.
3. The wearable electronic device according to claim 1, wherein the material is selected from a group consisting of: steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.
4. The wearable electronic device according to claim 1, wherein the electronic part is disposed proximate to a bottom of the cavity.
5. The wearable electronic device according to claim 1, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.
6. The wearable electronic device according to claim 1, wherein the electronic part is selected from a group consisting of: a battery, an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver.
7. The wearable electronic device according to claim 1, wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed circuit board, a flexible printed circuit board.
8. The wearable electronic device according to claim 1, wherein the body part comprises a ring configured to be worn on a finger.
9. The wearable electronic device according to claim 1, wherein the electronic part comprises an electromagnetic induction charging coil.
10. A method for forming a wearable electronic device comprising:

providing a body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part,

disposing an electronic part in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and

disposing a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.

11. The method according to claim 10, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.

12. The method according to claim 10,
wherein the electronic part is disposed proximate to a bottom of the cavity, and
wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed circuit board, a flexible printed circuit board.

13. The method according to claim 10, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.

14. The method according to claim 10, wherein the electronic part is selected from a group consisting of: a battery, an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver.

15. The method according to claim 14, wherein the potting material comprises a clear material and an opaque material

16. The method according to claim 10, wherein the body part comprises a ring configured to be worn on a finger.

17. The method according to claim 10, wherein the electronic part comprises an electromagnetic induction charging coil.

18. An electronic device configured to be worn on a finger comprising:
a C-shaped body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the C-shaped body part, the cavity extending from the inner surface of the C-shaped body part towards the outer surface of the C-

shaped body part and having a depth arranged within the inner surface of the C-shaped body part;

an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, wherein the electronic part comprises: a flexible printed circuit board having an electronic component disposed thereon, wherein the electronic component is selected from a group consisting of: an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver, and a battery coupled to the flexible printed circuit board; and

a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.

19. The wearable electronic device according to claim 18, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.

20. The wearable electronic device according to claim 18, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.

ABSTRACT

A smart ring includes a curved housing having a U-shape interior storing components including: a curved battery approximately conforming to the curved housing, a semi-flexible PCB approximately conforming to the curved housing and having mounted thereon: a motion sensor for generating motion data from physical perturbations of the smart ring, a memory for storing executable instructions, a transceiver for sending data to a client computer, a temperature sensor, and a processor for receiving motion data and performing executable instructions in response thereto, and a potting material disposed in the interior, forming an interior wall of the smart ring, wherein the potting material encapsulates the components and is substantially transparent to visible light, infrared light, and / or ultraviolet light.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		WEARABLE COMPUTING DEVICE		
First Named Inventor/Applicant Name:		Curt C. von BADINSKI		
Filer:		Steve Yong Soo Cho/Larisa Brzhevskaya		
Attorney Docket Number:		984SPMO0048US12		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				830

Electronic Acknowledgement Receipt	
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First Named Inventor/Applicant Name:	Curt C. von BADINSKI
Customer Number:	163435
Filer:	Steve Yong Soo Cho/Kyle Routen
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Payment Type	CARD
Payment was successfully received in RAM	\$830
RAM confirmation Number	E2021A4G32544864
Deposit Account	
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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	Drawings-only black and white line drawings	Drawings_984SPMO0048US12.pdf	1662923	no	33
			b3c8747f202e0052556e6d4b7e121b5828c ffd8		
Warnings:					
Information:					
2	Application Data Sheet	ADS_984SPMO0048US12.pdf	1307868	no	9
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Warnings:					
Information:					
3	Oath or Declaration filed	Declarations_984SPMO0048US12.pdf	161953	no	3
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Warnings:					
Information:					
4	Power of Attorney	POA_Proxy.pdf	665840	no	2
			62267b8f42b8b0463de23852a222b671abf 0b195		
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	IDS_984SPMO0048US12.pdf	1055772	no	13
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Warnings:					
Information:					
6	Assignee showing of ownership per 37 CFR 3.73	Stm_3_73.pdf	122296	no	3
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7	Transmittal Letter	IDS_Transmittal_984SPMO0048US12.pdf	130708 1343d56d8f979c1421a2d14eca27d5ad72bc0ab1	no	2
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	Document Description		Start	End	
	Specification		1	47	
	Claims		48	50	
	Abstract		51	51	
Warnings:					
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9	Fee Worksheet (SB06)	fee-info.pdf	44393 f6304daab4f2afd8cefa01c14fe78a179e59e4d9	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			5452674		
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. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

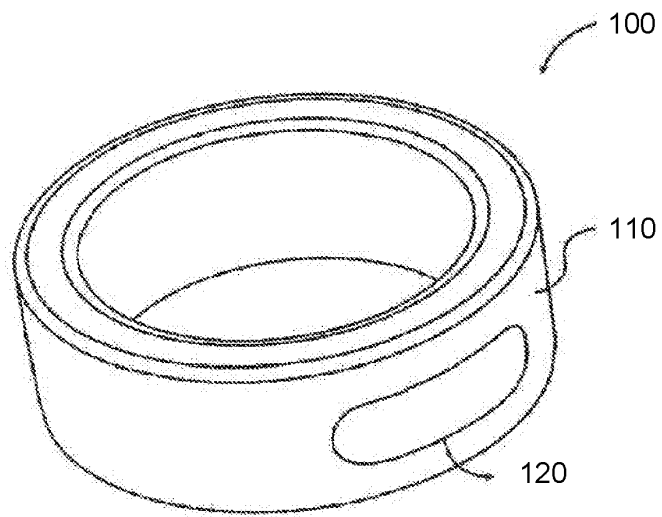


FIG. 1A

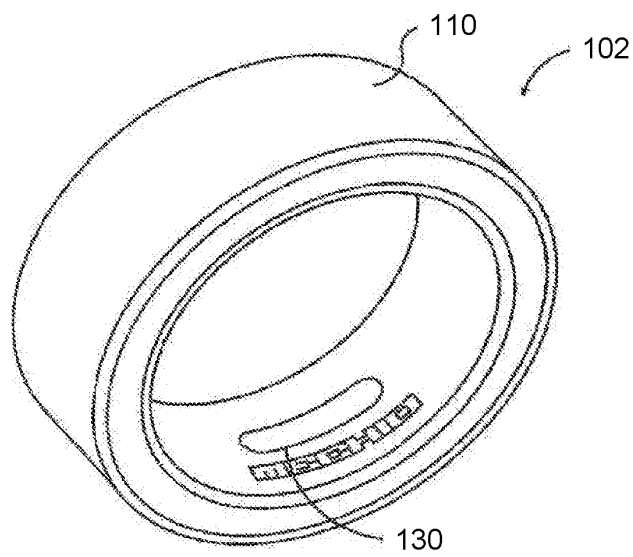


FIG. 1B

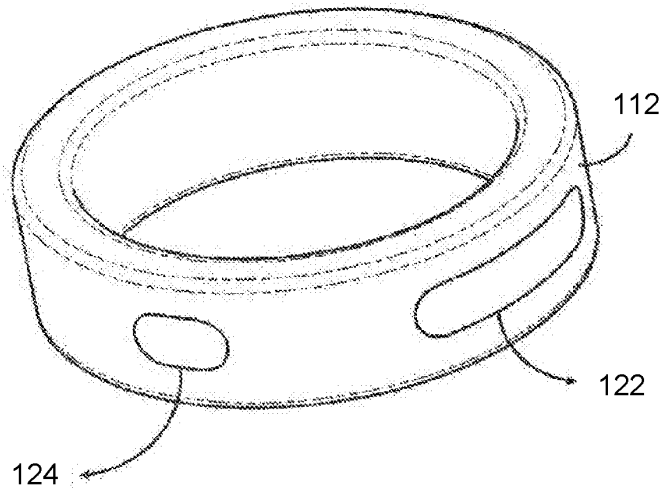


FIG. 1C

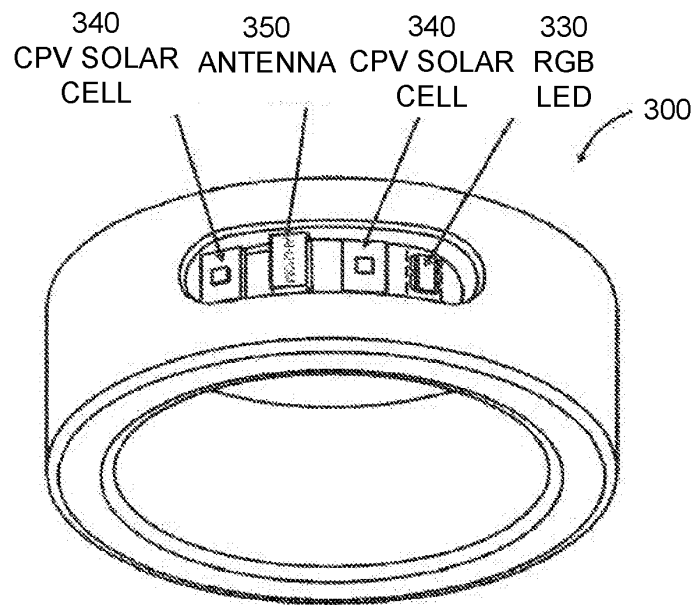


FIG. 3A

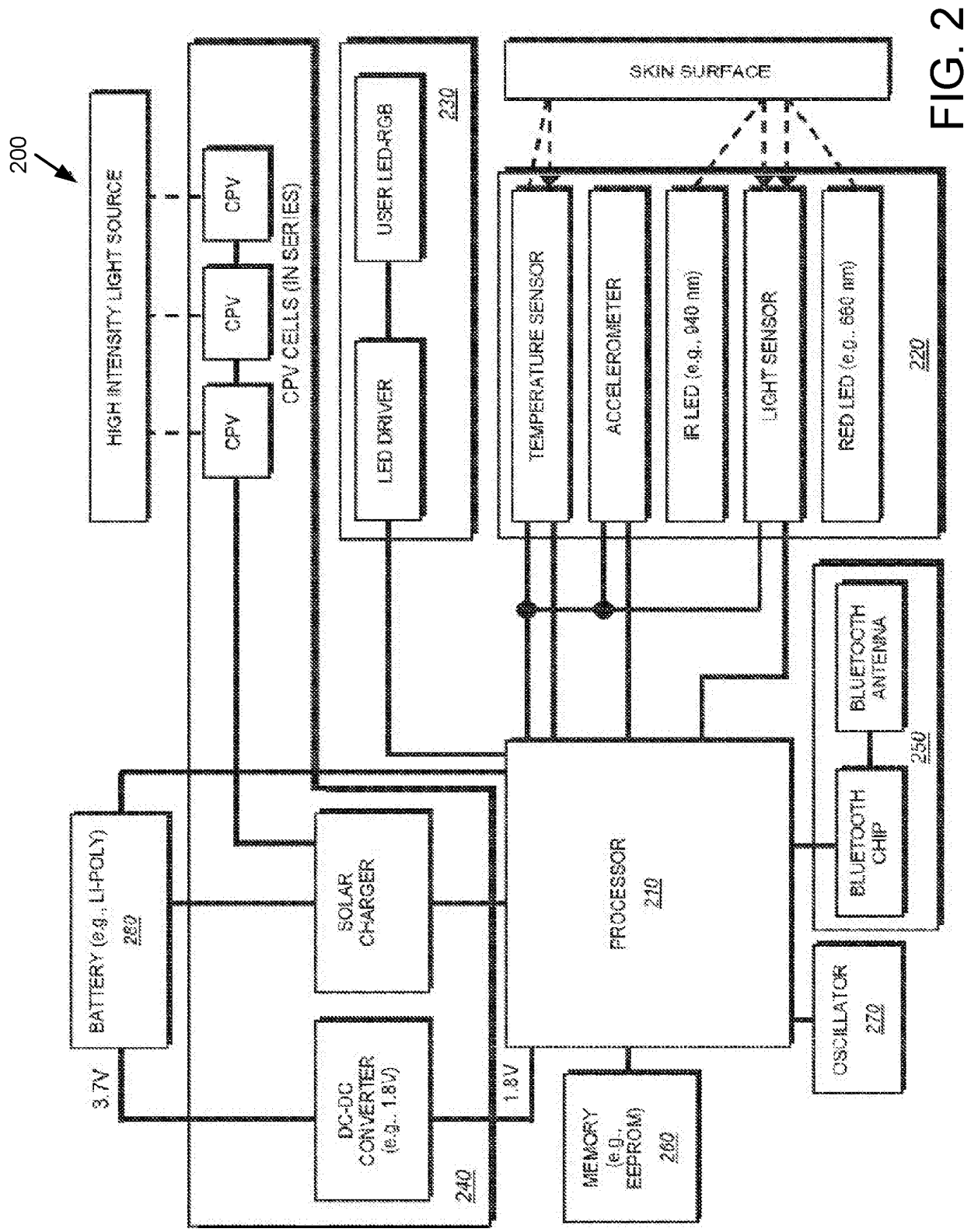


FIG. 2

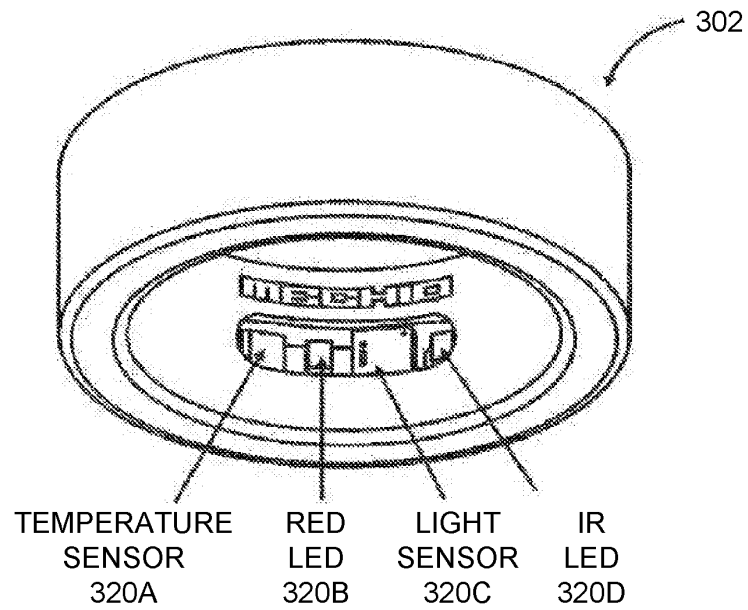


FIG. 3B

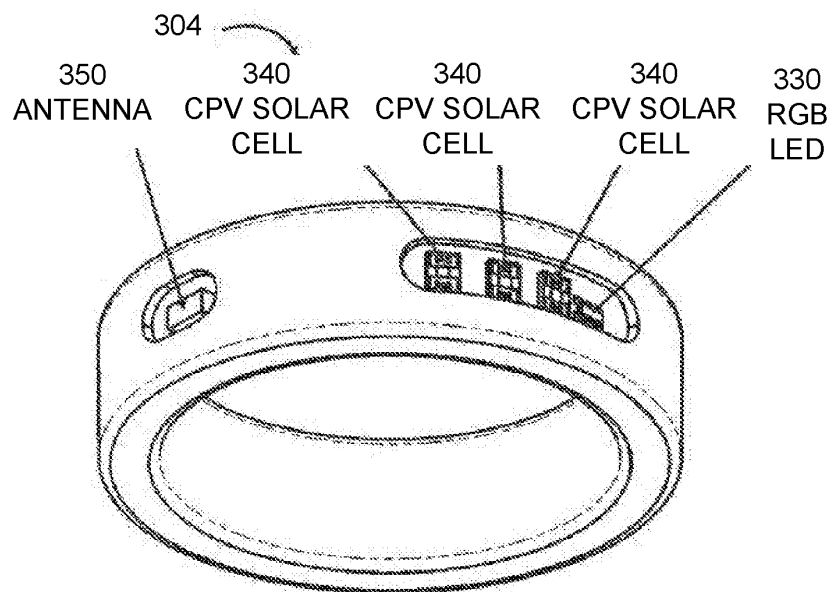


FIG. 3C

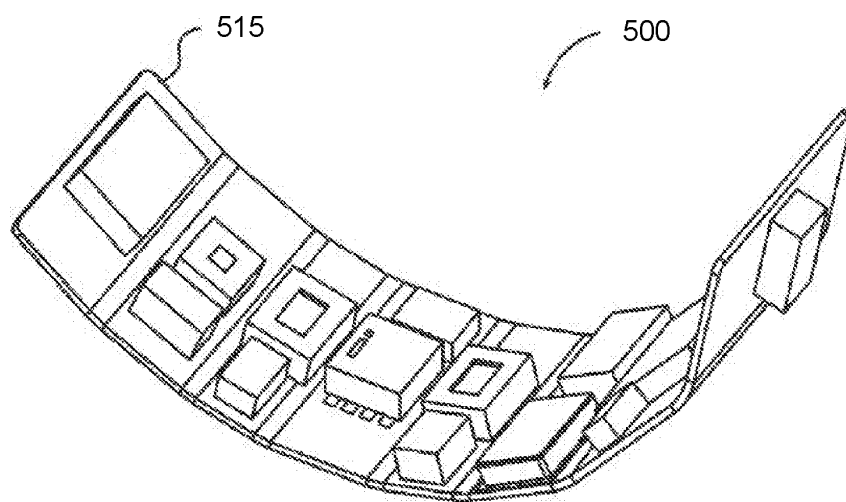
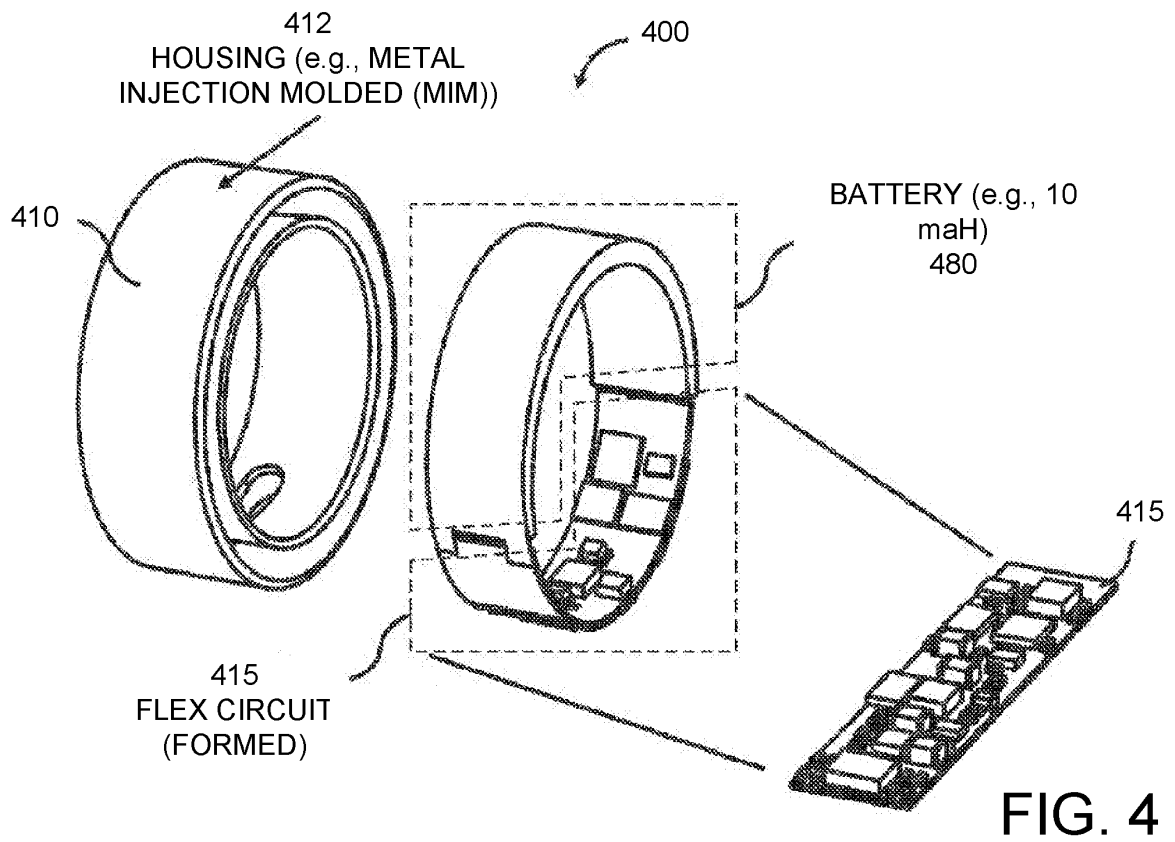


FIG. 5

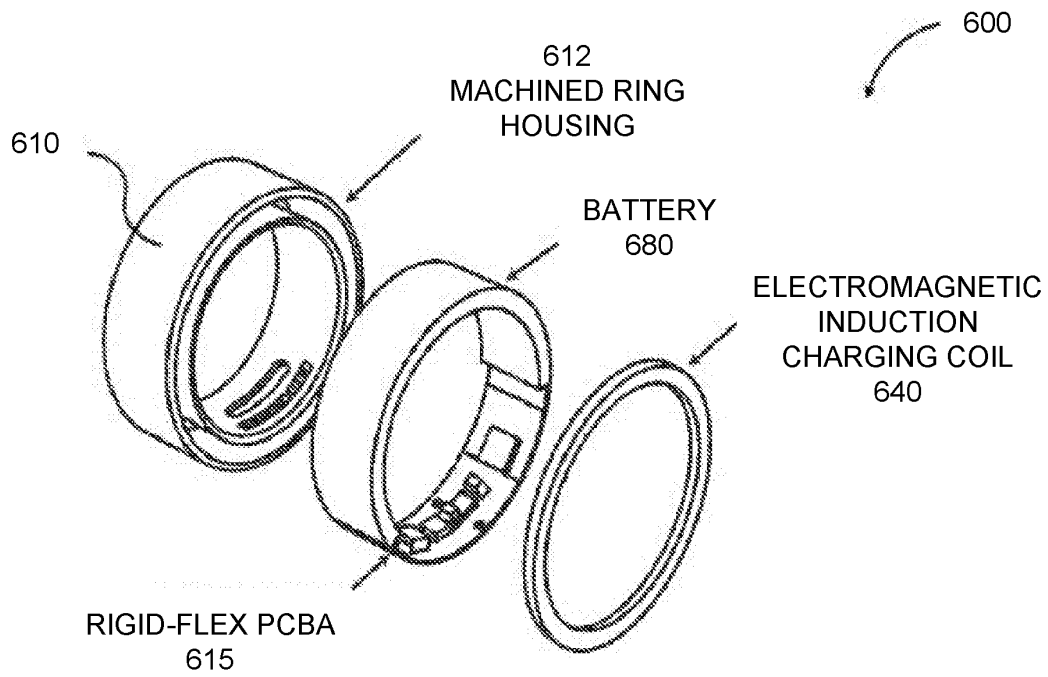


FIG. 6

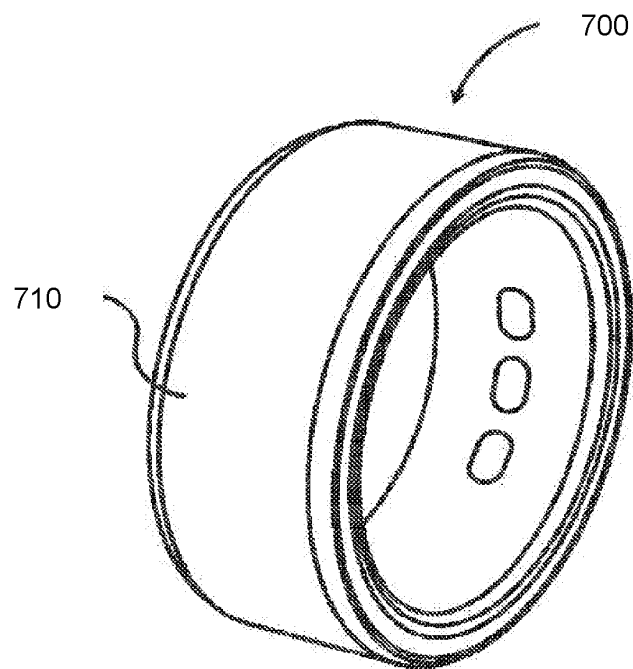


FIG. 7

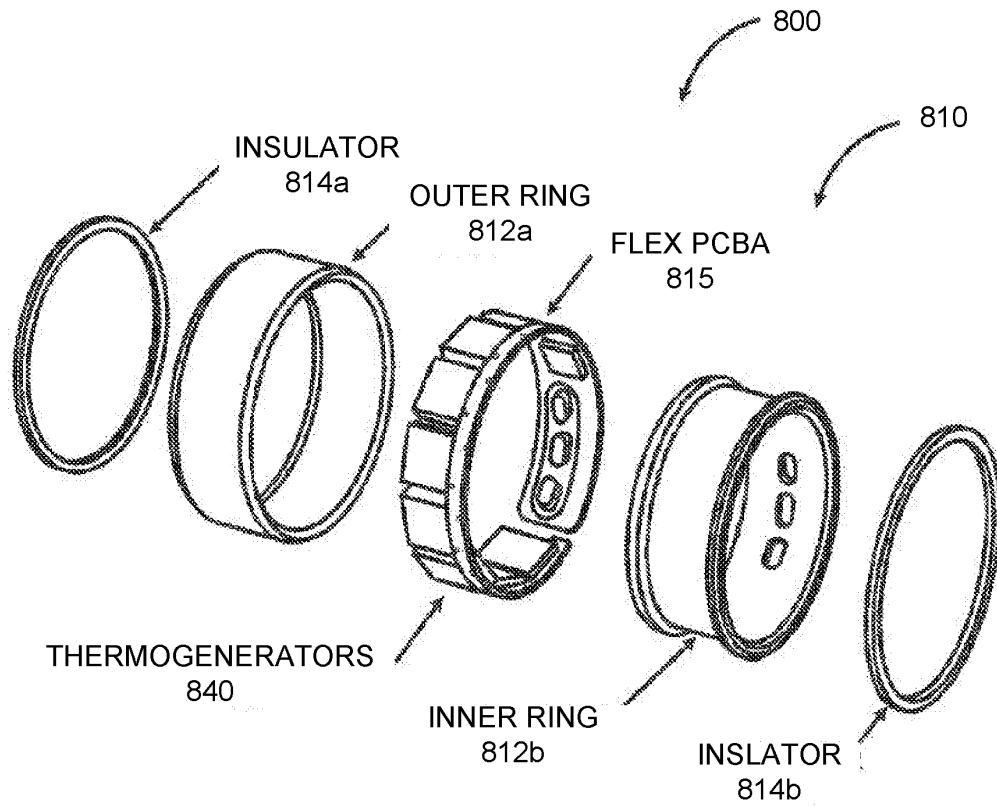


FIG. 8

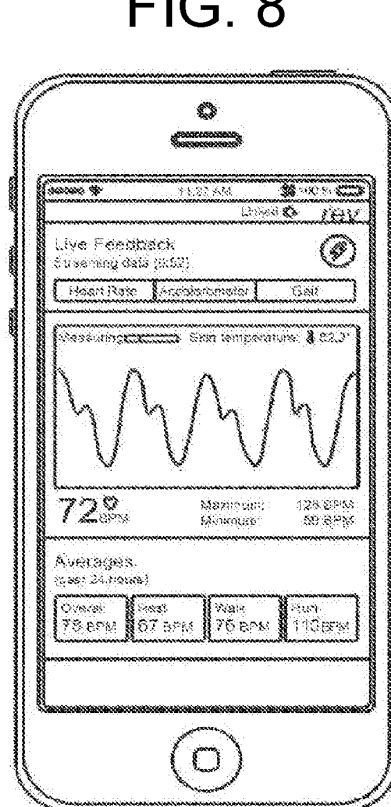


FIG. 9A

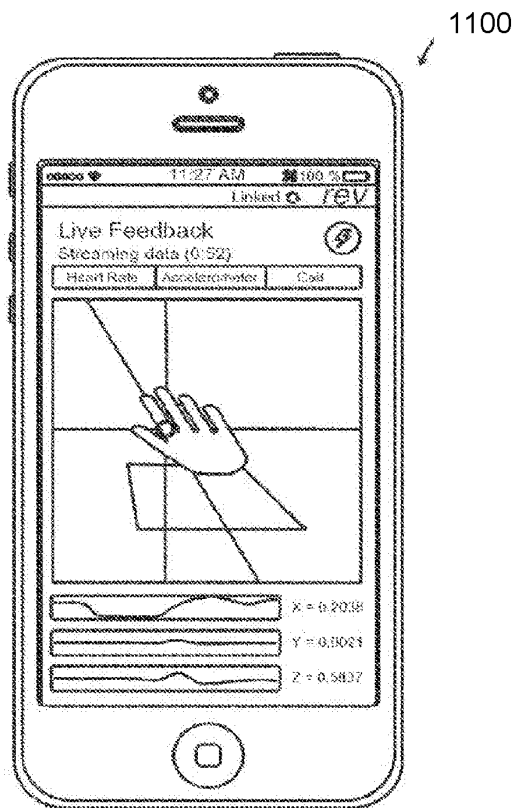


FIG. 9B

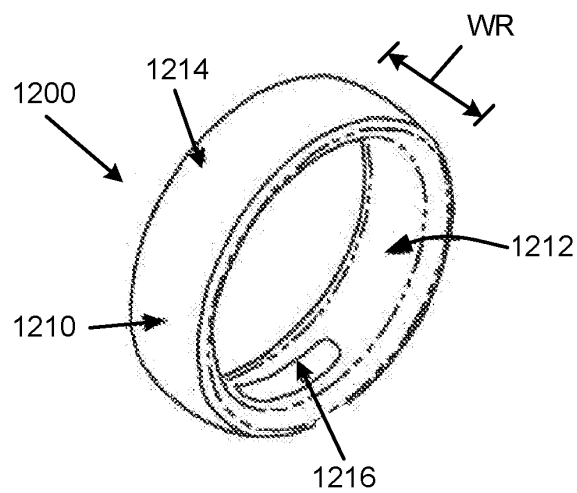


FIG. 10A

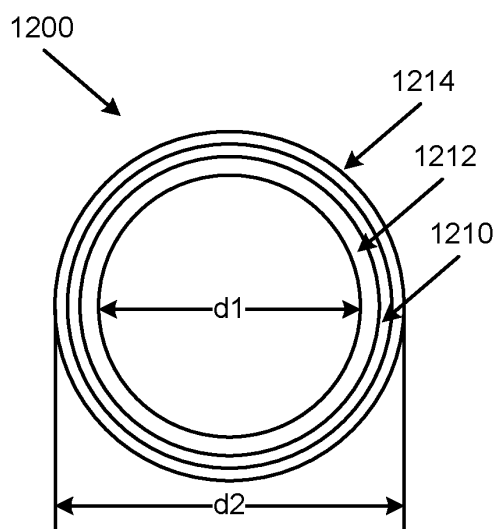


FIG. 10B

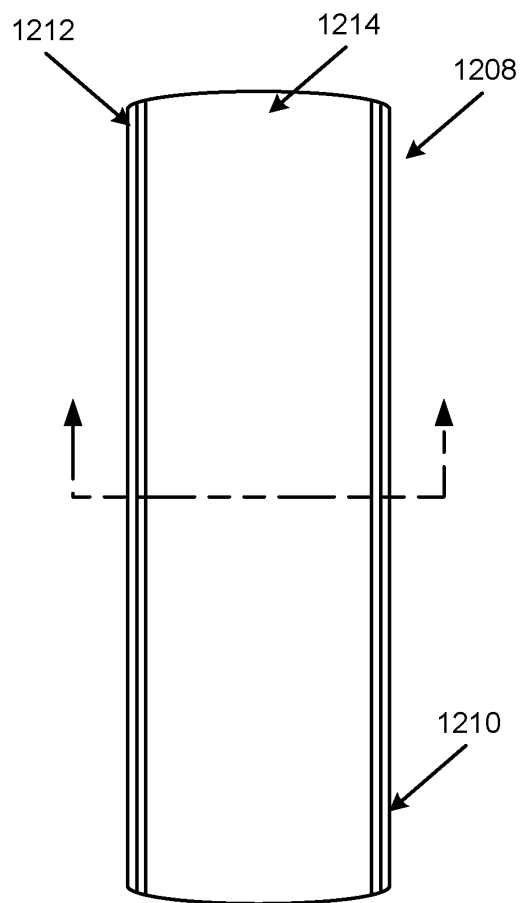


FIG. 10C

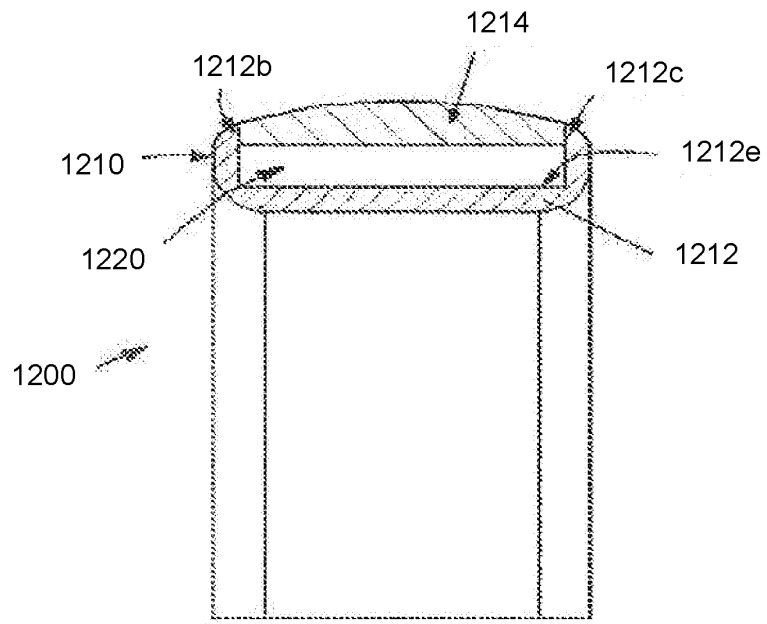


FIG. 10D

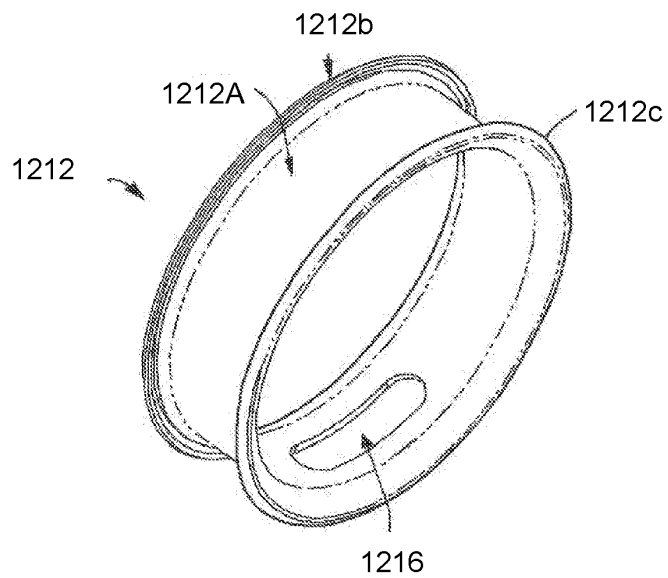


FIG. 10E

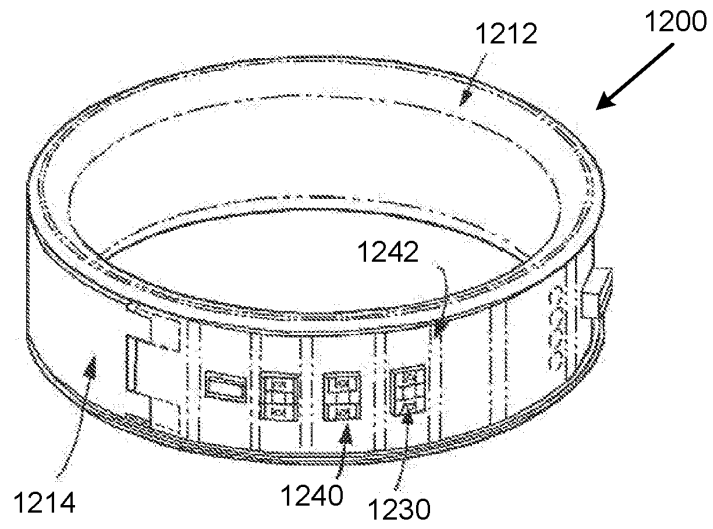


FIG. 10F

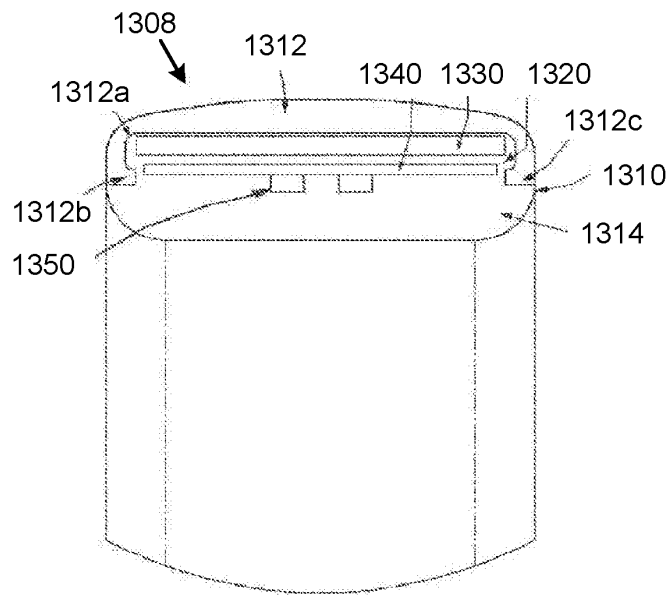


FIG. 11

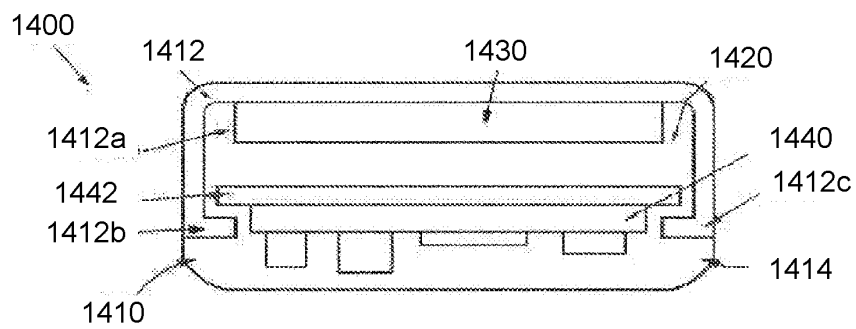


FIG. 12A

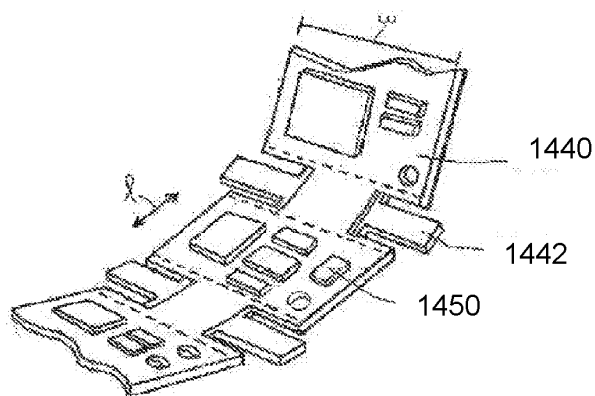


FIG. 12B

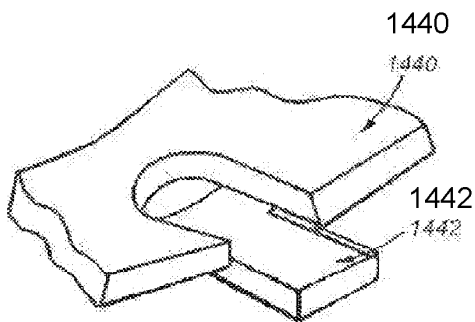


FIG. 12C

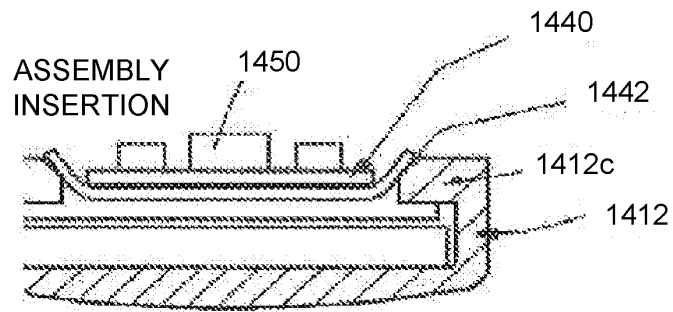


FIG. 12D

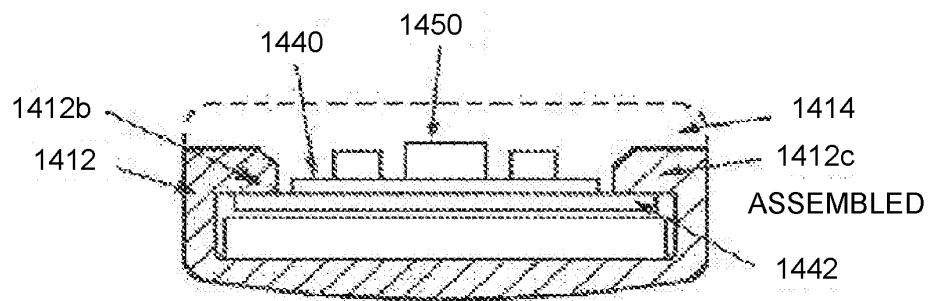


FIG. 12E

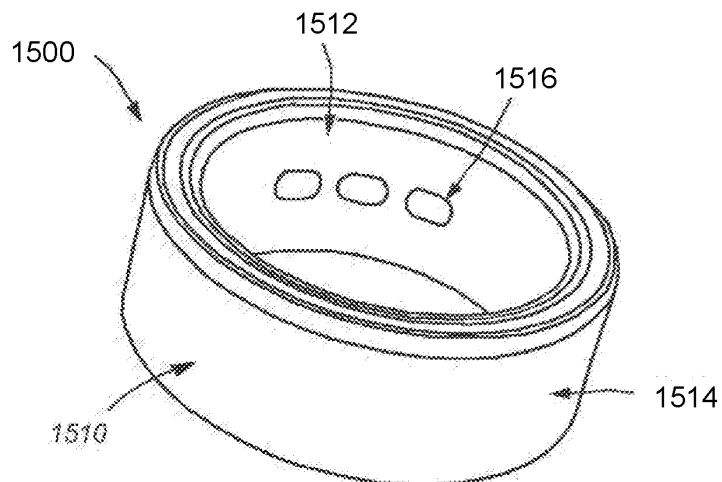
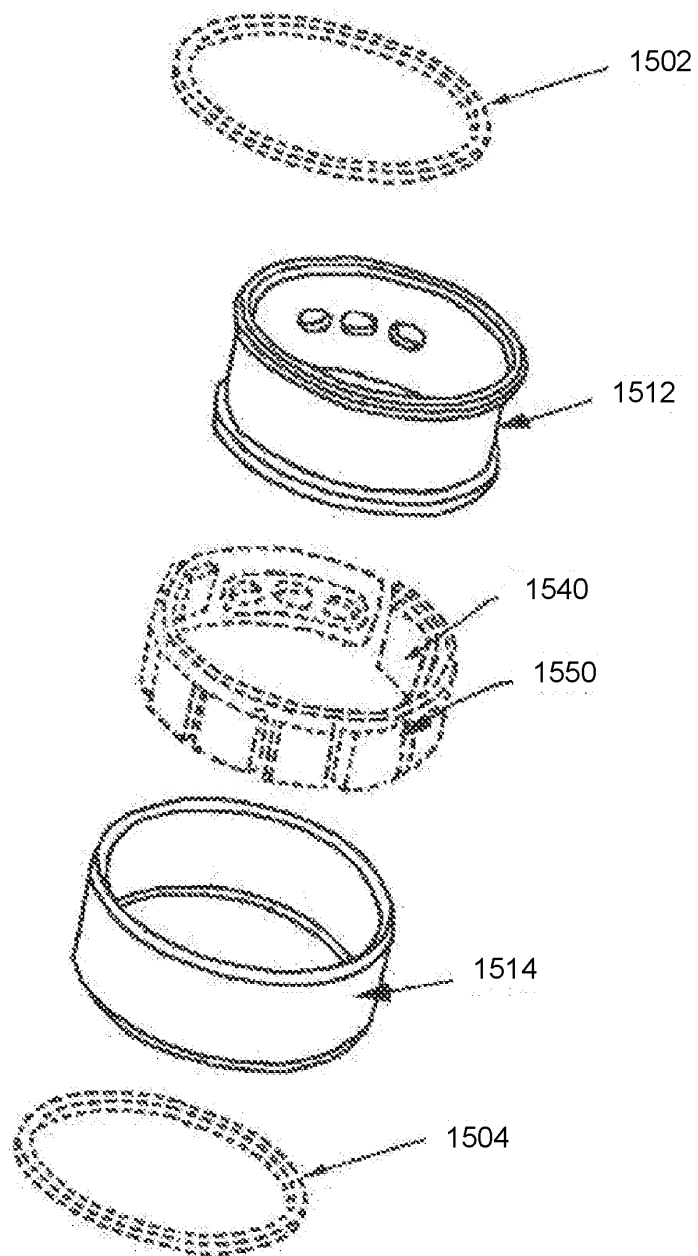


FIG. 13A

FIG. 13B



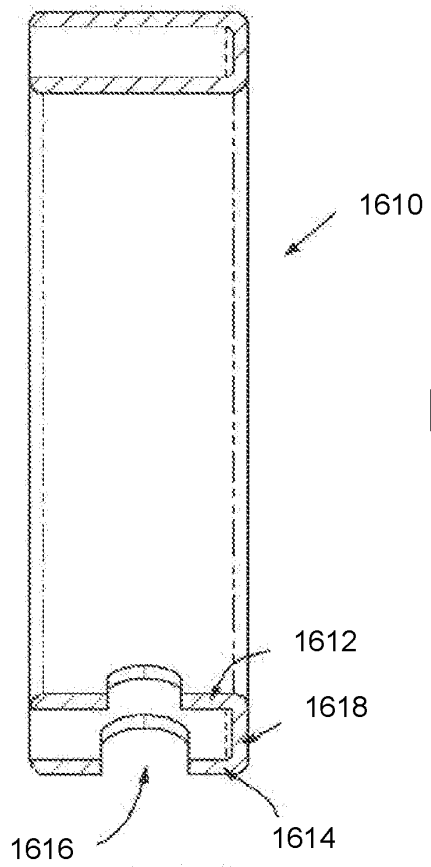


FIG. 14B

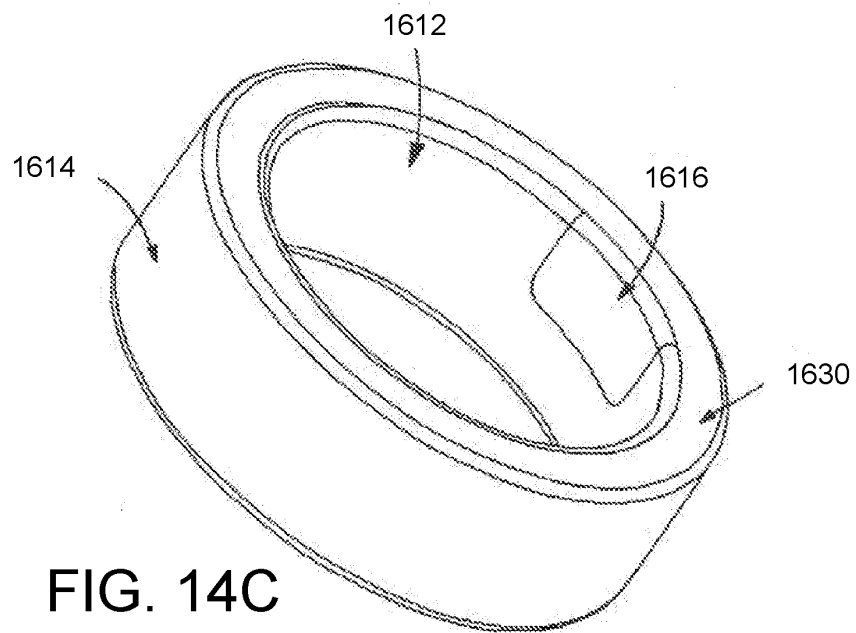


FIG. 14C

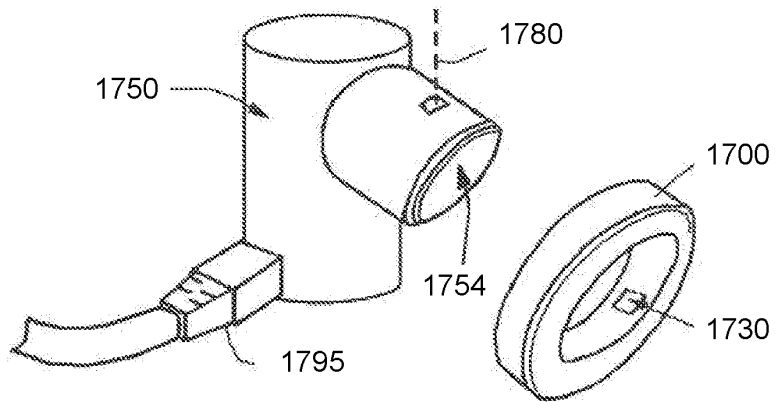


FIG. 15

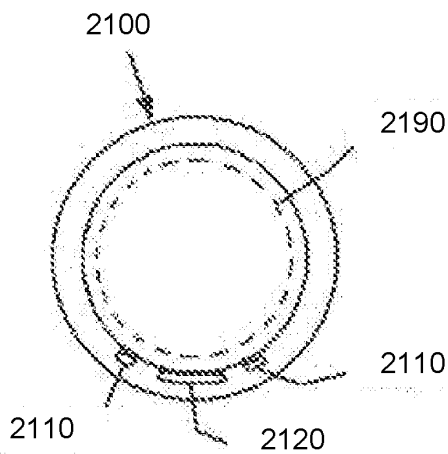


FIG. 16A

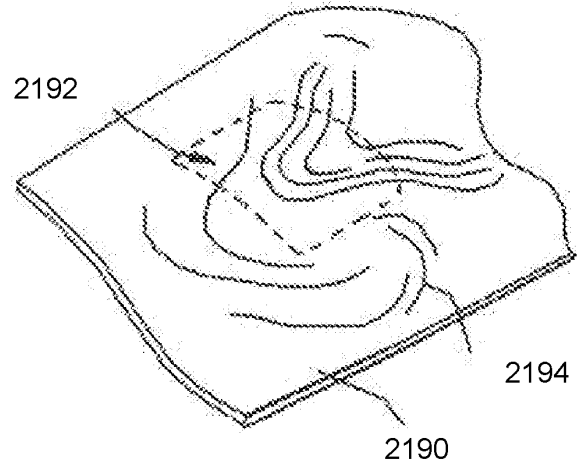
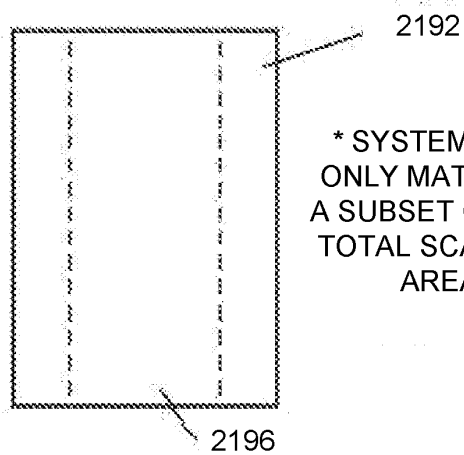


FIG. 16B



* SYSTEM WILL
ONLY MATCH TO
A SUBSET OF THE
TOTAL SCANNED
AREA

FIG. 16C

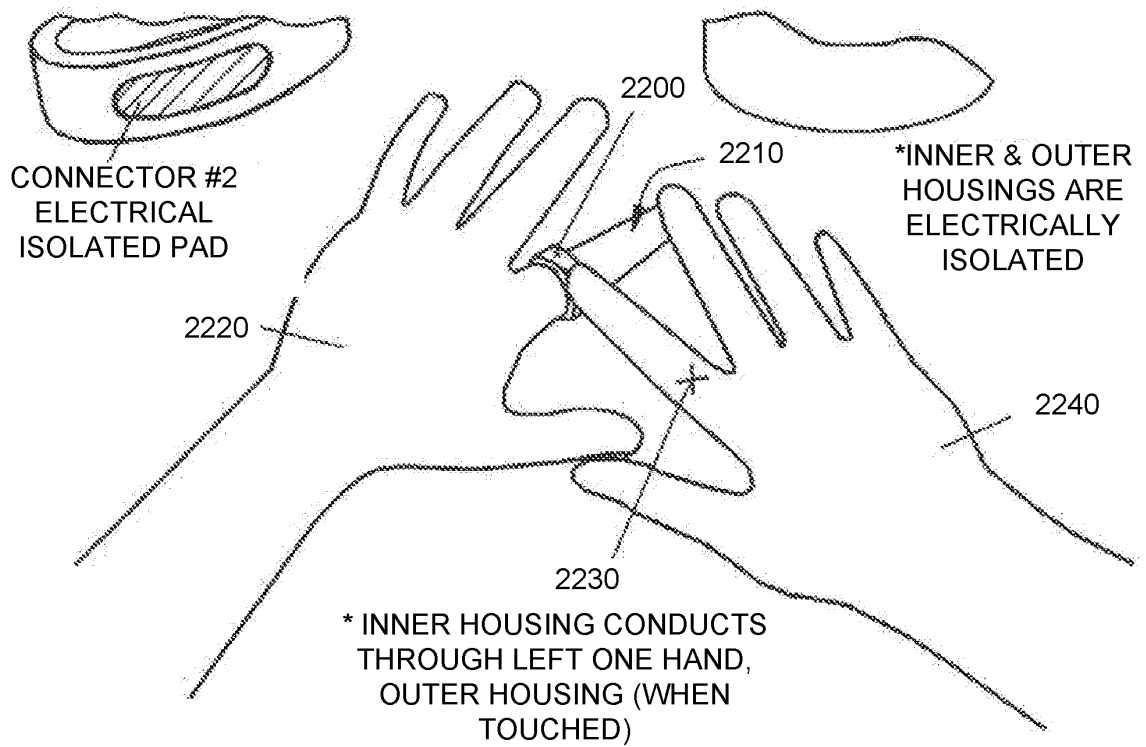


FIG. 17A

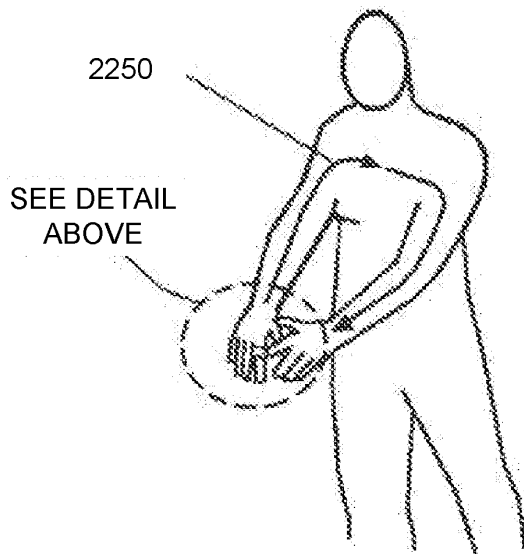


FIG. 17B

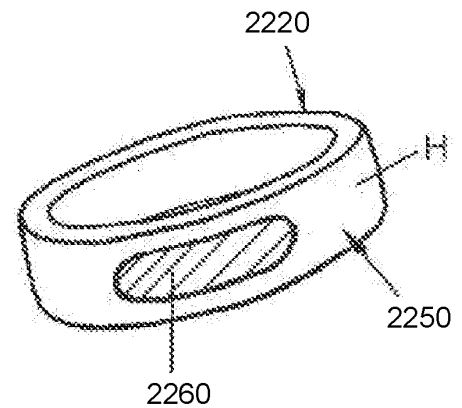


FIG. 17C

RING BASED NAVIGATION AID DESCRIPTION
GPS ON MOBILE DEVICE RELAYS MAGNETIC
HEADING INFORMATION OVER BLUETOOTH
TO RING WHICH GIVES FEEDBACK TO USER,
USING LED & MAGNETOMETER

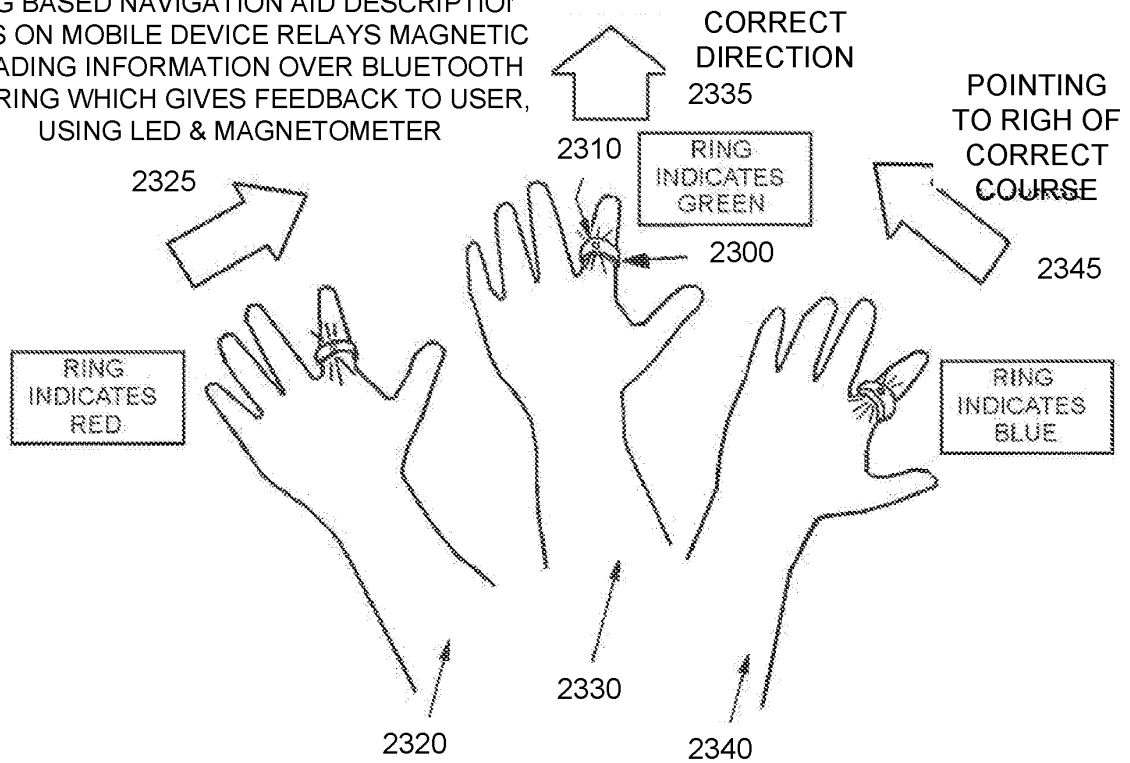


FIG. 18A

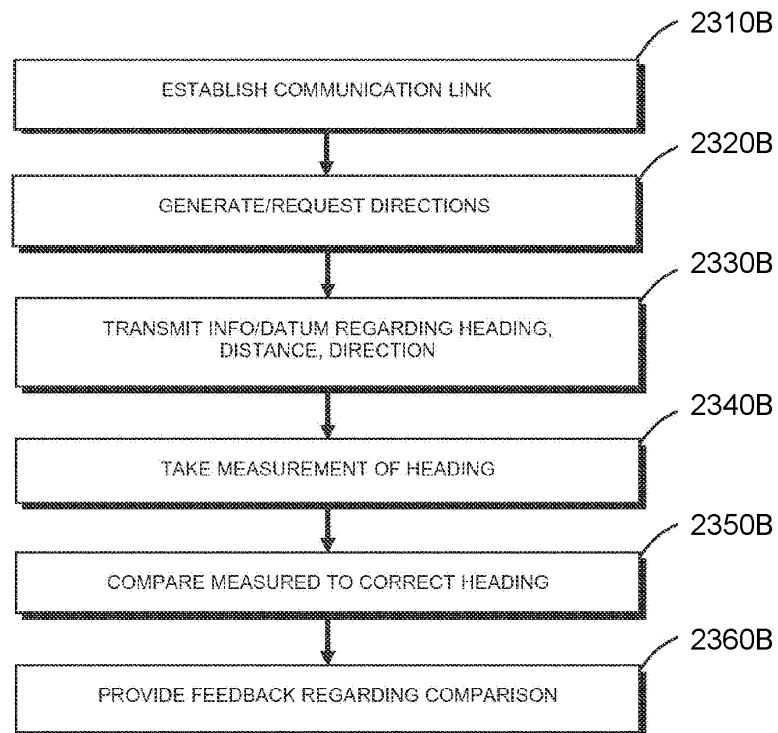


FIG. 18B

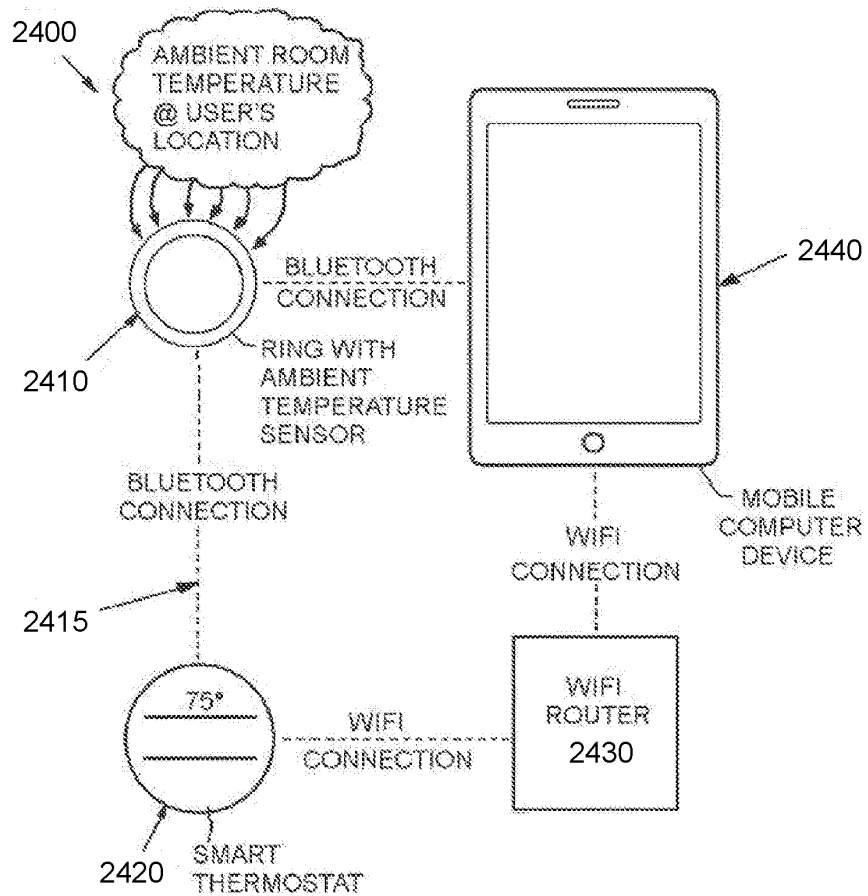


FIG. 19A

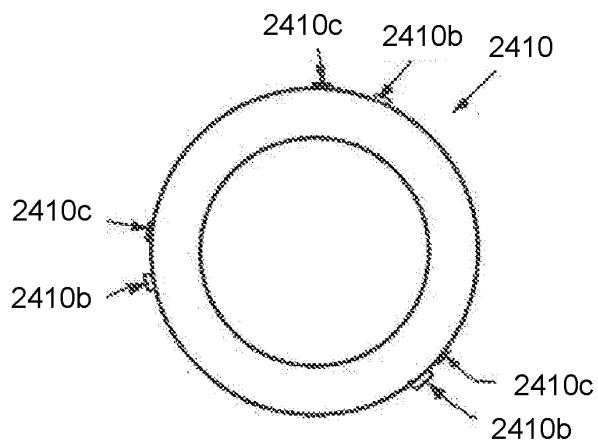


FIG. 19B

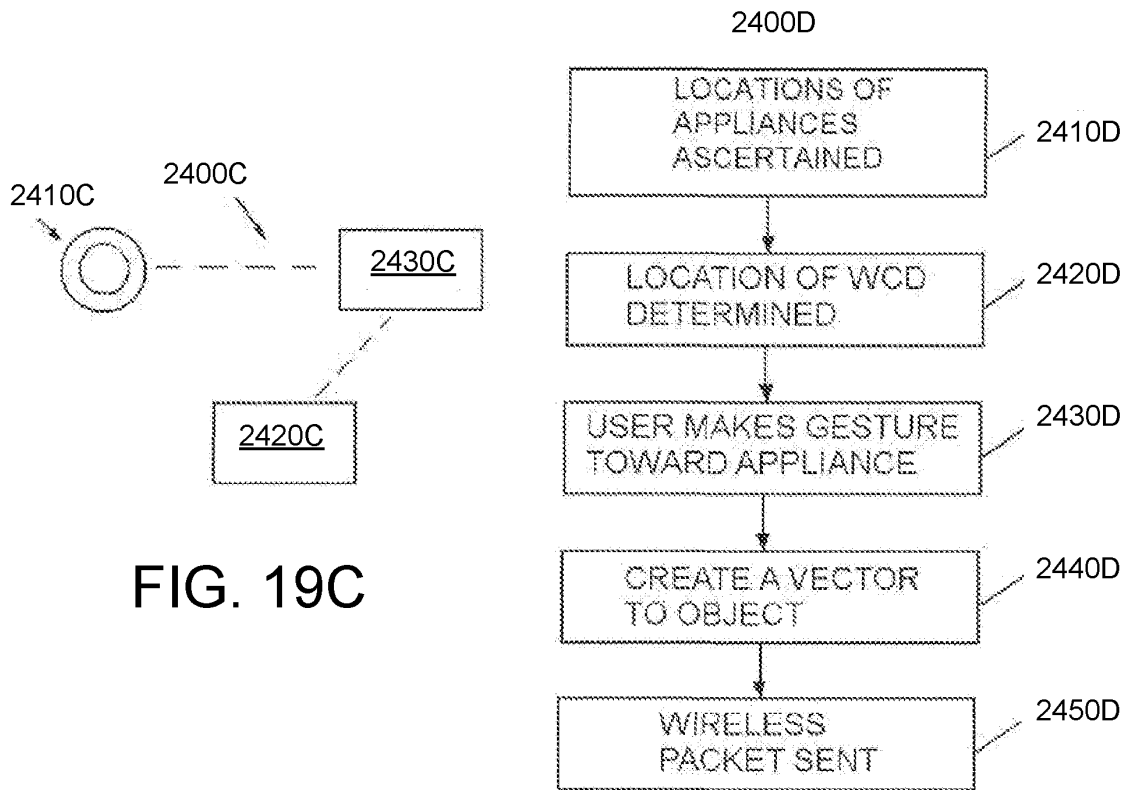


FIG. 19C

FIG. 19D

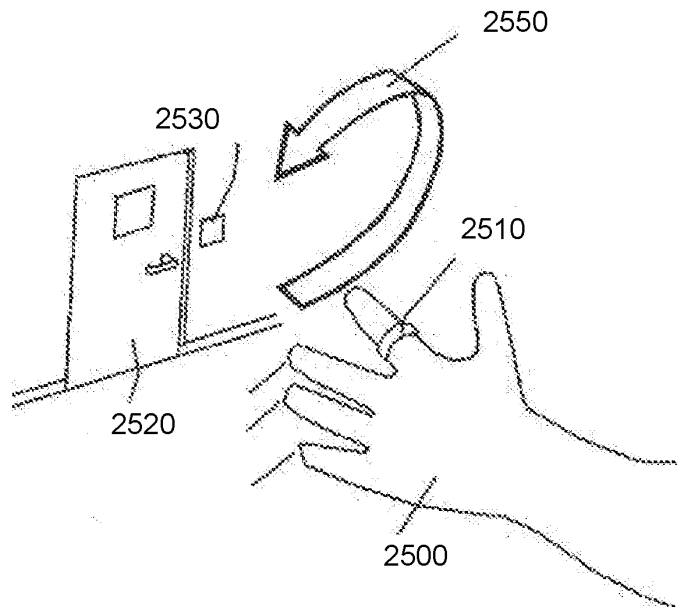


FIG. 20

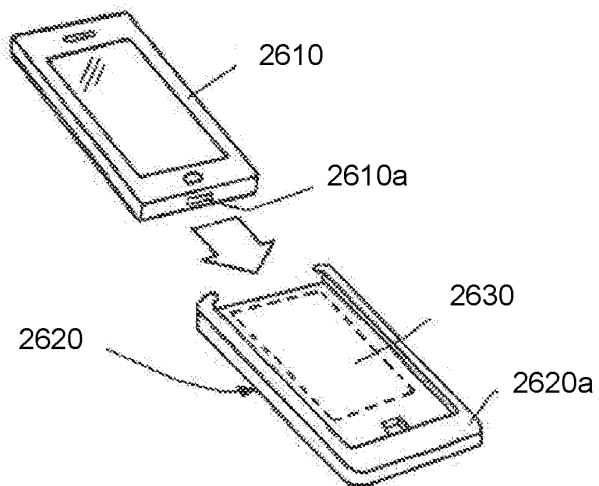


FIG. 21A

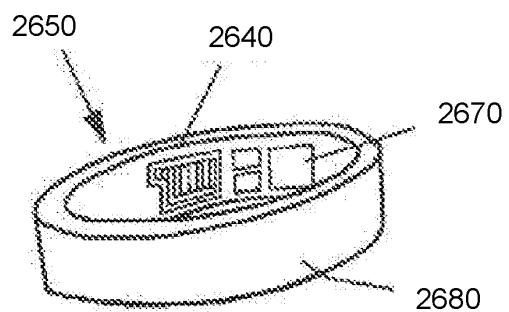


FIG. 21B

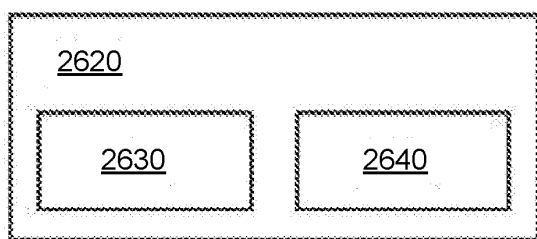


FIG. 21C

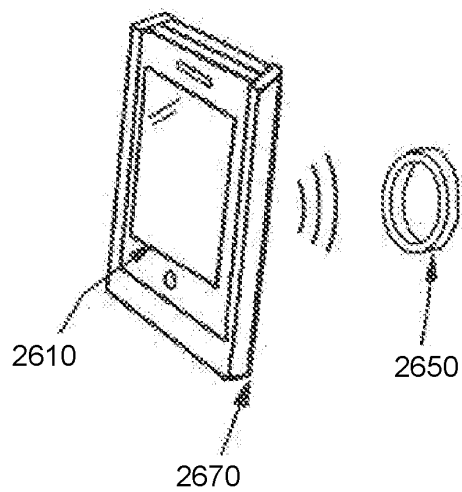


FIG. 21D

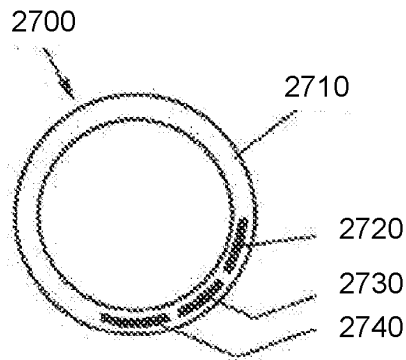


FIG. 22A

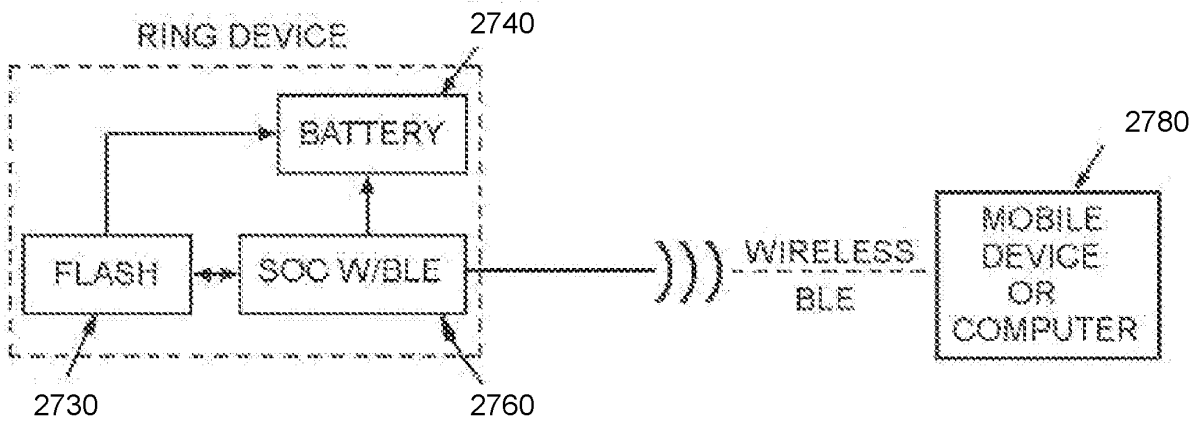


FIG. 22B

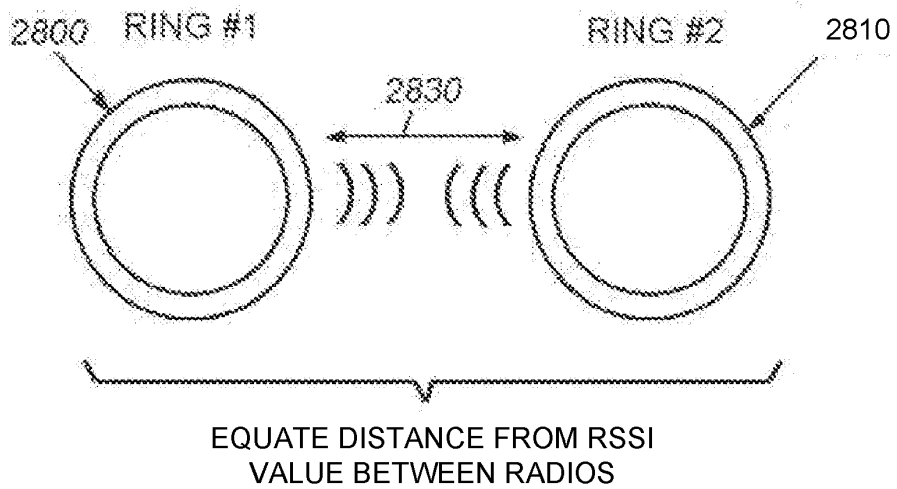


FIG. 23A

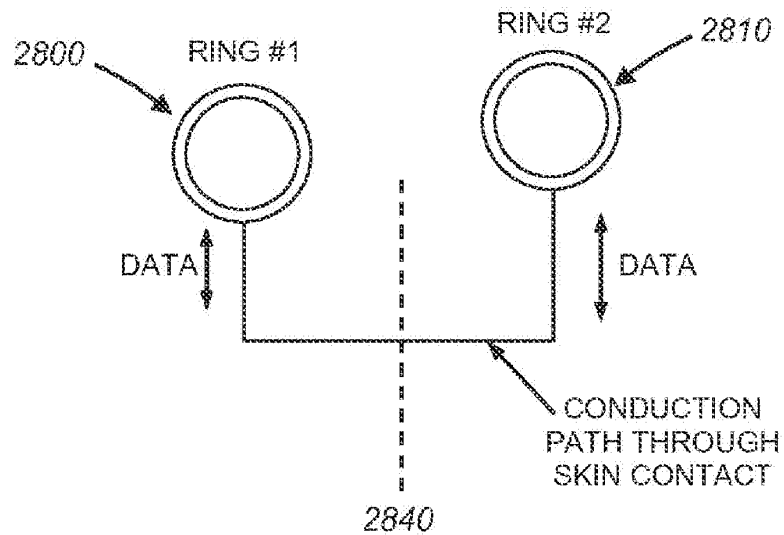


FIG. 23B

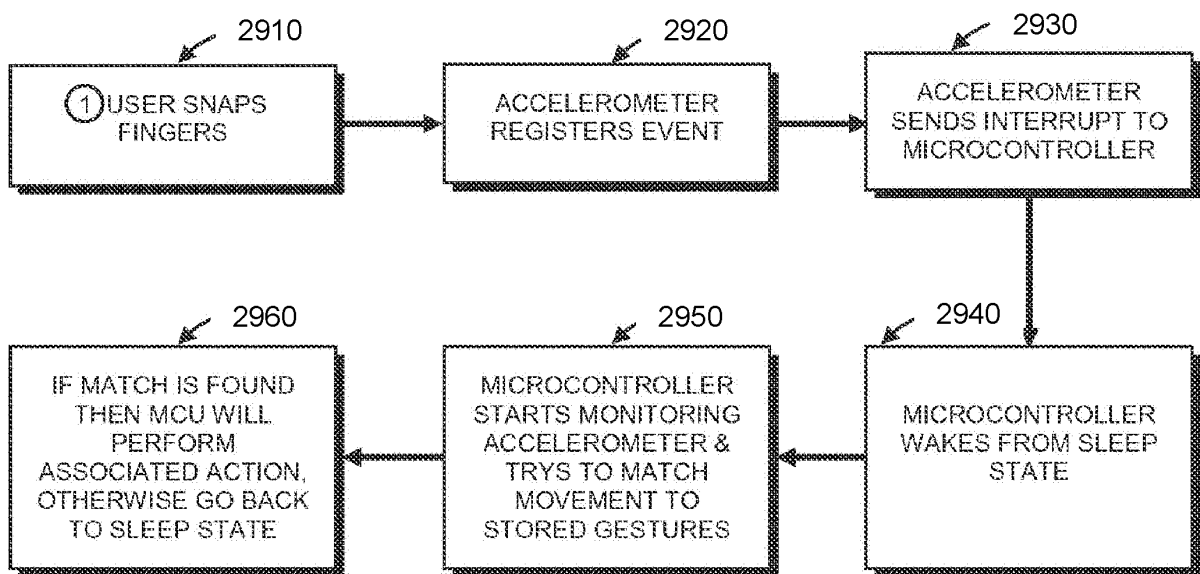


FIG. 24A

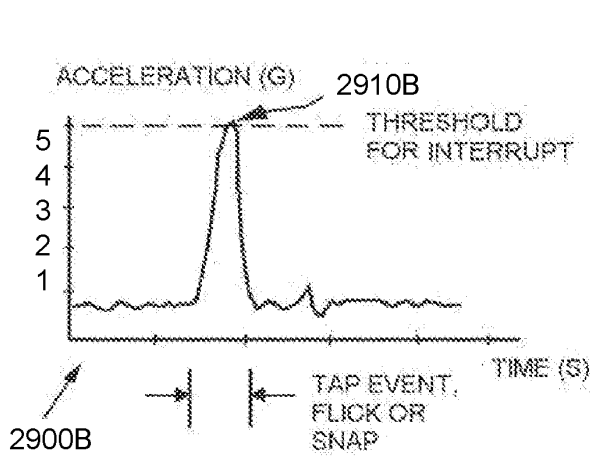


FIG. 24B

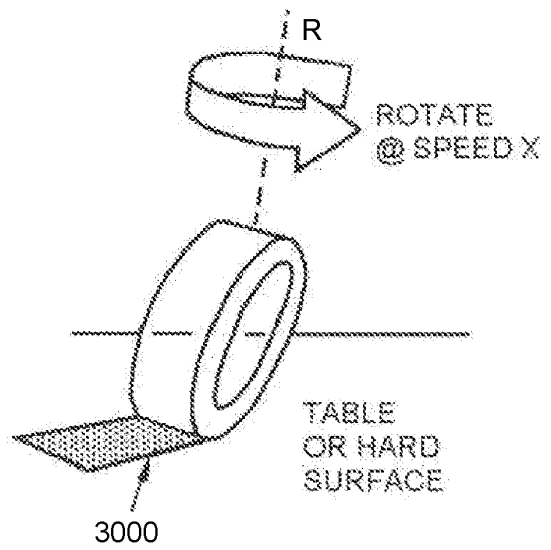


FIG. 25

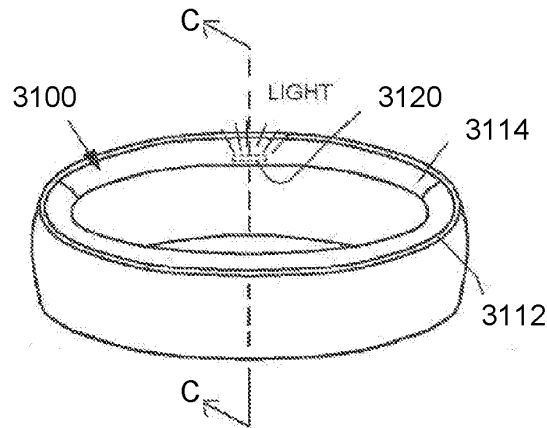


FIG. 26A

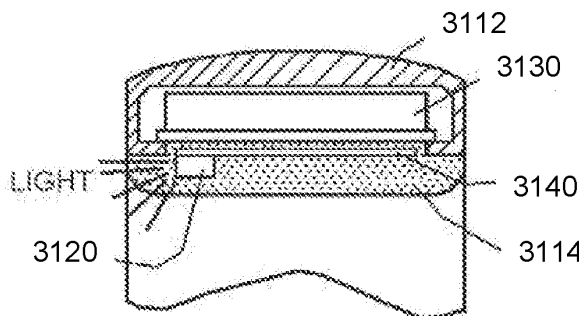


FIG. 26B

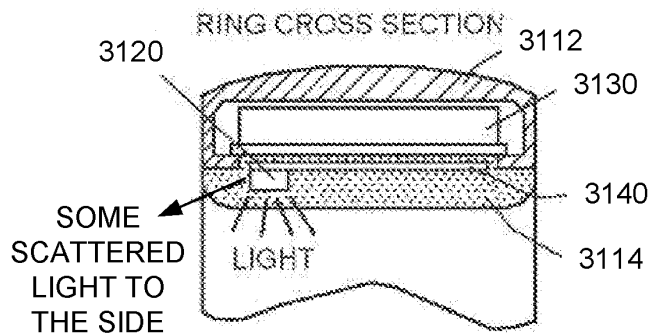


FIG. 26C

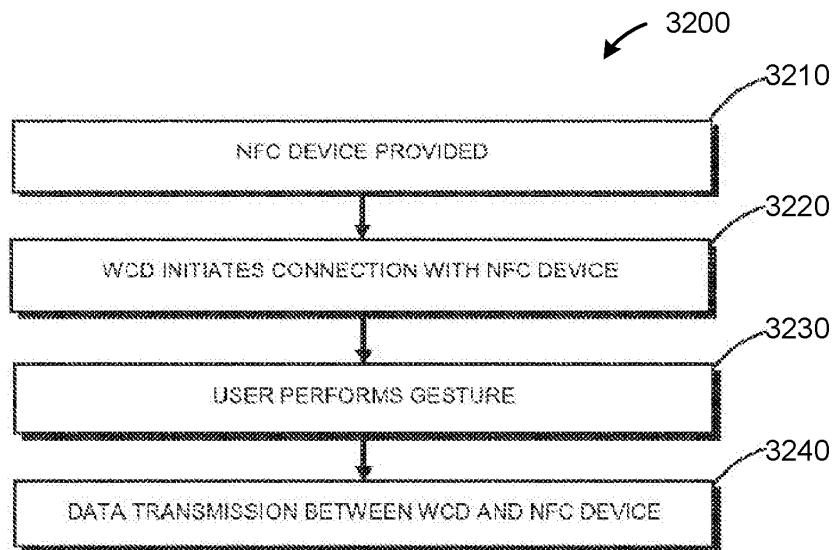


FIG. 27

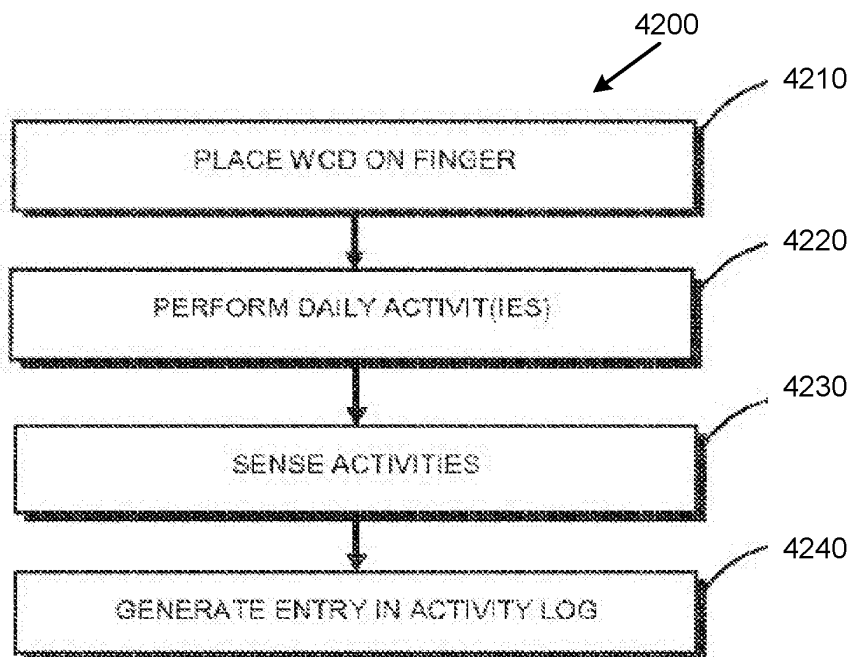


FIG. 28

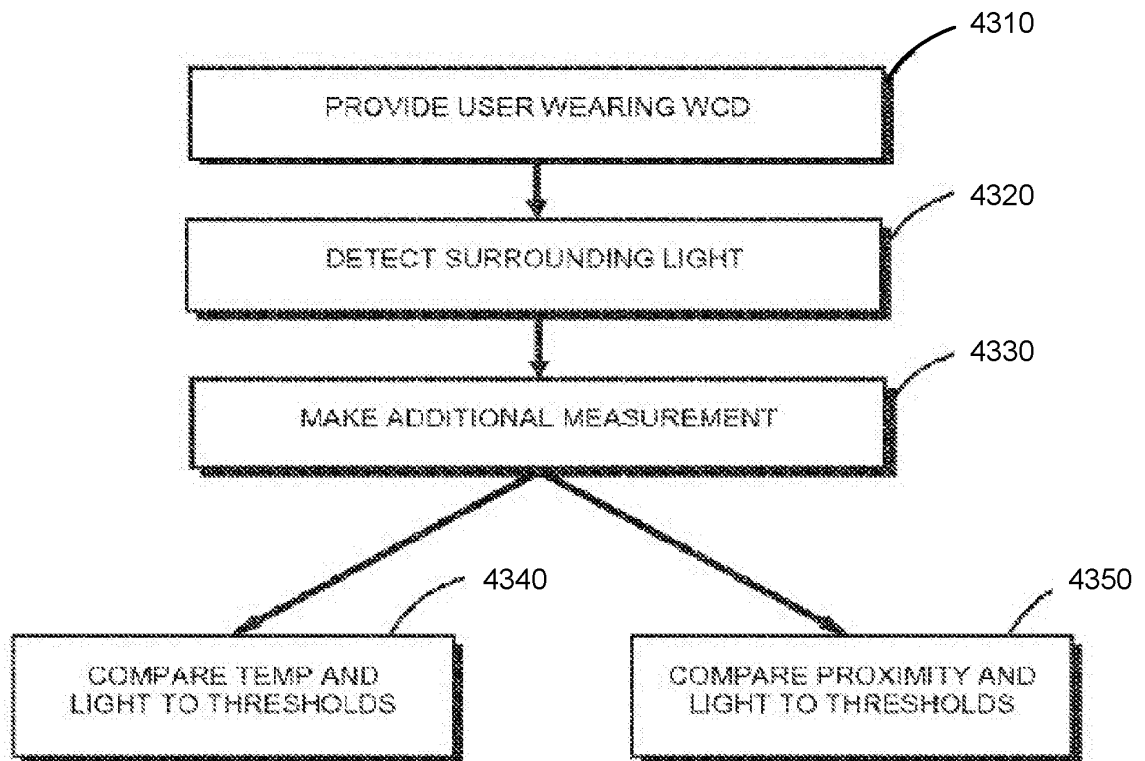


FIG. 29

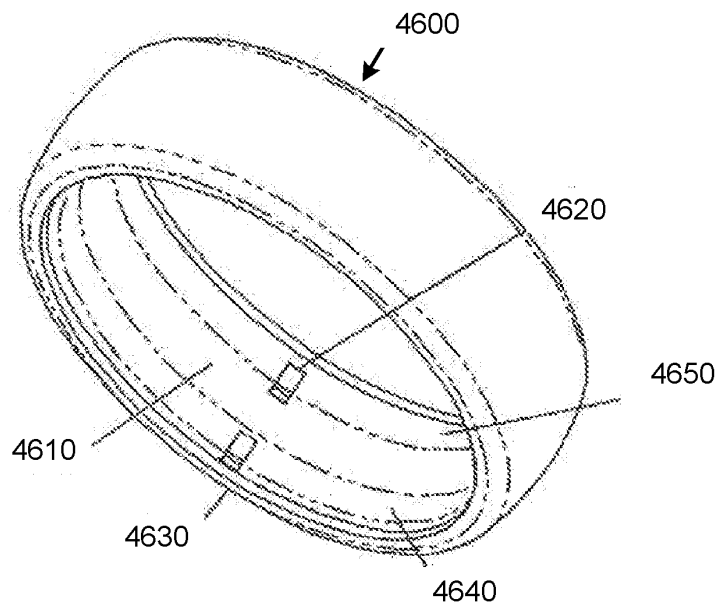


FIG. 31

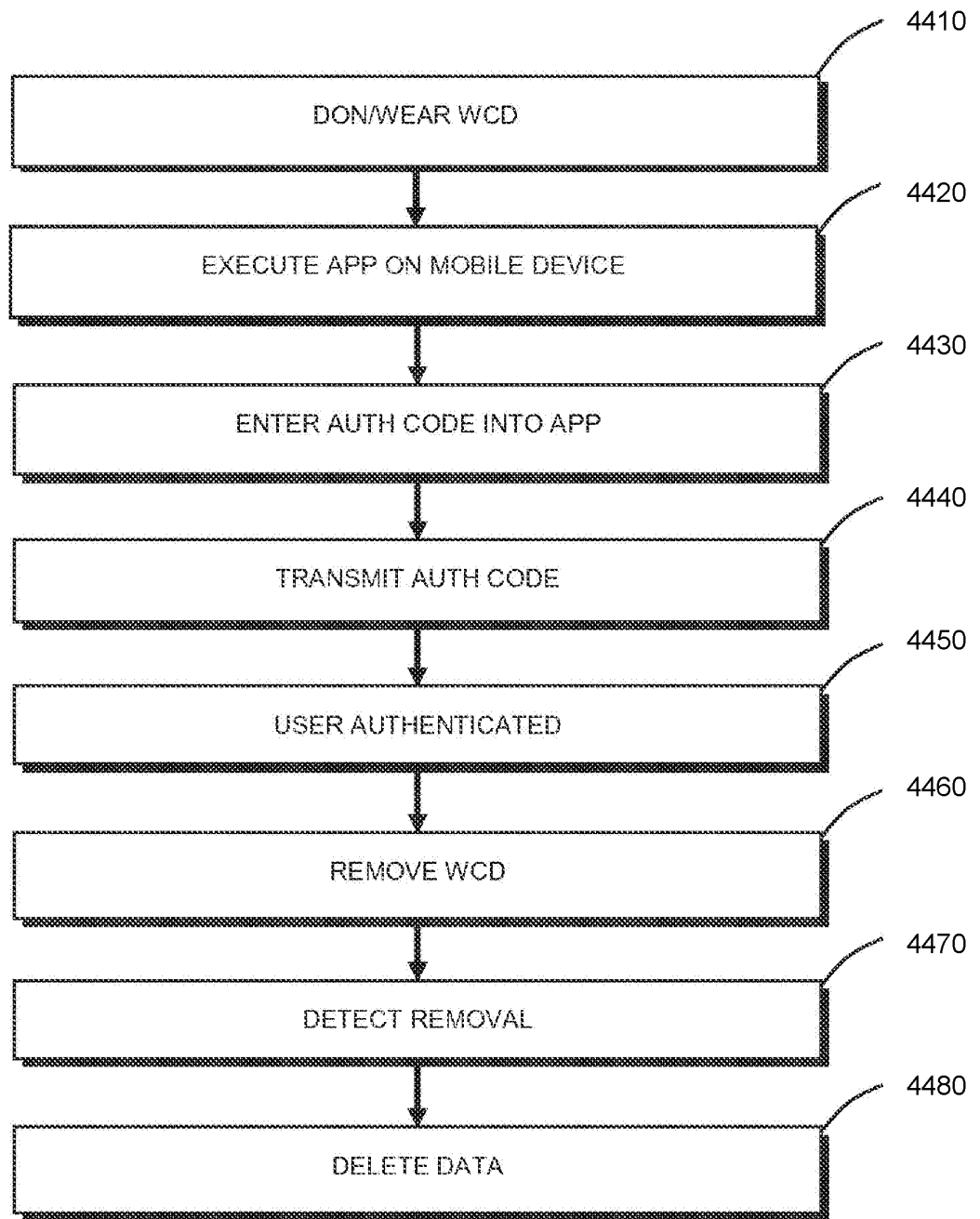


FIG. 30

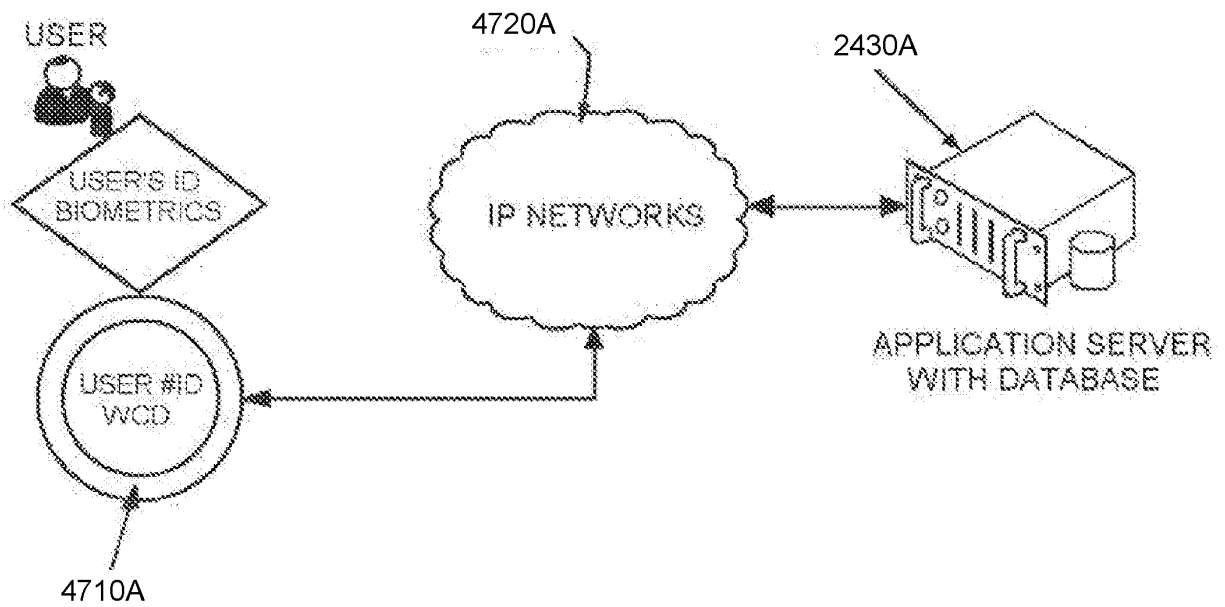


FIG. 32A

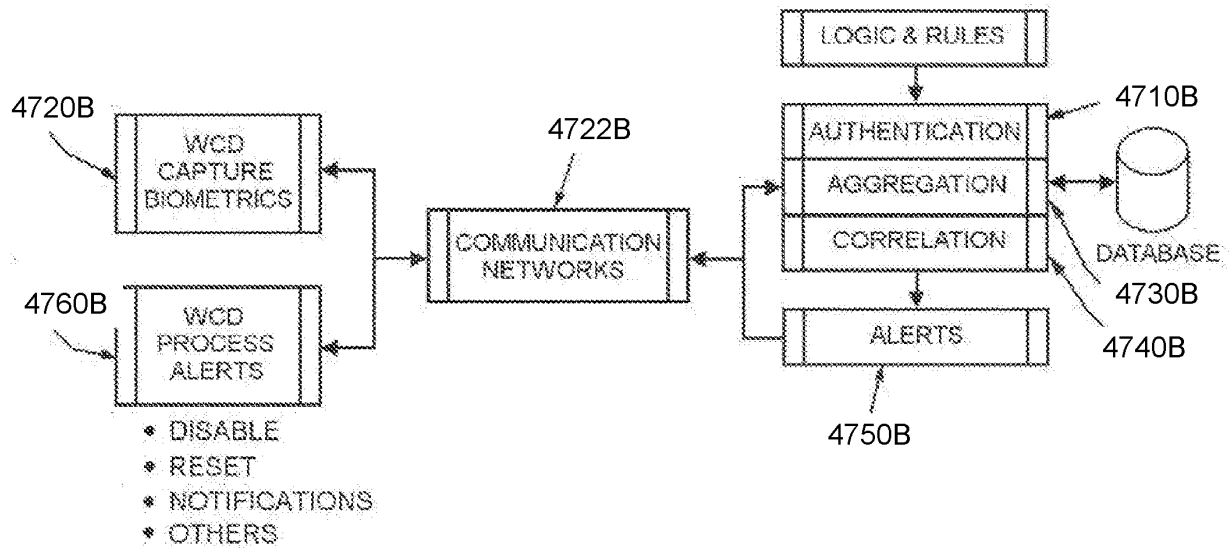


FIG. 32B

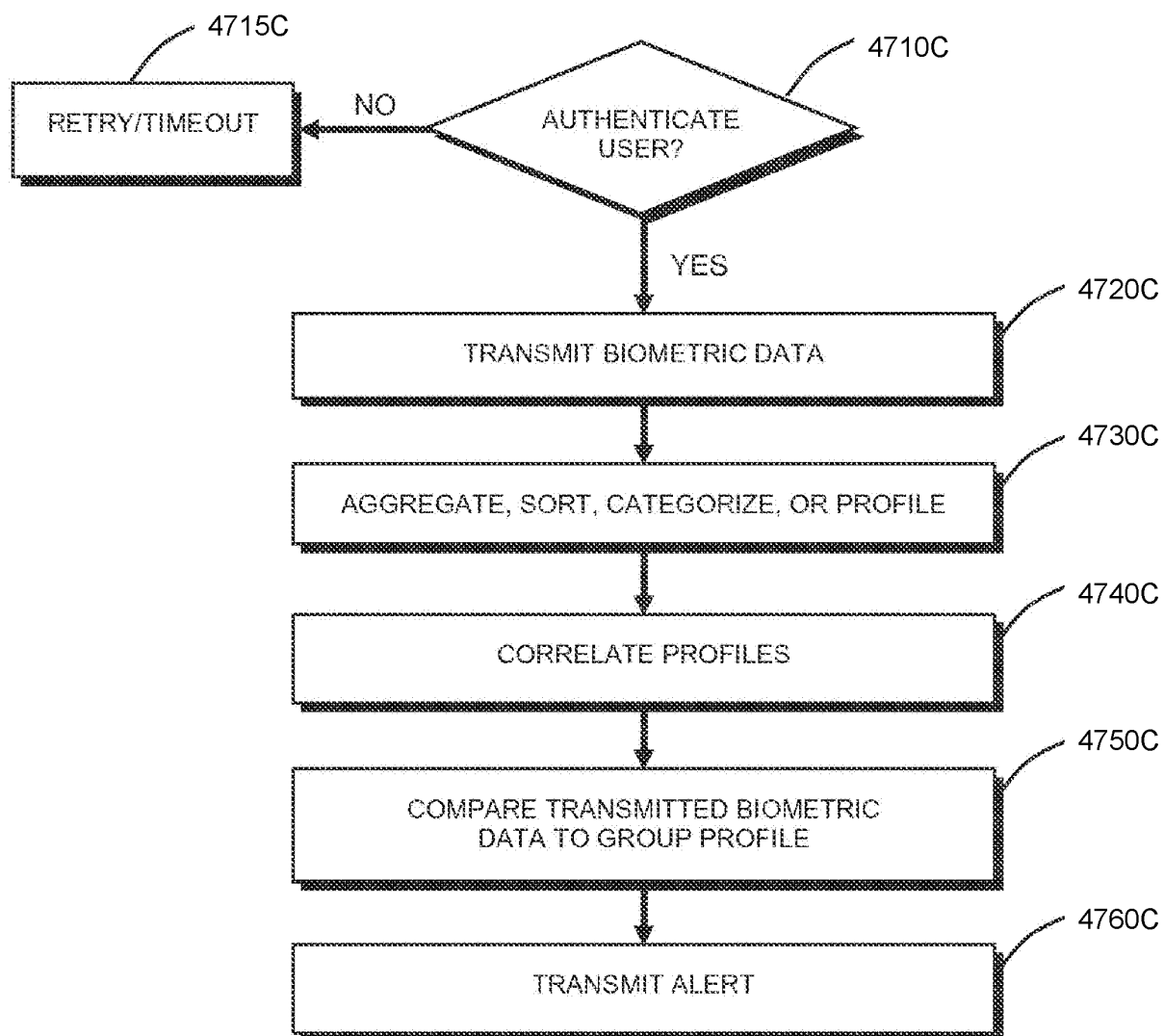


FIG. 32C

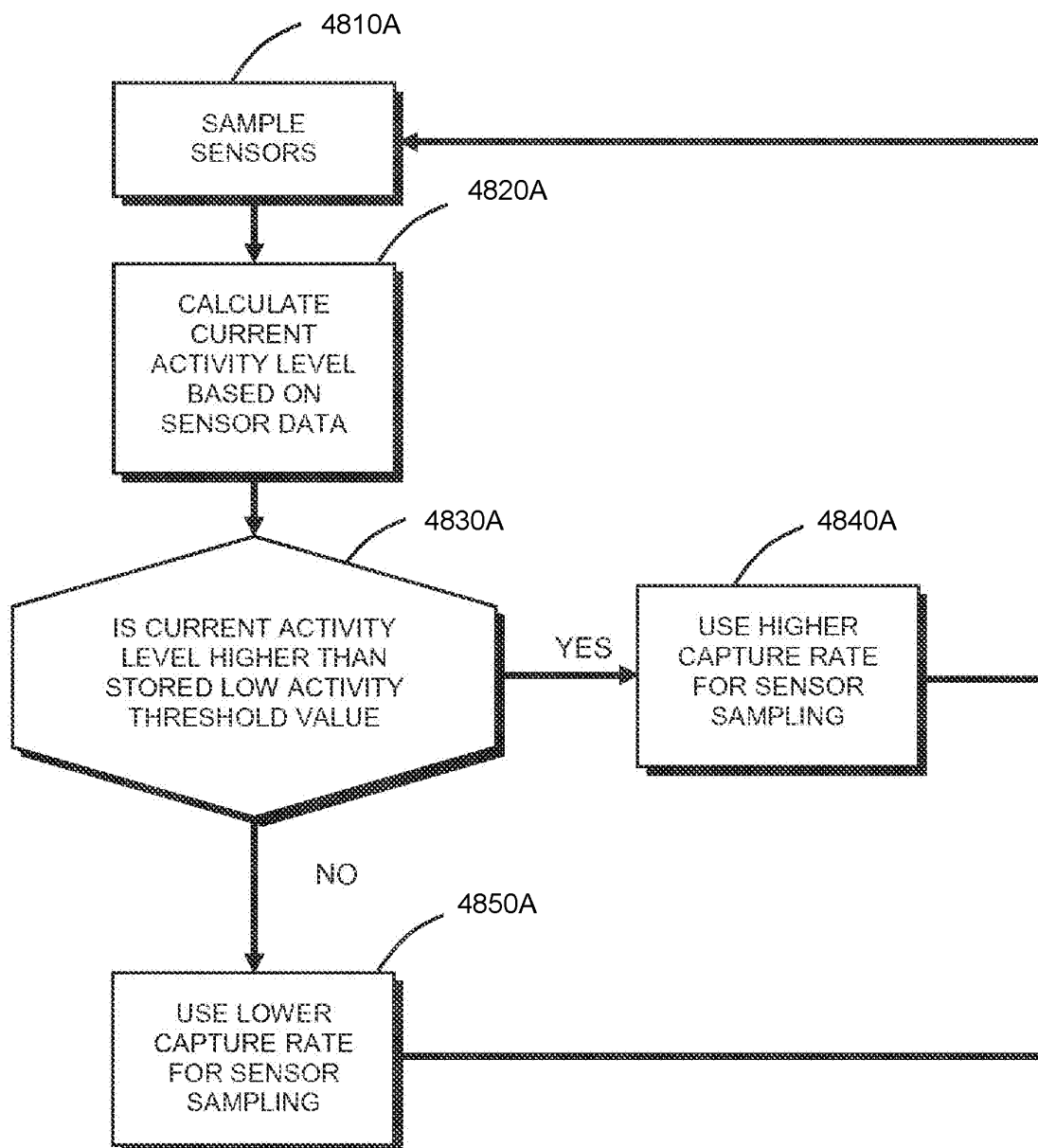


FIG. 33A

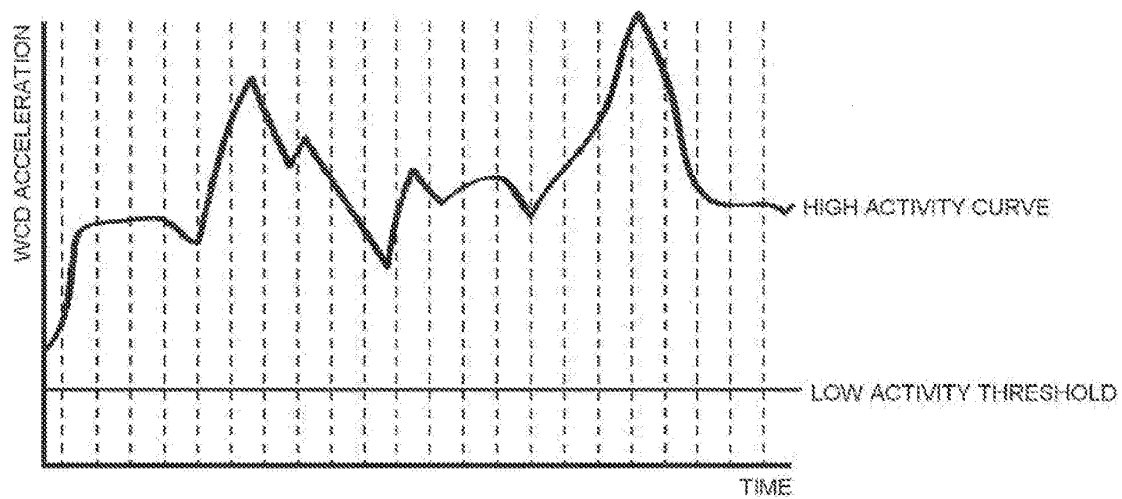


FIG. 33B

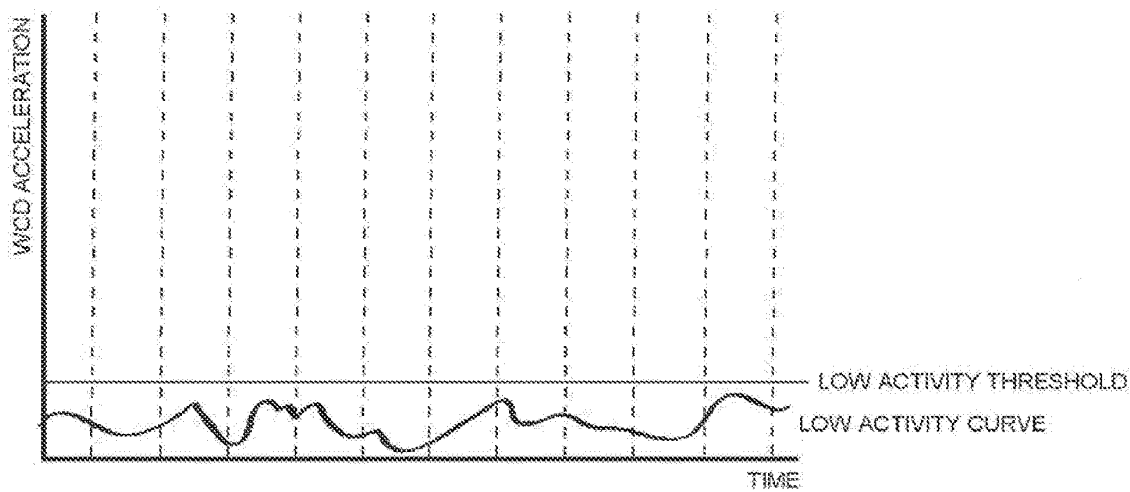


FIG. 33C

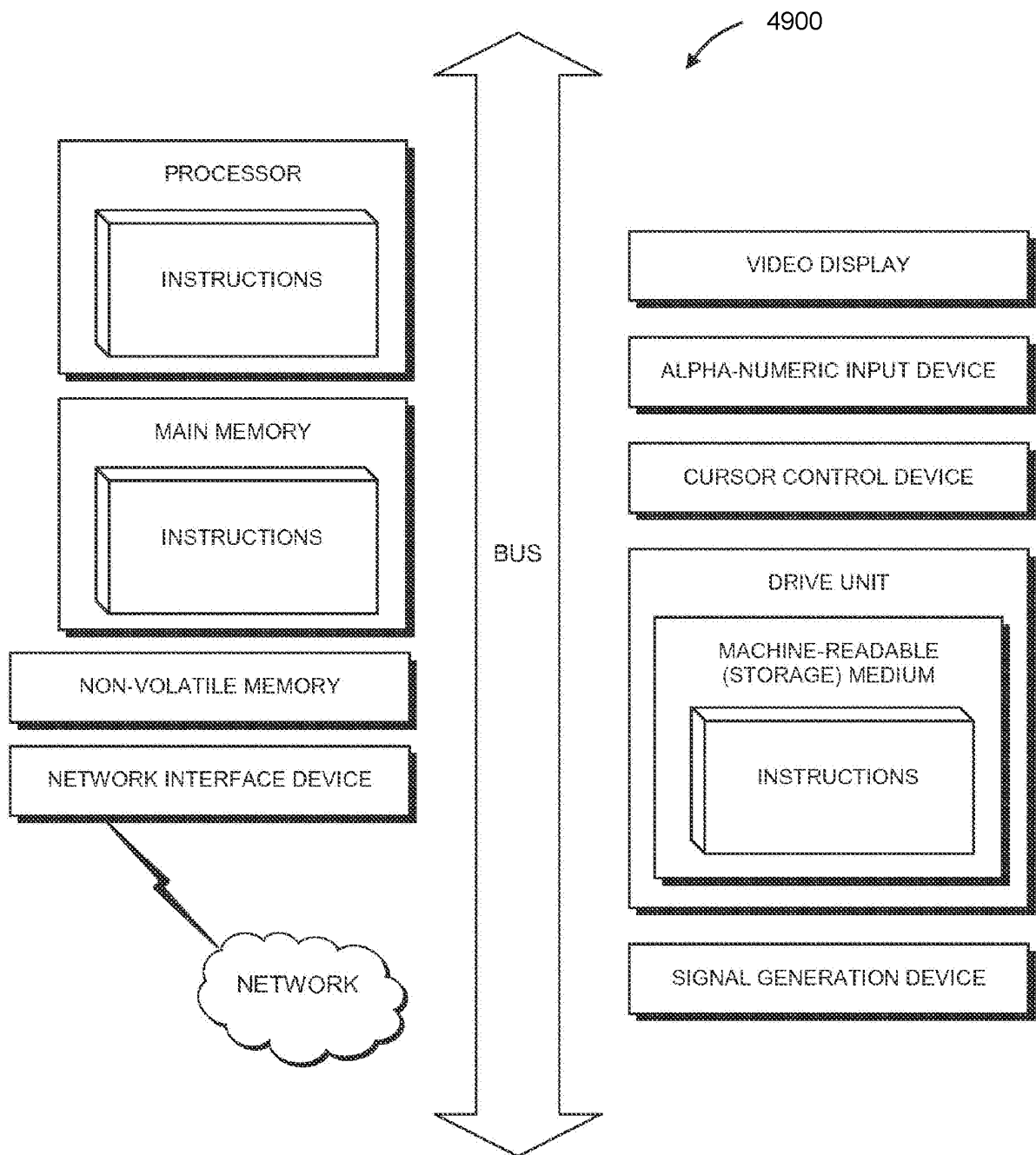


FIG. 34

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

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☐ 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		
	Curt	C.	von BADINSKI			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	San Francisco	State/Province	CA	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	600 3rd Street #245					
Address 2						
City	San Francisco	State/Province	CA			
Postal Code	94107	Country	US			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Michael	J.	STRASSER			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	San Francisco	State/Province	CA	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	600 3rd Street #245					
Address 2						
City	San Francisco	State/Province	CA			
Postal Code	94107	Country	US			
Inventor	3				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Peter		TWISS			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		984SPMO0048US12	
		Application Number			
Title of Invention	WEARABLE COMPUTING DEVICE				
City	San Francisco	State/Province	CA	Country of Residence	US
Mailing Address of Inventor:					
Address 1	500 3rd Street #245				
Address 2					
City	San Francisco	State/Province	CA		
Postal Code	94107	Country i	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

Correspondence Information:

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☐ An Address is being provided for the correspondence Information of this application.	
Customer Number	163435
Email Address	Add Email Remove Email

Application Information:

Title of the Invention	WEARABLE COMPUTING DEVICE		
Attorney Docket Number	984SPMO0048US12	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	33	Suggested Figure for Publication (if any)	12A

Filing By Reference:

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

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

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

Publication Information:

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		

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Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	163435		

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove			
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of		17013348	2020-09-04		
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
17013348	Continuation of	16224686	2018-12-18	10768666	2020-09-08	
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
16224686	Division of	15444217	2017-02-27	10156867	2018-12-18	
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
15444217	Division of	14556062	2014-11-28	9582034	2017-02-28	
Prior Application Status	Expired		Remove			
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14556062	Claims benefit of provisional		62006835	2014-06-02		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12	
		Application Number		
Title of Invention	WEARABLE COMPUTING DEVICE			
Prior Application Status	Expired			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
14556062	Claims benefit of provisional	61910201	2013-11-29	
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.				Add

Foreign Priority Information:

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

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				Add

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

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
- NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant	1		Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
		Clear	
☒ Assignee	Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor:			
If the Applicant is an Organization check here. ☒			
Organization Name	Proxy, Inc.		
Mailing Address Information For Applicant:			
Address 1	500 3rd Street #245		
Address 2			
City	San Francisco	State/Province	CA
Country	US	Postal Code	94107
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		

Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
				Remove
If the Assignee or Non-Applicant Assignee is an Organization check here.				☐
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
Address 2				
City		State/Province		
Country i		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				Add

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Steve Y. Cho/		Date (YYYY-MM-DD)	2021-11-04
First Name	Steve	Last Name	Cho	Registration Number
				44612
Additional Signature may be generated within this form by selecting the Add button.				Add

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	984SPMO0048US12
		Application Number	
Title of Invention	WEARABLE COMPUTING DEVICE		

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

Privacy Act Statement

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

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

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

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

**Title of
Invention**

WEARABLE COMPUTING DEVICE

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

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

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.

WARNING:

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 applications 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.

LEGAL NAME OF INVENTOR

Inventor: Curt C. von Badinski

Date (Optional): _____

Signature: _____

Curt von Badinski

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form.
Use an additional PTO/AIA/01 form for each additional inventor.

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 comment on the amount of time you required 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 APPLICATIONS USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

**Title of
Invention**

WEARABLE COMPUTING DEVICE

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

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

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.

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LEGAL NAME OF INVENTOR

Inventor: Michael J. Strasser

Date (Optional): _____

Signature: _____



Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form.
Use an additional PTO/AIA/01 form for each additional inventor.

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 comment on the amount of time you required 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 APPLICATIONS USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

**Title of
Invention**

WEARABLE COMPUTING DEVICE

As the below named inventor, I hereby declare that:

This declaration is directed to: ☒ The attached application, or

☐ United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

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

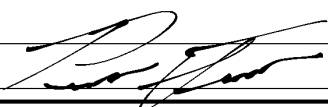
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

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 applications 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.

LEGAL NAME OF INVENTOR

Inventor: Peter Twiss _____ Date (Optional): _____

Signature:  _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

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 comment on the amount of time you required to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/519,201	11/04/2021		830	984SPMO0048US12	20	3

CONFIRMATION NO. 6157

FILING RECEIPT



0000000129832178

163435

Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

Date Mailed: 11/18/2021

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Curt C. von BADINSKI, San Francisco, CA;
Michael J. STRASSER, San Francisco, CA;
Peter TWISS, San Francisco, CA;

Applicant(s)

Proxy, Inc., San Francisco, CA;

Power of Attorney: The patent practitioners associated with Customer Number 163435

Domestic Priority data as claimed by applicant

This application is a CON of 17/013,348 09/04/2020 PAT 11188124
which is a CON of 16/224,686 12/18/2018 PAT 10768666
which is a DIV of 15/444,217 02/27/2017 PAT 10156867
which is a DIV of 14/556,062 11/28/2014 PAT 9582034
which claims benefit of 62/006,835 06/02/2014
and claims benefit of 61/910,201 11/29/2013

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

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 11/16/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/519,201**

Projected Publication Date: 02/24/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

WEARABLE COMPUTING DEVICE

Preliminary Class

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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

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

NOT GRANTED

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

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/519,201	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
			TOTAL	830		TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A		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	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		OTHER THAN SMALL ENTITY	
AMENDMENT B		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	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12

CONFIRMATION NO. 6157

163435
Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

PUBLICATION NOTICE



Title:WEARABLE COMPUTING DEVICE

Publication No.US-2022-0057832-A1

Publication Date:02/24/2022

NOTICE OF PUBLICATION OF APPLICATION

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

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

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Doc code: IDS

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PTO/SB/08a (01-22)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17519201
	Filing Date	2021-11-04
	First Named Inventor	Curt C. von BADINSKI
	Art Unit	2689
	Examiner Name	HUNNINGS, TRAVIS R.
	Attorney Docket Number	984SPMO0048US12

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	2	20070100666		2007-05-03	STIVORIC JOHN M			
	3	20130106603		2013-05-02	WEAST AARON B			
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17519201
	Filing Date	2021-11-04
	First Named Inventor	Curt C. von BADINSKI
	Art Unit	2689
	Examiner Name	HUNNINGS, TRAVIS R.
	Attorney Docket Number	984SPMO0048US12

	1						
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NON-PATENT LITERATURE DOCUMENTS

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	1	European Search Report dated September 8, 2022 for related European Patent Application No. 201205293.0	

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EXAMINER SIGNATURE

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17519201
	Filing Date	2021-11-04
	First Named Inventor	Curt C. von BADINSKI
	Art Unit	2689
	Examiner Name	HUNNINGS, TRAVIS R.
	Attorney Docket Number	984SPMO0048US12

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Steve Y. Cho/	Date (YYYY-MM-DD)	2022-09-23
Name/Print	Steve Y. Cho	Registration Number	44612

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

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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.



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APPLICATION #
17/519,201

RECEIPT DATE / TIME
09/23/2022 06:36:14 PM ET

ATTORNEY DOCKET #
984SPMO0048US12

Title of Invention

WEARABLE COMPUTING DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 6157

FILED BY Larisa Brzhevskaya

PATENT CENTER # 60997527

FILING DATE 11/04/2021

CUSTOMER # 163435

FIRST NAMED INVENTOR Curt C. von BADINSKI

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Steve Cho

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IDS_984SPMO0048US12.pdf	4	Information Disclosure Statement (IDS) Form (SB08)	1252 KB
EU_SR_984SPMO0048US12.pdf	12	Other reference-Patent/Application/Search Documents	820 KB

Digest

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IDS_984SPMO0048US12.pdf	BF2A367EA705B6CB42CB04638A32052DE3298E47DCFA713C4

9C5A337D27E7B3337050A6653E53D8FA951E490CE9CE5E622
D246E998A25DBBA5AE8CE738B0E204

EU_SR_984SPMO0048US12.p E12E6FB9715C06F875579E024C3FB8C7E68F8DFCE9C209FE6
df C2143655973717205C80F3D0635FE92DBC675F21E8B96CC1A
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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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12	6157
163435	7590	10/07/2022	EXAMINER	
Proxy, Inc. c/o AMPACC Law Group, PLLC 6100 219th Street SW, Suite 580 Mountlake Terrace, WA 98043			HUNNINGS, TRAVIS R	
			ART UNIT	PAPER NUMBER
			2689	
			NOTIFICATION DATE	DELIVERY MODE
			10/07/2022	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.

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *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 nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) 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 www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-3, 5-8, 10, 11, 13-16, 18-20 rejected on the ground of nonstatutory double patenting as being unpatentable over claims 11-13 of U.S. Patent No. 9,582,034. Although the claims at issue are not identical, they are not patentably distinct from each other because the claim the same subject matter.

The claim correspondence is as follows:

Claim	Application	9,582,034
1	1. A wearable electronic device comprising: a body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part, an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing. & 12. The wearable device of claim 11, wherein the external housing portion comprises a

		substantially transparent external potting.
2	2. The wearable electronic device according to claim 1, wherein the material is a titanium material.	Would have been obvious to one of ordinary skill in the art
3	3. The wearable electronic device according to claim 1, wherein the material is selected from a group consisting of: steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.	Would have been obvious to one of ordinary skill in the art
4	4. The wearable electronic device according to claim 1, wherein the electronic part is disposed proximate to a bottom of the cavity.	
5	5. The wearable electronic device according to claim 1, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.	Would have been obvious to one of ordinary skill in the art
6	6. The wearable electronic device according to claim 1, wherein the electronic part is selected from a group consisting of: a battery, an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver.	13. The wearable computing device of claim 12, wherein the at least one component comprises at least one LED configured to emit at least one of visible light, infrared radiation, and ultraviolet radiation through the external potting.
7	7. The wearable electronic device according to claim 1, wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of

	circuit board, a flexible printed circuit board.	a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing.
8	8. The wearable electronic device according to claim 1, wherein the body part comprises a ring configured to be worn on a finger.	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing.
9	9. The wearable electronic device according to claim 1, wherein the electronic part comprises an electromagnetic induction charging coil.	

10	10. A method for forming a wearable electronic device comprising: providing a body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part, disposing an electronic part in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and disposing a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing. & 12. The wearable device of claim 11, wherein the external housing portion comprises a substantially transparent external potting.
11	11. The method according to claim 10, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.	Would have been obvious to one of ordinary skill in the art
12	12. The method according to claim 10, wherein the electronic part is disposed proximate to a bottom of the cavity, and wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed circuit board, a flexible printed circuit board.	

13	13. The method according to claim 10, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.	Would have been obvious to one of ordinary skill in the art
14	14. The method according to claim 10, wherein the electronic part is selected from a group consisting of: a battery, an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver.	13. The wearable computing device of claim 12, wherein the at least one component comprises at least one LED configured to emit at least one of visible light, infrared radiation, and ultraviolet radiation through the external potting.
15	15. The method according to claim 14, wherein the potting material comprises a clear material and an opaque material	Would have been obvious to one of ordinary skill in the art
16	16. The method according to claim 10, wherein the body part comprises a ring configured to be worn on a finger.	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing. & 12. The wearable device of claim 11, wherein the external housing portion comprises a substantially transparent external potting.

17	17. The method according to claim 10, wherein the electronic part comprises an electromagnetic induction charging coil.	
18	18. An electronic device configured to be worn on a finger comprising: a C-shaped body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the C-shaped body part, the cavity extending from the inner surface of the C-shaped body part towards the outer surface of the C-shaped body part; an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, wherein the electronic part comprises: a flexible printed circuit board having an electronic component disposed thereon, wherein the electronic component is selected from a group consisting of: an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver, and a battery coupled to the flexible printed circuit board; and a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.	11. A wearable computing device, comprising: an internal housing portion defining a first enclosing structure, the internal housing portion configured to be disposed near a finger of a user; a flexible printed circuit board arranged around a portion of a circumference of an interior surface of the internal housing; at least one component disposed on the flexible printed circuit board; and an external housing portion defining a second enclosing structure, the external housing portion configured to seal the at least one component and the printed circuit board in an internal space defined by the interior surface of the internal housing. & 12. The wearable device of claim 11, wherein the external housing portion comprises a substantially transparent external potting.

19	19. The wearable electronic device according to claim 18, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.	Would have been obvious to one of ordinary skill in the art
20	20. The wearable electronic device according to claim 18, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.	Would have been obvious to one of ordinary skill in the art

Allowable Subject Matter

Claims 4, 9, 12, 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRAVIS R HUNNINGS whose telephone number is (571)272-3118. The examiner can normally be reached MTHF 830-430 (Office); W 8-4 (Home).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/TRAVIS R HUNNINGS/
Primary Examiner, Art Unit 2689

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	Examiner TRAVIS R HUNNINGS		Art Unit 2689	Page 1 of 2

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Symbol	Date	Examiner
G08B 1/142	10/03/2022	TRH

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text search of G08G 1/142	10/03/2022	TRH
SEARCH history attached	10/03/2022	TRH

Interference Search			
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Receipt date: 11/04/2021

17/519,201 - GAU: 2689

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Signature	/Steve Y. Cho/	Date (YYYY-MM-DD)	2021-11-04
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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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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)).
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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	16	((("8279107") or ("9373256") or ("9589465") or ("20010052860") or ("20090098903") or ("20110099126") or ("20130106621") or ("20150339924")).PN.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:07 PM
L2	1	L1 and lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:08 PM
L3	6	("9704400").PN.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:08 PM
L4	2356	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:11 PM
L5	386	g08g1/142.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:11 PM
L6	2685	L4 L5	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:12 PM
L7	18	L6 and park\$4 with lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:12 PM
L8	23	("20030112154" "20040032342" "20040068433" "5910782" "6694259" "6750786").PN. OR ("7312722").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2018/01/04 01:14 PM
L9	41	L7 L8	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2018/01/04 01:14 PM
L10	18	L9 and lidar	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2018/01/04 01:14 PM
L11	38	340/\$.ccls. and park\$4 with lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:20 PM
L12	40	340/\$.ccls. and (park\$4 occupancy) with lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:20 PM
L13	24	L12 not L10	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:20 PM
L14	28	340/\$.ccls. and (park\$4) near3 (space garage occupancy) same lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:22 PM

L15	143	(park\$4) near3 (space garage occupancy) same lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:22 PM
L16	11	L14 not L12	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:22 PM
L17	79	lidar with occupancy	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/01/04 01:24 PM
L22	2409	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/08/16 12:01 PM
L23	463	g08g1/142.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/08/16 12:01 PM
L24	2811	L22 L23	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2018/08/16 12:01 PM
L33	2448	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/01/04 09:37 AM
L34	521	g08g1/142.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/01/04 09:37 AM
L35	2903	L33 L34	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/01/04 09:37 AM
L36	25	L35 and park\$4 with lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/01/04 09:37 AM
L37	4	("10096247").PN.	(US-PGPUB; USPAT; EPO; JPO; DERWENT)	OR	OFF	OFF	2019/01/04 09:37 AM
L38	2493	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/04/25 03:25 PM
L39	604	g08g1/142.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/04/25 03:25 PM
L44	2574	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/09/09 04:40 PM
L45	684	g08g1/142.cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/09/09 04:40 PM
L46	3182	L44 L45	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/09/09 04:40 PM
L47	35	L46 and park\$4 with lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/09/09 04:40 PM
L52	9	((("10510250") or	(US-PGPUB; USPAT;	OR	OFF	OFF	2020/04/10

L53	2563	("10373493") or ("10096247").PN. 340/932.2.ccls.	EPO; JPO; DERWENT) (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	10:18 AM 2021/07/14 12:16 PM
L54	9150	(G08G1/142 G08G1/04 G08G1/143 G08G1/144 G08G1/146).cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2021/07/14 12:17 PM
L55	11311	L53 L54	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2021/07/14 12:17 PM
L56	1341	L55 and lidar	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2021/07/14 12:17 PM
L57	9	"10748424"	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2021/07/14 12:37 PM
L58	2	("20150277559").PN.	(US-PGPUB; USPAT; EPO; JPO; DERWENT)	OR	OFF	OFF	2021/07/15 01:25 PM
L59	2856	340/932.2.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2022/10/03 12:00 PM
L60	11808	(G08G1/142 G08G1/04 G08G1/143 G08G1/144 G08G1/146).cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2022/10/03 12:00 PM
L61	7797	59 60	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2022/10/03 12:00 PM
L62	5	("20150277559" "20130106603" "20140230019" "20060055517" "20130027341").pn.	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2022/10/03 02:57 PM
L63	301	("2015/0277559").urpn. AND (PGPB USPT USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/10/03 03:10 PM
L64	213	63 AND ring	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2022/10/03 03:10 PM
L65	25	63 AND (epoxy potting)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2022/10/03 03:11 PM
L66	9	("6701618" "7526927" "9612578" "20090306485" "20120218184" "20150220109" "20150277559" "20150342308" "20180343993").pn. AND (PGPB USPT USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/10/03 03:14 PM
L67	20	("11188124" "10768666" "10901460" "10139859" "10156867"	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2022/10/03 03:20 PM

		"9582034" "9958904" "10281953" "10496131" "10126779" "10331168" "10884455").pn.					
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PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Bibliographic Data

Application No: 17/519,201

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /TRAVIS R HUNNINGS/

Examiner's Signature

Initials

Title:

WEARABLE COMPUTING DEVICE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/04/2021	340	2689	984SPMO0048US12
RULE			

APPLICANTS

Proxy, Inc., San Francisco, CA,

INVENTORS

Curt C. von BADINSKI, San Francisco, CA, UNITED STATES

Michael J. STRASSER, San Francisco, CA, UNITED STATES

Peter TWISS, San Francisco, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 17013348 09/04/2020 PAT 11188124

17013348 is a CON of 16224686 12/18/2018 PAT 10768666

16224686 is a DIV of 15444217 02/27/2017 PAT 10156867

15444217 is a DIV of 14556062 11/28/2014 PAT 9582034

14556062 has PRO of 62006835 06/02/2014

14556062 has PRO of 61910201 11/29/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

11/16/2021

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STATE OR COUNTRY

UNITED STATES

ADDRESS

Proxy, Inc.

c/o AMPACC Law Group, PLLC

6100 219th Street SW, Suite 580

Mountlake Terrace, WA 98043

UNITED STATES
FILING FEE RECEIVED
\$830

Doc code: IDS

PTO/SB/08a (01-22)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 05/31/2024. OMB 0651-0031

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17519201
	Filing Date	2021-11-04
	First Named Inventor	Curt C. von BADINSKI
	Art Unit	2689
	Examiner Name	HUNNINGS, TRAVIS R.
	Attorney Docket Number	984SPMO0048US12

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	1	20050189906		2005-09-01	SUN HUEI-HSIN			
	2	20070100666		2007-05-03	STIVORIC JOHN M			
	3	20130106603		2013-05-02	WEAST AARON B			
	4	20130131519		2013-05-23	LEBOEUF STEVEN FRANCIS			
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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17519201
Filing Date	2021-11-04
First Named Inventor	Curt C. von BADINSKI
Art Unit	2689
Examiner Name	HUNNINGS, TRAVIS R.
Attorney Docket Number	984SPMO0048US12

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NON-PATENT LITERATURE DOCUMENTS

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	European Search Report dated September 8, 2022 for related European Patent Application No. 201205293.0	

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EXAMINER SIGNATURE

Examiner Signature	/TRAVIS R HUNNINGS/	Date Considered	10/03/2022
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17519201
Filing Date	2021-11-04
First Named Inventor	Curt C. von BADINSKI
Art Unit	2689
Examiner Name	HUNNINGS, TRAVIS R.
Attorney Docket Number	984SPMO0048US12

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Steve Y. Cho/	Date (YYYY-MM-DD)	2022-09-23
Name/Print	Steve Y. Cho	Registration Number	44612

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
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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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 17/519,201		Filing Date 11/04/2021		☐ To be Mailed	
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO									
APPLICATION AS FILED - PART I									
	(Column 1)	(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)			FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*			x \$50 =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			x \$240 =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.							TOTAL		
APPLICATION AS AMENDED - PART II									
	(Column 1)	(Column 2)	(Column 3)						
AMENDMENT	12/30/2022	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(j))	* 23	Minus ** 20	= 3		x \$40 =		120	
	Independent (37 CFR 1.16(h))	* 4	Minus *** 3	= 1		x \$192 =		192	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		312	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(j))	*	Minus **	=		x \$0 =			
	Independent (37 CFR 1.16(h))	*	Minus ***	=		x \$0 =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/ALLYSON PURNELL/			
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".									
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									

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

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Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	17519201	
Filing Date	04-Nov-2021	
First Named Inventor	Curt von BADINSKI	
Attorney Docket Number	984SPMO0048US12	
Title of Invention	WEARABLE COMPUTING DEVICE	
☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action ☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.		
Owner	Percent Interest	
Proxy, Inc.	100%	
The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s) 9582034 as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns. In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later: - expires for failure to pay a maintenance fee; - is held unenforceable; - is found invalid by a court of competent jurisdiction; - is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321; - has all claims canceled by a reexamination certificate; - is reissued; or - is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer. ☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.		

☐ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ☒ Small Entity ☐ Micro Entity ☐ Regular Undiscounted	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ☒ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number <u>44612</u> ☐ A sole inventor ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ☐ A joint inventor; all of whom are signing this request	
Signature	/Steve Y. Cho/
Name	Steve Y. Cho

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

Electronic Patent Application Fee Transmittal				
Application Number:		17519201		
Filing Date:		04-Nov-2021		
Title of Invention:		WEARABLE COMPUTING DEVICE		
First Named Inventor/Applicant Name:		Curt C. von BADINSKI		
Filer:		Steve Yong Soo Cho/Kyle Routen		
Attorney Docket Number:		984SPMO0048US12		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				170

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17519201

Filing Date: 04-Nov-2021

Applicant/Patent under Reexamination: von BADINSKI

Electronic Terminal Disclaimer filed on December 30, 2022

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

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

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	47295761
Application Number:	17519201
International Application Number:	
Confirmation Number:	6157
Title of Invention:	WEARABLE COMPUTING DEVICE
First Named Inventor/Applicant Name:	Curt C. von BADINSKI
Customer Number:	163435
Filer:	Steve Yong Soo Cho/Kyle Routen
Filer Authorized By:	Steve Yong Soo Cho
Attorney Docket Number:	984SPMO0048US12
Receipt Date:	30-DEC-2022
Filing Date:	04-NOV-2021
Time Stamp:	11:50:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$170
RAM confirmation Number	E2022BTB50444385
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	41320	no	2
			00581a434dd4d2298c0d132eb528ad11d09cb0c8		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37915	no	2
			d962d04fd34a2064be012ed81311762f694a21ec		
Warnings:					
Information:					
Total Files Size (in bytes):			79235		
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. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Electronic Patent Application Fee Transmittal				
Application Number:		17519201		
Filing Date:		04-Nov-2021		
Title of Invention:		WEARABLE COMPUTING DEVICE		
First Named Inventor/Applicant Name:		Curt C. von BADINSKI		
Filer:		Steve Yong Soo Cho/Kyle Routen		
Attorney Docket Number:		984SPMO0048US12		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	3	50	150
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	240	240
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				390

Electronic Acknowledgement Receipt	
EFS ID:	47295776
Application Number:	17519201
International Application Number:	
Confirmation Number:	6157
Title of Invention:	WEARABLE COMPUTING DEVICE
First Named Inventor/Applicant Name:	Curt C. von BADINSKI
Customer Number:	163435
Filer:	Steve Yong Soo Cho/Kyle Routen
Filer Authorized By:	Steve Yong Soo Cho
Attorney Docket Number:	984SPMO0048US12
Receipt Date:	30-DEC-2022
Filing Date:	04-NOV-2021
Time Stamp:	11:53:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Request for Reconsideration-After Non-Final Rejection	NFOA_Response_984SPMO0048US12.pdf	109641	no	7
			0cf3313ef7fe6d9743dda7d816b54b2763119d10		

Warnings:

Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40300	no	2
			b5ec9d3123f16008d0da3cabf1d206e8be92e18d		
Warnings:					
Information:					
Total Files Size (in bytes):			149941		
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. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Curt C. von BADINSKI et al.

Application No.: 17/519,201

Filed: November 4, 2021

For: WEARABLE COMPUTING
DEVICE

Customer No.: 163435

Confirmation No.: 6157

Examiner: HUNNINGS, TRAVIS R

Technology Center/Art Unit: 2689

AMENDMENT

Mail Stop Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed October 7, 2022, please enter the following amendments and remarks:

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

Remarks begin on page 7 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A wearable electronic device comprising:
a body part made of a material, having an inner surface and an outer surface,
wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part,
an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and
a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.
2. (Original) The wearable electronic device according to claim 1, wherein the material is a titanium material.
3. (Original) The wearable electronic device according to claim 1, wherein the material is selected from a group consisting of: steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.
4. (Original) The wearable electronic device according to claim 1, wherein the electronic part is disposed proximate to a bottom of the cavity.
5. (Original) The wearable electronic device according to claim 1, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.
6. (Currently amended) The wearable electronic device according to claim 1, wherein the electronic part is selected from a group consisting of: a battery, an infrared

transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor, a haptic feedback device, a piezo actuator, and an infrared receiver.

7. (Original) The wearable electronic device according to claim 1, wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed circuit board, a flexible printed circuit board.

8. (Original) The wearable electronic device according to claim 1, wherein the body part comprises a ring configured to be worn on a finger.

9. (Original) The wearable electronic device according to claim 1, wherein the electronic part comprises an electromagnetic induction charging coil.

10. (Original) A method for forming a wearable electronic device comprising:
providing a body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the body part, the cavity extending from the inner surface of the body part towards the outer surface of the body part and having a depth arranged within the inner surface of the body part,
disposing an electronic part in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, and
disposing a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.

11. (Original) The method according to claim 10, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.

12. (Original) The method according to claim 10,
wherein the electronic part is disposed proximate to a bottom of the cavity, and

wherein the electronic part comprises a circuit board selected from a group consisting of: a rigid-flexible printed circuit board, a flexible printed circuit board.

13. (Original) The method according to claim 10, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.

14. (Currently amended) The method according to claim 10, wherein the electronic part is selected from a group consisting of: a battery, an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor, a haptic feedback device, a piezo actuator, and an infrared receiver.

15. (Currently amended) The method according to claim 14, wherein the potting material comprises a clear material and an opaque material.

16. (Original) The method according to claim 10, wherein the body part comprises a ring configured to be worn on a finger.

17. (Original) The method according to claim 10, wherein the electronic part comprises an electromagnetic induction charging coil.

18. (Currently amended) [[An]] A wearable electronic device configured to be worn on a finger comprising:

a C-shaped body part made of a material, having an inner surface and an outer surface, wherein a cavity is formed on the inner surface of the C-shaped body part, the cavity extending from the inner surface of the C-shaped body part towards the outer surface of the C-shaped body part and having a depth arranged within the inner surface of the C-shaped body part;

an electronic part arranged in the cavity, wherein at least a portion of the electronic part has a thickness that is less than the depth of the cavity, wherein the electronic part

comprises: a flexible printed circuit board having an electronic component disposed thereon, wherein the electronic component is selected from a group consisting of: an infrared transmitter, a microcontroller, a radio frequency transceiver, a temperature sensor and an infrared receiver, and a battery coupled to the flexible printed circuit board; and

a coating made of a potting material on the inner surface of the body part, covering the electronic part and the cavity.

19. (Original) The wearable electronic device according to claim 18, wherein the material is selected from a group consisting of: titanium, titanium alloy, steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy.

20. (Original) The wearable electronic device according to claim 18, wherein the potting material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.

21. (New) A wearable electronic device configured to be worn on a finger comprising:

an external portion made of a first material and having an inner surface and an outer surface, wherein the outer surface of the external portion defines an exterior surface of the electronic device;

an interior portion coupled to the external portion, wherein the interior portion is disposed below the inner surface of the external portion, wherein the interior portion is made of a second material, and wherein the interior portion defines an interior surface of the electronic device;

an electronic part disposed within the interior portion, wherein the electronic part comprises:

a rigid-flex printed circuit board comprising at least a first rigid circuit board and a second rigid circuit board coupled via a flexible material; and

at least one electronic component disposed upon the first rigid printed circuit board, wherein the electronic component is selected from a group consisting of: a light emitting diode (LED), a microcontroller, a temperature sensor, a light sensor, an accelerometer, a wireless interface and a haptic feedback device.

22. (New) The wearable electronic device according to claim 21,
wherein the first material is selected from a group consisting of: titanium, titanium alloy, stainless steel, platinum, gold, silver, aluminum, polymer, plastic, tungsten carbide and a metal alloy; and
wherein the second material is selected from a group consisting of: epoxy material, silicone, a resin, and a polymer.

23. (New) The wearable electronic device according to claim 21
wherein the electronic part comprises a plurality of electronic components;
wherein the plurality of electronic components are disposed upon portions of the rigid-flex printed circuit board;
wherein the plurality of electronic components comprise: a light emitting diode (LED), a microcontroller, a temperature sensor, a light sensor, an accelerometer, a Bluetooth interface and a haptic feedback device; and
wherein the plurality of electronic components are encapsulated within the interior portion.

REMARKS

Claims 1-20 were pending. New claims 21-23 are entered herein. Claims 1-23 are now pending. Claims 6, 14, 15 and 18 are amended as indicated above. No new matter has been added.

The undersigned thanks the Examiner for indication that Claims 4, 9, 12 and 17 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1, 2, 3, 5-8, 10, 11, 13-16, 18, 19 and 20 were rejected on the ground of nonstatutory double patenting as being unpatentable over claims 11-13 of U.S. Patent No. 9,582,034. To expedite prosecution of the present claims, the attached Terminal Disclaimer is provided.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

The Commissioner is authorized to charge any deficiency in any fees required under 37 C.F.R. 1.16 and/or 1.17, including extension of time fees, and credit any overpayment to Deposit Account No. 50-4713.

If the Examiner believes a telephone conference would expedite prosecution of this Application, please telephone the undersigned at 425-348-3500.

Respectfully submitted,

/Steve Y. Cho/

Steve Y. Cho
Reg. No. 44,612

AMPACC Law Group, PLLC
6100 219th St. SW, Suite 580
Mountlake Terrace, WA 98043
Tel: 425-348-3500
Fax: 425-348-3299



UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

163435 7590 02/01/2023
Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

EXAMINER

HUNNINGS, TRAVIS R

ART UNIT

PAPER NUMBER

2689

DATE MAILED: 02/01/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12	6157

TITLE OF INVENTION: WEARABLE COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	05/01/2023

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 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted 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. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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

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

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

163435 7590 02/01/2023
Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12	6157

TITLE OF INVENTION: WEARABLE COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	05/01/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
HUNNINGS, TRAVIS R	2689	340-539120

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/AIA/122 or PTO/SB/122) attached.

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

2. For printing on the patent front page, list

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

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

1 _____
2 _____
3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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.
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12	6157
163435	7590	02/01/2023	EXAMINER	
Proxy, Inc. c/o AMPACC Law Group, PLLC 6100 219th Street SW, Suite 580 Mountlake Terrace, WA 98043			HUNNINGS, TRAVIS R	
			ART UNIT	PAPER NUMBER
			2689	

DATE MAILED: 02/01/2023

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 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, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 17/519,201	Applicant(s) von BADINSKI et al.	
	Examiner TRAVIS R HUNNINGS	Art Unit 2689	AIA (FITF) Status Yes

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

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

1. ☒ This communication is responsive to 12/30/22.
☐ 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 1-23 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

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

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

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

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

Attachment(s)

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

/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689	
--	--

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Allowable Subject Matter

Claims 1-23 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art does not disclose nor suggest a wearable computing device with the particularly claimed limitations and in particular the claimed structure, especially the inclusion of the coating made of a potting material covering the electronic part and the cavity. The closest prior art Vescovi (US 20150277559) discloses a similar computing device enclosed in a ring structure but fails to disclose the particularly claimed limitations or the potting material.

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."

Conclusion

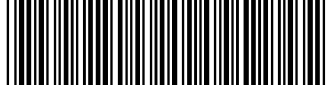
Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRAVIS R HUNNINGS whose telephone number is (571)272-3118. The examiner can normally be reached MTHF 830-430 (Office); W 8-4 (Home).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TRAVIS R HUNNINGS/
Primary Examiner, Art Unit 2689

Issue Classification 	Application/Control No. 17/519,201	Applicant(s)/Patent Under Reexamination von BADINSKI et al.
	Examiner TRAVIS R HUNNINGS	Art Unit 2689

CPC						
Symbol					Type	Version
G06F	/	1	/	163	F	2013-01-01
A61B	/	5	/	681	I	2013-01-01
A61B	/	5	/	6826	I	2013-01-01
H02J	/	7	/	35	I	2013-01-01
A61B	/	5	/	332	I	2021-01-01
A61B	/	5	/	349	I	2021-01-01
G06V	/	10	/	751	I	2022-01-01
G06V	/	40	/	10	I	2022-01-01
G06V	/	40	/	70	I	2022-01-01
G01P	/	15	/	00	I	2013-01-01
G04G	/	21	/	02	I	2013-01-01
G06F	/	3	/	014	I	2013-01-01
G06F	/	3	/	017	I	2013-01-01
G08B	/	21	/	02	I	2013-01-01
G08C	/	17	/	02	I	2013-01-01
G06F	/	1	/	1635	I	2013-01-01
G06F	/	3	/	14	I	2013-01-01
G08B	/	5	/	36	I	2013-01-01
H02J	/	7	/	0044	I	2013-01-01
H02S	/	40	/	22	I	2014-12-01
G02B	/	19	/	0052	I	2013-01-01
G02B	/	19	/	0061	I	2013-01-01
H02S	/	99	/	00	I	2013-01-01
A61B	/	5	/	01	I	2013-01-01
A61B	/	5	/	021	I	2013-01-01
A61B	/	5	/	02416	I	2013-01-01
A61B	/	5	/	1118	I	2013-01-01
A61B	/	5	/	14532	I	2013-01-01
A61B	/	5	/	1455	I	2013-01-01
G06F	/	21	/	32	I	2013-01-01
A61B	/	5	/	0205	I	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689	11 January 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20230111

Issue Classification 	Application/Control No. 17/519,201	Applicant(s)/Patent Under Reexamination von BADINSKI et al.
	Examiner TRAVIS R HUNNINGS	Art Unit 2689

CPC						
Symbol					Type	Version
G04G	/	21	/	025	I	2013-01-01
A61B	/	2560	/	0214	A	2013-01-01
A61B	/	2560	/	0412	A	2013-01-01
A61B	/	2562	/	146	A	2013-01-01
A61B	/	2562	/	164	A	2013-01-01
A61B	/	2562	/	166	A	2013-01-01
Y02E	/	10	/	52	A	2013-01-01
G06V	/	40	/	15	A	2022-01-01
G02B	/	19	/	0042	A	2013-01-01
G08C	/	2201	/	30	A	2013-01-01

CPC Combination Sets					
Symbol				Type	Set

NONE (Assistant Examiner)		Total Claims Allowed: 23	
/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689 (Primary Examiner)		11 January 2023 (Date)	
		O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No.: 20230111

Issue Classification 	Application/Control No. 17/519,201	Applicant(s)/Patent Under Reexamination von BADINSKI et al.
	Examiner TRAVIS R HUNNINGS	Art Unit 2689

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F		1	16
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

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

NONE (Assistant Examiner)		Total Claims Allowed: 23	
/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689 (Primary Examiner)		11 January 2023 (Date)	
		O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 17/519,201	Applicant(s)/Patent Under Reexamination von BADINSKI et al.
	Examiner TRAVIS R HUNNINGS	Art Unit 2689

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19										
	2		11		20										
	3		12		21										
	4		13		22										
	5		14		23										
	6		15												
	7		16												
	8		17												
	9		18												

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 23	
/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689 (Primary Examiner) _____ (Date) 11 January 2023		O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No.: 20230111

<i>Search Notes</i> 	Application/Control No. 17/519,201	Applicant(s)/Patent Under Reexamination von BADINSKI et al.
	Examiner TRAVIS R HUNNINGS	Art Unit 2689

CPC - Searched*		
Symbol	Date	Examiner
G08B 1/142	10/03/2022	TRH

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
inventor search	10/03/2022	TRH
text search of G08G 1/142	10/03/2022	TRH
SEARCH history attached	10/03/2022	TRH
updated SEARCH attached	01/11/2023	TRH

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F	1/163	01/11/2023	TRH

/TRAVIS R HUNNINGS/ Primary Examiner, Art Unit 2689	
--	--

PE2E SEARCH - Search History (Prior Art)

There are no Prior Art searches to show.

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N63	18937	(G08G1/142 G08G1/04 G08G1/143 G08G1/144 G08G1/146 g06f1/163).cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N64	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N65	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N66	260	g08g1/142.cpc.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N67	1096	N18 N19	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N68	28	N20 and park\$4 with lidar	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N69	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N70	260	g08g1/142.cpc.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N71	1096	N25 N26	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N72	28	N27 and (park\$4) near3 (space garage occupancy) same lidar	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N73	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N74	260	g08g1/142.cpc.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N75	1096	N29 N30	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N76	28	N31 and (park\$4) near3 (space garage occupancy) same lidar	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N77	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N78	260	g08g1/142.cpc.	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N79	1096	N40 N41	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N80	28	N42 and (park\$4) near3 (space garage occupancy) same lidar	(USPAT)	OR	ON	ON	2023/01/11 04:15 PM
N81	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	2023/01/11

N82	260	g08g1/142.cpc.	(USPAT)	OR	ON	ON	04:15 PM 2023/01/11 04:15 PM
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N87	1096	N59 N60	(USPAT)	OR	ON	ON	04:15 PM 2023/01/11 04:15 PM
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N90	844	340/932.2.ccls.	(USPAT)	OR	ON	ON	04:15 PM 2023/01/11 04:15 PM
N91	20181	N63 N64	(US-PGPUB; USPAT)	OR	ON	ON	04:15 PM 2023/01/11 04:15 PM
N92	87	n91 AND (park\$4) near3 (space garage occupancy) SAME lidar	(USPAT)	OR	ON	ON	04:15 PM 2023/01/11 04:15 PM



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/519,201

RECEIPT DATE / TIME
02/01/2023 09:31:49 PM ET

ATTORNEY DOCKET #
984SPMO0048US12

Title of Invention

WEARABLE COMPUTING DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 6157

FILED BY Autumn Stoecker

PATENT CENTER # 61528116

FILING DATE 11/04/2021

CUSTOMER # 163435

FIRST NAMED INVENTOR Curt C. von BADINSKI

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Steve Cho

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
FEE_TRNSMTL_984SPMO0048US12.pdf	1	Issue Fee Payment (PTO-85B)	818 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
FEE_TRNSMTL_984SPMO0048US12.pdf	54392130D00E500FEC3AA40B95540DE1FDAFBF3001E9101288 5D992052A03D05056553B64DDD06046EC3F887A6CCE9E3BA8 F96A4378D8057DCE071737644D8A8

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 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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

163435 7590 02/01/2023
Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12	6157

TITLE OF INVENTION: WEARABLE COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	05/01/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
HUNNINGS, TRAVIS R	2689	340-539120

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/AIA/122 or PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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

Proxy, Inc.

Redwood City, CA

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

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-4713

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 /ImSeon Song/ Date 2023/02/01

Typed or printed name ImSeon Song Registration No. 76,000



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/519,201

RECEIPT DATE / TIME
02/01/2023 09:31:49 PM ET

ATTORNEY DOCKET #
984SPMO0048US12

Title of Invention

WEARABLE COMPUTING DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 6157

FILED BY Autumn Stoecker

PATENT CENTER # 61528116

AUTHORIZED BY Steve Cho

CUSTOMER # 163435

FILING DATE 11/04/2021

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Curt C. von BADINSKI

Payment Information

PAYMENT METHOD
CARD / 2001

PAYMENT TRANSACTION ID
E202321L32231473

PAYMENT AUTHORIZED BY
Kyle Routen

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2501	UTILITY ISSUE FEE	480.00	1	480.00
TOTAL AMOUNT:				\$480.00

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 filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

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

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/519,201	03/07/2023	11599147	984SPMO0048US12	6157

163435 7590 02/15/2023
Proxy, Inc.
c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

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

Curt C. von BADINSKI, San Francisco, CA;
Michael J. STRASSER, San Francisco, CA;
Peter TWISS, San Francisco, CA;

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

Proxy, Inc., San Francisco, 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.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: von Badinski et al.Application No./Patent No.: 17/519,201Filed/Issue Date: 11/04/2021Titled: WEARABLE COMPUTING DEVICE

Ouraring Inc., a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):1. ☒ The assignee of the entire right, title, and interest.2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:1. From: C.C. von Badinski, M.J. Strasser, P. Twiss To: MECHIO INC.

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: MECHIO INC. To: MOTIV INC.

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: MOTIV INC. To: MOTIV (ABC), LLC

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: MOTIV (ABC), LLC To: PROXY, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: PROXY, INC. To: TWIN MERGER SUB II, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: TWIN MERGER SUB II, LLC To: OURARING INC.

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

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

/Nathan J. Mutter/

2023-06-23

Signature

Date

Nathan J. Mutter

70,107

Printed or Typed Name

Title or Registration Number

ASSIGNMENT OF PATENT APPLICATION

FOR GOOD AND VALUABLE CONSIDERATION,

We, the undersigned (each) have agreed and hereby agree to assign for good and valuable consideration, receipt of which is hereby expressly acknowledged, and do hereby sell, assign and transfer unto

Mechio Inc.

an entity organized under the laws of California, with offices at 179 11th Street, 3rd Floor, San Francisco, CA 94103 as Assignee, and its successors, assigns and legal representatives, the entire right, title and interest, for all countries in and to certain inventions relating to

WEARABLE COMPUTING DEVICE

described in an application for Letters Patent of the United States, identified as Attorney Docket No. 340/0002, at Loginov & Associates, PLLC, 214 South Main Street, Concord, NH 03301-4844 and filed on 11/28/2014 as Application Serial No. 14/556,062, and the invention(s) and improvement(s) set forth therein, and any and all continuations, continuations-in-part, divisionals, and renewals of and substitutes for said application for said Letters Patent, and all the rights and privileges under any and all Letters Patent that may be granted therefor in any country, and any reissues, or reexaminations, or extensions of said Letters Patent. We request that any and all Letters Patent for said inventions be issued to said Assignee, its successors, assigns and legal representatives, or to such nominees as it may designate.

We agree that, when requested, we will, without charge to said Assignee but at its expense, sign all papers, take all rightful oaths, and do all acts which may be necessary, desirable or convenient for securing and maintaining patents for said inventions in any and all countries and for vesting title thereto in said Assignee, its successors, assigns and legal representatives or nominees.

We authorize and empower the said Assignee, its successors, assigns and legal representatives or nominees, to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from us.

We hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said Assignee or nominee to claim the aforesaid benefit of the right of priority provided by the International convention which may henceforth be substituted for it.

We covenant with said Assignee, its successors, assigns and legal representatives, that the rights and property herein conveyed are free and clear of any encumbrance, and that we have full right to convey the same as herein expressed.

IN WITNESS WHEREOF, we have hereunto signed our names on the day and year set forth below.


Inventor's Signature

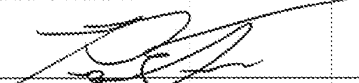
4/1/2015
DATE

Curt C. von Badinski
Inventor's Printed Name


Inventor's Signature

3/19/2015
DATE

Michael J. Strasser
Inventor's Printed Name


Inventor's Signature

3/23/2015
DATE

Peter Twiss
Inventor's Printed Name

State of California
Secretary of State

NAME CHANGE
CERTIFICATE OF QUALIFICATION

C3633500

I, ALEX PADILLA, Secretary of State of the State of California, hereby certify that on the **18th day of March 2016**, there was filed in this office an Amended Statement and Designation by Foreign Corporation whereby the corporate name of **MECHIO INC.**, a corporation organized and existing under the laws of **Delaware**, was changed to **MOTIV INC.**. This corporation complied with the requirements of California law in effect on that date for the purpose of qualifying to transact intrastate business in the State of California and as of said date has been and is qualified and authorized to transact intrastate business in the State of California, subject however, to any licensing requirements otherwise imposed by the laws of this State.

IN WITNESS WHEREOF, I execute
this certificate and affix the Great Seal
of the State of California this day of
March 23, 2016.



A handwritten signature in black ink, appearing to read "Alex Padilla".

ALEX PADILLA
Secretary of State

A0782298

**Amended Statement
By Foreign Corporation**

3633500

FILED *YK*
Secretary of State
State of California

W MAR 18 2016 *JP*

Motiv Inc.

[Name of Corporation]

a corporation organized and existing under the laws of DELAWARE,
[State or Place of Incorporation]

and which is presently qualified for the transaction of intrastate business in the State of
California, makes the following statement:

That the name of the corporation has been changed to that hereinabove set forth and
that the name relinquished at the time of such change was Mechio Inc.



[Signature of Corporate Officer]

MICHAEL STRASSER, CEO, 2/18/2016

[Typed Name and Title of Officer Signing]

A0782298

Delaware

The First State

Page 1

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THAT THE SAID "MECHIO INC.", FILED A RESTATED CERTIFICATE, CHANGING ITS NAME TO "MOTIV INC" ON THE TWELFTH DAY OF FEBRUARY, A.D. 2016, AT 4:07 O'CLOCK P.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE AFORESAID CORPORATION IS DULY INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL CORPORATE EXISTENCE NOT HAVING BEEN CANCELLED OR DISSOLVED SO FAR AS THE RECORDS OF THIS OFFICE SHOW AND IS DULY AUTHORIZED TO TRANSACT BUSINESS.



5455044 8320
SR# 20161711256

You may verify this certificate online at corp.delaware.gov/authver.shtml

A handwritten signature in black ink, appearing to read "JB", is written over a horizontal line. Below the line, the text "Jeffrey W. Bullock, Secretary of State" is printed.

Jeffrey W. Bullock, Secretary of State

Authentication: 202000836
Date: 03-17-16

PATENT
REEL: 038364 FRAME: 0793

Petitioner Samsung Ex-1004, 0215



I hereby certify that the foregoing
transcript of _____ page(s)
is a full, true and correct copy of the
original record in the custody of the
California Secretary of State's office.

MAR 23 2016 *pm*

Date: _____

Alex Padilla

ALEX PADILLA, Secretary of State

RECORDED: 04/06/2016

PATENT
REEL: 038364 FRAME: 0794

Petitioner Samsung Ex-1004, 0216

PATENT ASSIGNMENT AGREEMENT

This PATENT ASSIGNMENT AGREEMENT is made effective as of March 27, 2020, by and between MOTIV INC. a Delaware Corporation (“Assignor”), and MOTIV (ABC), LLC a California limited liability company, as Assignee for the Benefit of Creditors of Motiv Inc., (“Assignee”), pursuant to a certain General Assignment Agreement dated as of March 27, 2020, (the “Assignment Agreement”). Capitalized terms used without definitions herein shall have the meanings ascribed to such terms in the Assignment Agreement.

WHEREAS, Assignor has agreed to sell to Assignee, and Assignee has agreed to acquire from Assignor, all of Assignor’s rights, title and interest in and to the Assigned Patents (as defined below); and

WHEREAS, the parties accordingly wish to execute this recordable instrument, assigning all of Assignor’s right, title and interest in and to the Assigned Patents to Assignee;

NOW, THEREFORE, for valuable consideration set forth in the Assignment Agreement, the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee agree as follows:

1. Assignor hereby assigns, transfers, conveys, and sets over to Assignee, and its lawful successors and assigns, and Assignee acknowledges receipt of and accepts, Assignor’s entire right, title, and interest throughout the world in and to the patents and patent applications identified in Schedule A attached hereto, together with all rights to the inventions described or claimed therein, and all divisions, continuations and continuations-in-part thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof, and all rights to claim priority therefrom, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, and all extensions, renewals, and reissues, thereof (collectively, the “Assigned Patents”) and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents, utility models, design registrations, inventors’ certificates, or like rights of exclusion on applications as described above, to (a) issue all Letters Patent, utility models, design registrations, inventors’ certificates and like rights of exclusion for any invention disclosed and claimed in any Assigned Patent to Assignee, its successors and assigns, in accordance with the terms of this Patent Assignment Agreement and (b) record Assignee as the assignee of the Assigned Patents and to deliver to Assignee and to Assignee’s attorneys, agents, successors and/or assigns all official documents and communications as may be warranted by this Patent Assignment Agreement.

2. Assignor further assigns to Assignee all rights to (a) register or apply in all countries and regions for patents, utility models, design registrations, inventors’ certificates and like rights of exclusion for the Assigned Patents, (b) prosecute, maintain, and defend the Assigned Patents before any public or private agency, office, or registrar, (c) claim priority based on the filing dates of any of the Assigned Patents under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, the Paris Convention, and all other treaties of like purposes, and (d) (i) sue and recover for any past, present or future actions, causes of action and rights to recover damages or payments (including lost profits), for past, present, or future infringement of any Assigned Patent, as well as the right to take over and continue any and all existing suits related to any Assigned Patent, (ii) obtain equitable relief, including injunctive relief, in

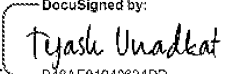
respect of such infringement, and (iii) fully and entirely stand in the place of Assignor in all matters related to the Assigned Patents.

3. This Patent Assignment Agreement is subject to the terms and conditions of the Assignment Agreement and this Patent Assignment Agreement shall not be deemed to limit, enlarge or extinguish any obligation of Assignor or Assignee under the Assignment Agreement, all of which obligations shall survive the delivery of this Patent Assignment Agreement in accordance with the terms of the Assignment Agreement, and that to the extent there is any conflict between this Patent Assignment Agreement and the terms and conditions of the Assignment Agreement, the Assignment Agreement shall control.

4. This Patent Assignment Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

ASSIGNOR:

MOTIV INC. a Delaware Corporation

By:  _____
Name: Tejash Unadkat
Title: Chief Executive Officer

ASSIGNEE:

MOTIV (ABC), LLC a California Limited Liability Company, as Assignee for the Benefit of Creditors of Motiv Inc.

By: _____
Name: David Miller
Its: Manager

[Signature Page to Patent Assignment]

respect of such infringement, and (iii) fully and entirely stand in the place of Assignor in all matters related to the Assigned Patents.

3. This Patent Assignment Agreement is subject to the terms and conditions of the Assignment Agreement and this Patent Assignment Agreement shall not be deemed to limit, enlarge or extinguish any obligation of Assignor or Assignee under the Assignment Agreement, all of which obligations shall survive the delivery of this Patent Assignment Agreement in accordance with the terms of the Assignment Agreement, and that to the extent there is any conflict between this Patent Assignment Agreement and the terms and conditions of the Assignment Agreement, the Assignment Agreement shall control.

4. This Patent Assignment Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

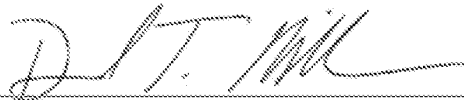
ASSIGNOR:

MOTIV INC. a Delaware Corporation

By: _____
Name: Tejash Unadkat
Title: Chief Executive Officer

ASSIGNEE:

MOTIV (ABC), LLC a California Limited Liability Company, as Assignee for the Benefit of Creditors of Motiv Inc.

By: 
Name: David Miller
Its: Manager

Schedule A
To Patent Assignment Agreement

Issued Patents

<u>Title</u>	<u>Country</u>	<u>Patent No.</u>	<u>Issuance Date</u>
WEARABLE COMPUTING DEVICE	United States	9582034	February 28, 2017
WEARABLE COMPUTING DEVICE	United States	9958904	May 1, 2018
WEARABLE COMPUTING DEVICE	United States	10156867	December 18, 2018
WEARABLE COMPUTING DEVICE	United States	10126779	November 13, 2018
WEARABLE COMPUTING DEVICE	United States	10139859	November 27, 2018
WEARABLE DEVICE AND DATA TRANSMISSION METHOD	United States	10281953	May 7, 2019
WEARABLE COMPUTING DEVICE	United States	10496131	December 3, 2019
WEARABLE COMPUTING DEVICE	United States	10331168	June 25, 2019
USB CHARGER	United States	D810016	February 13, 2018
KEY HOLDER	United States	D809782	February 13, 2018
WEARABLE COMPUTING DEVICE	United States	D804471	December 5, 2017
WEARABLE COMPUTING DEVICE	United States	D756999	May 24, 2016
WEARABLE COMPUTING DEVICE	United States	D791765	July 11, 2017
WEARABLE COMPUTING DEVICE	United States	D791764	July 11, 2017
HEART RATE SENSOR	United States	D817496	May 8, 2018
PACKAGE	United States	D828767	September 18, 2018

Pending Patent Applications

<u>Title</u>	<u>Country</u>	<u>Application No.</u>	<u>Application Date</u>
WEARABLE COMPUTING DEVICE	United States	16/202054	November 27, 2018
WEARABLE COMPUTING DEVICE	United States	16/224686	December 18, 2018
WEARABLE COMPUTING DEVICE	United States	16/189038	November 13, 2018
WEARABLE COMPUTING DEVICE	United States	16/718135	December 17, 2019
EXPANDABLE RING	United States	29/683561	March 14, 2019
WEARABLE COMPUTING DEVICE	Hong Kong	17102435	September 9, 2017
WEARABLE COMPUTING DEVICE	Canada	CA 2931973	November 28, 2014
WEARABLE COMPUTING DEVICE	China	201480074476	November 28, 2014
WEARABLE COMPUTING DEVICE	Europe	EU2014866236	November 28, 2014
WEARABLE COMPUTING DEVICE	Japan	P2017-506376A	March 2, 2017

147222371.5

RECORDED: 04/03/2020

PATENT
REEL: 052304 FRAME: 0872

Petitioner Samsung Ex-1004, 0221

EXHIBIT 6.2 (ii)

TO ASSET PURCHASE AGREEMENT **PATENT ASSIGNMENT AGREEMENT**

THIS PATENT ASSIGNMENT AGREEMENT is made as of March 27, 2020, by and between MOTIV (ABC), LLC, a California limited liability company ("Seller"), as Assignee for the Benefit of Creditors of Motiv Inc., a Delaware corporation, and Proxy, Inc., a Delaware corporation ("Buyer"). Seller and Buyer are parties to a certain Asset Purchase Agreement dated as of March 27, 2020, (the "Asset Purchase Agreement"). Capitalized terms used without definitions herein shall have the meanings ascribed to such terms in the Asset Purchase Agreement.

WHEREAS, Seller has agreed to sell to Buyer, and Buyer has agreed to acquire from Seller, all of Seller's rights, title and interest in all patents and patent applications owned by Seller, including those patents and patent applications identified in Schedule A attached herein ("Assigned Patents"); and

WHEREAS, the parties accordingly wish to execute this recordable instrument, assigning all of Seller's right, title and interest in and to the Assigned Patents to Buyer;

NOW, THEREFORE, for valuable consideration set forth in the Asset Purchase Agreement, the receipt and sufficiency of which are hereby acknowledged, Seller and Buyer agree as follows:

1. Seller hereby sells, assigns, transfers, and sets over to Buyer, and its lawful successors and assigns, the Seller's entire right, title, and interest throughout the world in and to the Assigned Patents, together with all rights to the inventions described or claimed therein, and all divisions, continuations and continuations-in-part thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof, and all rights to claim priority therefrom, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, and all extensions, renewals, and reissues, thereof and Seller hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue and record patents, applications and title thereto, as described above, and to issue all Letters Patent for any invention disclosed and claimed in any Assigned Patent as the property of Buyer, its successors and assigns, in accordance with the terms of this Patent Assignment Agreement.

2. Seller further assign to Buyer all rights to sue and recover for any past, present or future actions, causes of action and rights to recover damages or payments (including lost profits), for infringement or misappropriations of any Assigned Patent, as well as the right to take over and continue any and all existing suits related to any Assigned Patent.

3. This Patent Assignment Agreement is subject to the terms and conditions of the Asset Purchase Agreement and this Patent Assignment Agreement shall not be deemed to limit, enlarge or extinguish any obligation of Seller or Buyer under the Asset Purchase Agreement, all of which obligations shall survive the delivery of this Patent Assignment Agreement in accordance with the terms of the Asset Purchase Agreement, and that to the extent there is any conflict between this Patent Assignment Agreement and the terms and conditions of the Asset Purchase Agreement, the Asset Purchase Agreement shall control.

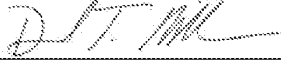
4. This Patent Assignment Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

PATENT
REEL: 052419 FRAME: 0428

Petitioner Samsung Ex-1004, 0222

SELLER:

MOTIV (ABC), LLC, a California
limited liability company, as Assignee for
the Benefit of Creditors of Motiv Inc.

By: 

Name: David Miller

Title: Manager

BUYER:

PROXY, INC., a Delaware corporation

By: _____

Name: _____

Title: _____

[Signature page to Patent Assignment]

PATENT
REEL: 052419 FRAME: 0429

Petitioner Samsung Ex-1004, 0223

SELLER:

MOTIV (ABC), LLC, a California
limited liability company, as Assignee for
the Benefit of Creditors of Motiv Inc.

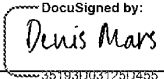
By: _____

Name: David Miller

Title: Manager

BUYER:

PROXY, INC., a Delaware corporation

By:  _____
35193DU3125D455...

Name: Denis Mars

Title: President

[Signature page to Patent Assignment]

PATENT
REEL: 052419 FRAME: 0430

Petitioner Samsung Ex-1004, 0224

Schedule A
To Patent Assignment Agreement
Assigned Patents

Issued Patents

<u>Title</u>	<u>Country</u>	<u>Patent No.</u>	<u>Issuance Date</u>
WEARABLE COMPUTING DEVICE	United States	9582034	February 28, 2017
WEARABLE COMPUTING DEVICE	United States	9958904	May 1, 2018
WEARABLE COMPUTING DEVICE	United States	10156867	December 18, 2018
WEARABLE COMPUTING DEVICE	United States	10126779	November 13, 2018
WEARABLE COMPUTING DEVICE	United States	10139859	November 27, 2018
WEARABLE DEVICE AND DATA TRANSMISSION METHOD	United States	10281953	May 7, 2019
WEARABLE COMPUTING DEVICE	United States	10496131	December 3, 2019
WEARABLE COMPUTING DEVICE	United States	10331168	June 25, 2019
USB CHARGER	United States	D810016	February 13, 2018
KEY HOLDER	United States	D809782	February 13, 2018
WEARABLE COMPUTING DEVICE	United States	D804471	December 5, 2017
WEARABLE COMPUTING DEVICE	United States	D756999	May 24, 2016
WEARABLE COMPUTING DEVICE	United States	D791765	July 11, 2017
WEARABLE COMPUTING DEVICE	United States	D791764	July 11, 2017
HEART RATE SENSOR	United States	D817496	May 8, 2018
PACKAGE	United States	D828767	September 18, 2018

PATENT
REEL: 052419 FRAME: 0431

Petitioner Samsung Ex-1004, 0225

Pending Patent Applications

<u>Title</u>	<u>Country</u>	<u>Application No.</u>	<u>Application Date</u>
WEARABLE COMPUTING DEVICE	United States	16/202054	November 27, 2018
WEARABLE COMPUTING DEVICE	United States	16/224686	December 18, 2018
WEARABLE COMPUTING DEVICE	United States	16/189038	November 13, 2018
WEARABLE COMPUTING DEVICE	United States	16/718135	December 17, 2019
EXPANDABLE RING	United States	29/683561	March 14, 2019
WEARABLE COMPUTING DEVICE	Hong Kong	17102435	September 9, 2017
WEARABLE COMPUTING DEVICE	Canada	CA 2931973	November 28, 2014
WEARABLE COMPUTING DEVICE	China	201480074476	November 28, 2014
WEARABLE COMPUTING DEVICE	Europe	EU2014866236	November 28, 2014
WEARABLE COMPUTING DEVICE	Japan	P2017-506376A	March 2, 2017

RECORDED: 04/16/2020**PATENT
REEL: 052419 FRAME: 0432**

Petitioner Samsung Ex-1004, 0226

Delaware

The First State

Page 1

*I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF
DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT
COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:*

*"PROXY, INC.", A DELAWARE CORPORATION,
WITH AND INTO "TWIN MERGER SUB II, LLC" UNDER THE NAME OF
"TWIN MERGER SUB II, LLC", A LIMITED LIABILITY COMPANY ORGANIZED
AND EXISTING UNDER THE LAWS OF THE STATE OF DELAWARE, AS
RECEIVED AND FILED IN THIS OFFICE ON THE TWENTY-SECOND DAY OF
MAY, A.D. 2023, AT 5:07 O`CLOCK P.M.*



7431690 8100M
SR# 20232261723

You may verify this certificate online at corp.delaware.gov/authver.shtml

A handwritten signature in black ink, appearing to read "JBullock", is written over a horizontal line. Below the line, the text "Jeffrey W. Bullock, Secretary of State" is printed in a small font.

Authentication: 203399810
Date: 05-23-23

State of Delaware
Secretary of State
Division of Corporations
Delivered 05:07 PM 05/22/2023
FILED 05:07 PM 05/22/2023
SR 20232261723 - File Number 7431690

CERTIFICATE OF MERGER

MERGING

PROXY, INC.
a Delaware corporation

WITH AND INTO

TWIN MERGER SUB II, LLC
a Delaware Limited Liability Company

Pursuant to Title 8, Section 264(c) of the Delaware General Corporation Law and Title 6, Section 18-209 of the Limited Liability Company Act, the undersigned limited liability company executed the following Certificate of Merger:

FIRST: The name of the surviving limited liability company is Twin Merger Sub II, LLC that was formed pursuant to the Delaware Limited Liability Company Act, and the name of the corporation being merged into this surviving limited liability company is Proxy, Inc. that was incorporated pursuant to the Delaware General Corporation Law.

SECOND: An Agreement and Plan of Reorganization, dated as of May 6, 2023, by and among Oura Health Oy, Ouraring Inc., Twin Merger Sub I, Inc., Proxy, Inc., Twin Merger Sub II, LLC, and Shareholder Representative Services LLC, as the securityholder representative (the “**Merger Agreement**”), has been approved, adopted, certified, executed and acknowledged by the surviving limited liability company and the merged corporation in accordance with Section 264 and Section 228 of the Delaware General Corporation Law and Section 18-209 of the Delaware Limited Liability Company Act.

THIRD: The name of the surviving limited liability company is “Twin Merger Sub II, LLC”.

FOURTH: The merger shall become effective upon the filing of this Certificate of Merger with the Secretary of State of the State of Delaware.

FIFTH: The Merger Agreement is on file at 415 Mission St., Floor 37, San Francisco, CA 94105, the place of business of the surviving limited liability company.

SIXTH: A copy of the Merger Agreement will be furnished by the surviving limited liability company on request, without cost, to any member of any constituent limited liability company or stockholder of any constituent corporation.

[Signature Page Follows]

IN WITNESS WHEREOF, Twin Merger Sub II, LLC has caused this Certificate of Merger to be signed by an authorized person, the 22nd day of May, 2023.

TWIN MERGER SUB II, LLC

By: /s/ Thomas Hale
Name: Thomas Hale
Title: President

ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, Twin Merger Sub II, LLC, a Delaware limited liability company, having a place of business at 415 Mission St. Floor 37, San Francisco, California 94105, United States of America (“ASSIGNOR”) has sold, assigned, and transferred and does hereby sell, assign, and transfer to Ouraring Inc., a corporation of Delaware, having a place of business at 415 Mission St. Floor 37, San Francisco, California 94105, United States of America (“ASSIGNEE”), for itself and its successors, transferees, and assignees, the following:

1. The entire worldwide right, title and interest in all inventions and improvements (“SUBJECT MATTER”) that are disclosed in the patent applications and Letters Patents (“PATENT RIGHTS”) listed in Exhibit A, and;
2. The entire worldwide right, title and interest in and to:
 - (a) the PATENT RIGHTS, including any right of priority;
 - (b) any provisional, divisional, continuation, substitute, renewal, reissue, and other related applications thereto which have been or may be filed in the United States or elsewhere in the world;
 - (c) any patents which may be granted on the applications set forth in (a) and (b) above; and
 - (d) the right to sue in its own name and to recover for past infringement of any or all of any applications or patents issuing therefore together with all rights to recover damages for infringement of provisional rights.

ASSIGNOR agrees to do the following, when requested, and without further consideration, in order to carry out the intent of this Assignment:

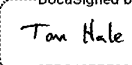
1. execute all oaths, assignments, powers of attorney, applications, and other papers necessary or desirable to fully secure to ASSIGNEE the rights, titles, and interests herein conveyed;
2. communicate to ASSIGNEE all known facts relating to the SUBJECT MATTER of the above-identified PATENT RIGHTS; and
3. generally do all lawful acts that ASSIGNEE shall consider desirable for securing, maintaining, and enforcing worldwide patent protection relating to the SUBJECT MATTER of the above-identified PATENT RIGHTS, and for vesting in ASSIGNEE the rights, titles, and interests herein conveyed.

ASSIGNOR further agrees to provide any successor, transferee, assignee, or legal representative of ASSIGNEE with the benefits and assistance provided to ASSIGNEE hereunder.

ASSIGNOR represents that ASSIGNOR has the rights, titles, and interests to convey as set forth herein, and covenants with ASSIGNEE that the ASSIGNOR has made or will make hereafter no assignment, grant, mortgage, license, or other agreement affecting the rights, titles, and interests herein conveyed.

Duly authorized Representative of ASSIGNOR

Date of Signature

DocuSigned by:

92BC197EE063413

May 26, 2023

Printed Name: Thomas Hale
Title: President
Twin Merger Sub II, LLC

EXHIBIT A
PATENT RIGHTS
(TWIN MERGER SUB II, LLC PATENT APPLICATIONS)

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 14/556,062	2014-11-28	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 9582034 B2	WEARABLE COMPUTING DEVICE
US 15/043,412	2016-02-12	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 9958904 B2	WEARABLE COMPUTING DEVICE
US 15/444,208	2017-02-27	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10139859 B2	WEARABLE COMPUTING DEVICE
US 15/444,217	2017-02-27	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10156867 B2	WEARABLE COMPUTING DEVICE
US 15/444,227	2017-02-27	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10126779 B2	WEARABLE COMPUTING DEVICE
US 15/444,237	2017-02-27	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10331168 B2	WEARABLE COMPUTING DEVICE
US 15/716,464	2017-09-26	MARS, Denis RATNER, Simon	US 10721625 B2	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
US 15/854,783	2017-12-27	VON BADINSKI, Curt C. TWISS, Peter Miles POST, Daniel Jeffrey AMBUEHL, Anthony STRASSER, Michael J. STRASSER, Eric	US 10281953 B2	WEARABLE DEVICE AND DATA TRANSMISSION METHOD
US 15/967,559	2018-04-30	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10496131 B2	WEARABLE COMPUTING DEVICE
US 16/129,859	2018-09-13	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL ID SYSTEM AND METHODS
US 16/129,901	2018-09-13	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL SYSTEM AND METHODS
US 16/164,822	2018-10-19	MARS, Denis RATNER, Simon	--	UNIVERSAL ID SYSTEM AND METHODS AND BIOMETRIC INFORMATION
US 16/164,831	2018-10-19	MARS, Denis RATNER, Simon	--	UNIVERSAL ID WITH WIRELESS COMMUNICATION DEVICES DETECTING ADVERTISING SIGNALS WHILE IN THE PROCESS OF CONNECTING TO ELECTRONIC DEVICES
US 16/164,841	2018-10-19	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
US 16/166,076	2018-10-20	MARS, Denis RATNER, Simon	--	UNIVERSAL ID OPERABLE WITH BLOCKCHAIN
US 16/189,038	2018-11-13	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	--	WEARABLE COMPUTING DEVICE
US 16/202,054	2018-11-27	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10901460 B2	WEARABLE COMPUTING DEVICE
US 16/204,345	2018-11-29	MARS, Denis RATNER, Simon	--	UNIVERSAL ID OPERABLE WITH MODES OF TRANSPORTATION SYSTEM AND METHODS FOR
US 16/204,416	2018-11-29	MARS, Denis RATNER, Simon	--	PHYSICAL WORLD PAYMENTS USING A UNIVERSAL ID

ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 16/204,453	2018-11-29	MARS, Denis RATNER, Simon	--	UNIVERSAL ID SYSTEM AND METHODS WITH BIOMETRIC INFORMATION ENROLLMENT
US 16/204,492	2018-11-29	MARS, Denis RATNER, Simon	--	UNIVERSAL ID SYSTEM AND METHODS WITH AUGMENTATION
US 16/224,686	2018-12-18	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 10768666 B2	WEARABLE COMPUTING DEVICE
US 16/404,542	2019-05-06	VON BADINSKI, Curt TWISS, Peter POST, Daniel AMBUEHL, Anthony STRASSER, Michael STRASSER, Eric	--	WEARABLE DEVICE AND DATA TRANSMISSION METHOD
US 16/573,806	2019-09-17	MARS, Denis RATNER, Simon	US 11509475 B2	METHOD AND APPARATUS FOR OBTAINING MULTIPLE USER CREDENTIALS
US 16/573,830	2019-09-17	MARS, Denis RATNER, Simon	--	METHOD AND APPARATUS FOR PROVIDING MULTIPLE USER CREDENTIALS
US 16/591,327	2019-10-02	MARS, Denis RATNER, Simon	--	BIOMETRIC CREDENTIAL IMPROVEMENT METHODS AND APPARATUS
US 16/591,362	2019-10-02	MARS, Denis RATNER, Simon	--	SECURE BIOMETRIC CREDENTIAL AUTHORIZATION METHODS AND APPARATUS
US 16/677,489	2020-10-14	MARS, Denis RATNER, Simon	US 10826699 B2	HIGH AVAILABILITY BLE PROXIMITY DETECTION METHODS AND APPARATUS
US 16/717,951	2019-12-17	MARS, Denis RATNER, Simon	US 11539522 B2	METHODS AND APPARATUS FOR AUTHORIZING AND PROVIDING OF SERVICES
US 16/717,973	2019-12-17	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR AUTHORIZING AND PROVIDING OF GOODS
US 16/718,010	2019-12-17	MARS, Denis RATNER, Simon	US 11109234 B2	READER DEVICE WITH SENSOR STREAMING DATA AND METHODS
US 16/718,044	2019-12-17	MARS, Denis RATNER, Simon	US 11438767 B2	METHODS AND APPARATUS FOR PREAUTHORIZING READER DEVICES
US 16/718,135	2019-12-17	VON BADINSKI, Curt C. TWISS, Peter Miles POST, Daniel Jeffrey AMBUEHL, Anthony STRASSER, Michael J. STRASSER, Eric	US 10884455 B2	WEARABLE DEVICE AND DATA TRANSMISSION METHOD
US 16/736,665	2020-01-07	MARS, Denis TAM, Andrew	--	WIRELESS CHARGING OF USER ACCESS READER DEVICE AND METHODS
US 16/736,695	2020-01-07	MARS, Denis TAM, Andrew	US 11201740 B2	WIRELESS READER DEVICE WITH WIEGAND INTERFACE AND METHODS
US 16/840,193	2020-04-03	MARS, Denis RATNER, Simon	US 11562054 B2	AUTHORIZED GESTURE CONTROL METHODS AND APPARATUS
US 16/858,459	2020-04-24	MARS, Denis RATNER, Simon	US 11238683 B1	METHODS AND APPARATUS FOR ENABLING DIGITAL IDENTITY SUPPORT ON LEGACY ACCESS CONTROL SYSTEMS
US 16/933,607	2020-07-20	MARS, Denis RATNER, Simon	US 11240668 B2	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
US 17/013,348	2020-09-04	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	US 11188124 B2	WEARABLE COMPUTING DEVICE
US 17/068,314	2020-10-12	MARS, Denis RATNER, Simon PAPPER, William	US 11398123 B1	METHODS AND APPARATUS FOR FACILITATING OPERATION OF CONTROL ACCESS SYSTEMS

ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 17/088,414	2020-11-03	MARS, Denis RATNER, Simon	--	HIGH AVAILABILITY BLE PROXIMITY DETECTION METHODS AND APPARATUS
US 17/097,828	2020-11-13	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR KEY REGENERATION
US 17/098,095	2020-11-13	MARS, Denis RATNER, Simon	US 11462095 B2	FACILITY CONTROL METHODS AND APPARATUS
US 17/098,246	2020-11-13	MARS, Denis RATNER, Simon	US 11546728 B2	METHODS AND APPARATUS FOR PRESENCE SENSING REPORTING
US 17/174,913	2021-02-12	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR AUTHORIZING AND PROVIDING OF GOODS OR SERVICES WITH REDUCED HARDWARE RESOURCES
US 17/174,950	2021-02-12	MARS, Denis RATNER, Simon	US 11411735 B2	METHODS AND APPARATUS FOR AUTHORIZING AND PROVIDING OF DISTRIBUTED GOODS OR SERVICES
US 17/195,392	2021-03-08	MARS, Denis RATNER, Simon	--	AUTHORIZED WIRELESS CHARGING METHODS AND APPARATUS
US 17/195,407	2021-03-08	MARS, Denis RATNER, Simon	US 11539706 B2	AUTHORIZED OFF-LINE ACCESS METHODS AND APPARATUS
US 17/229,762	2021-04-13	MARS, Denis RATNER, Simon	--	AUTHORIZED REMOTE CONTROL DEVICE GESTURE CONTROL METHODS AND APPARATUS
US 17/326,101	2021-05-20	MARS, Denis RATNER, Simon	--	PERSONAL ANOMALY DETECTION METHODS AND APPARATUS
US 17/326,122	2021-05-20	MARS, Denis RATNER, Simon	--	AUTHENTICATED HEALTH CREDENTIAL ACCESS METHODS AND APPARATUS
US 17/326,197	2021-05-20	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR PRESENCE MONITORING
US 17/326,201	2021-05-20	MARS, Denis RATNER, Simon VON BADINSKI, Curt C.	--	SMART RING AND METHODS FOR MANUFACTURING
US 17/352,923	2021-06-21	MARS, Denis RATNER, Simon VON BADINSKI, Curt C.	--	WEARABLE DEVICE AND METHODS OF MANUFACTURING
US 17/385,705	2021-07-26	MARS, Denis RATNER, Simon	--	READER DEVICE WITH SENSOR STREAMING DATA AND METHODS
US 17/454,000	2021-11-08	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING SECURE TRANSACTIONS WITH REDUCED HARDWARE REQUIREMENTS
US 17/465,726	2021-09-02	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR PRIVACY-CONTROLLED SECURE TRANSACTIONS
US 17/465,747	2021-09-02	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FACILITATING HIGH SECURITY TRANSACTIONS
US 17/516,301	2021-11-01	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING NFC TRANSACTIONS
US 17/519,201	2021-11-04	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	US 11599147 B2	WEARABLE COMPUTING DEVICE
US 17/547,174	2021-12-09	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR CONFIGURING WEARABLE DEVICES
US 17/573,168	2022-01-11	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
US 17/704,925	2022-03-25	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING SECURE MULTIPARTY TRANSACTIONS WITH REDUCED HARDWARE REQUIRMENTS
US 17/704,945	2022-03-25	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING DISTRIBUTION OF AUTHENTICATED DATA WITH REDUCED HARDWARE REQUIRMENTS

*ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.*

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 17/734,967	2022-05-02	MARS, Denis RATNER, Simon	--	WEARABLE DEVICE SYNCHRONIZATION SYSTEM AND METHODS
US 17/740,222	2022-05-09	MARS, Denis RATNER, Simon	--	SMART RING AND METHODS FOR MANUFACTURING
US 17/878,785	2022-08-01	MARS, Denis RATNER, Simon	--	DISPLAY READER DEVICE AND METHODS
US 18/179,272	2023-03-06	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	--	WEARABLE COMPUTING DEVICE
US 29/492,739	2014-06-02	VON BADINSKI, Curt STRASSER, Michael	US D756999 S1	WEARABLE COMPUTING DEVICE
US 29/550,957	2016-01-08	VON BADINSKI, Curt STRASSER, Michael	US D791764 S1	WEARABLE COMPUTING DEVICE
US 29/551,034	2016-01-08	VON BADINSKI, Curt STRASSER, Michael	US D791765 S1	WEARABLE COMPUTING DEVICE
US 29/573,392	2016-08-05	VON BADINSKI, Curt C. STRASSER, Michael J. ZELIFF, Zachary Joseph	US D804471 S1	WEARABLE COMPUTING DEVICE
US 29/573,393	2016-08-05	STIRN, Andres VON BADINSKI, Curt C. ZELIFF, Zachary Joseph	US D817496 S1	HEART RATE SENSOR
US 29/573,394	2016-08-05	STIRN, Andres VON BADINSKI, Curt C. ZELIFF, Zachary Joseph	US D828767 S1	PACKAGE
US 29/574,680	2016-08-18	VON BADINSKI, Curt C. STRASSER, Michael J. ZELIFF, Zachary Joseph HUANG, Ting-Che	US D810016 S1	USB CHARGER
US 29/575,004	2016-08-21	VON BADINSKI, Curt C. STRASSER, Michael J. ZELIFF, Zachary Joseph HUANG, Ting-Che	US D809782 S1	KEY HOLDER
US 29/665,935	2018-10-09	VON BADINSKI, Curt C. STRASSER, Michael ZELIFF, Zachary Joseph STRASSER, Eric HUANG, Ting-Che	US D885333 S1	CHARGER
US 29/683,561	2019-03-14	VON BADINSKI, Curt C.	US D960755 S1	EXPANDABLE RING
US 29/744,892	2020-07-31	MARS, Denis	--	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/746,078	2020-08-11	JAYE, Ian	US D937894 S1	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/746,082	2020-08-11	JAYE, Ian	US D937895 S1	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/746,086	2020-08-11	JAYE, Ian	US D939573 S1	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/746,088	2020-08-11	JAYE, Ian	US D939574 S1	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/746,089	2020-08-11	JAYE, Ian	--	DISPLAY SCREEN OR PORTION THEREOF WITH ICON
US 29/759,201	2020-11-20	VON BADINSKI, Curt C.	--	RING
US 29/770,248	2021-02-10	VON BADINSKI, Curt C.	--	RING

ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 29/771,355	2021-02-22	MARS, Denis	--	DISPLAY SCREEN OR PORTION THEREOF WITH ANIMATED GRAPHICAL USER INTERFACE
US 29/811,359	2021-10-13	MARS, Denis PUERTOLAS, Clement	--	IDENTITY SENSOR
US 29/811,361	2021-10-13	MARS, Denis PUERTOLAS, Clement	--	IDENTITY SENSOR
US 61/910,201	2013-11-29	VON BADINSKI, Curt STRASSER, Michael FASTE, Haakon	--	FINGER RING DEVICE FOR ACTIVITY MONITORING OR GESTURAL INPUT
US 62/006,835	2014-06-02	VON BADINSKI, Curt STRASSER, Michael TWISS, Peter	--	WEARABLE COMPUTING DEVICE
US 62/685,292	2018-06-15	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
US 62/781,618	2018-12-19	MARS, Denis	--	READER WITH SENSOR STREAMING DATA
US 62/781,625	2018-12-19	MARS, Denis	--	READER AND PRE-AUTHORIZATION
US 62/789,051	2019-01-07	MARS, Denis LAM, Andrew	--	INDUCTIVE CHARGING DOOR PLATE
US 62/789,063	2019-01-07	MARS, Denis LAM, Andrew	--	WIRELESS COMMUNICATION DEVICES WITH BOARD THAT OVERLAYS AN EXISTING WIEGAND BOARD AND OR SUPERIMPOSES DATA ON AN EXISTING WIEGAND INTERFACE
US 62/838,202	2019-04-24	MARS, Denis RATNER, Simon	--	EMULATING AN RFID CARD READER TO BE A MOBILE DEVICE READER
US 62/913,599	2019-10-10	MARS, Denis RATNER, Simon PAPPER, Will	--	METHODS AND APPARATUS FOR FACILITATING OPERATION OF CONTROL ACCESS SYSTEMS
US 62/934,908	2019-11-13	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR KEY REGENERATION
US 62/934,981	2020-11-15	MARS, Denis RATNER, Simon	--	FACILITY CONTROL METHODS AND APPARATUS
US 62/935,000	2019-11-13	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR PRESENCE SENSING REPORTING
US 62/986,397	2020-03-06	MARS, Denis RATNER, Simon	--	AUTHORIZED WIRELESS CHARGING METHODS AND APPARATUS
US 62/986,408	2020-03-06	MARS, Denis RATNER, Simon	--	AUTHORIZED OFF-LINE ACCESS METHODS AND APPARATUS
US 63/009,323	2020-04-13	MARS, Denis RATNER, Simon	--	AUTHORIZED REMOTE CONTROL DEVICE GESTURE CONTROL METHODS AND APPARATUS
US 63/027,769	2020-05-20	MARS, Denis RATNER, Simon VON BADINSKI, Curt C.	--	AUTHENTICATED HEALTH CREDENTIAL ACCESS METHODS AND APPARATUS
US 63/027,774	2020-05-20	MARS, Denis RATNER, Simon VON BADINSKI, Curt C.	--	HEALTH MONITORING SYSTEM INCLUDING WEARABLE DEVICE AND METHODS
US 63/029,004	2020-05-22	MARS, Denis RATNER, Simon	--	AUTHENTICATED HEALTH CREDENTIAL ACCESS METHODS AND APPARATUS
US 63/041,012	2020-06-18	MARS, Denis RATNER, Simon VON BADINSKI, Curt C.	--	WEARABLE DEVICE FOR HEALTH MONITORING SYSTEM AND METHODS
US 63/073,578	2020-09-02	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR PRIVACY-CONTROLLED SECURE TRANSACTIONS
US 63/073,585	2020-09-02	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FACILITATING HIGH SECURITY TRANSACTIONS
US 63/108,218	2020-10-30	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING NFC TRANSACTIONS

ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
US 63/110,695	2020-11-06	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING SECURE TRANSACTIONS WITH REDUCED HARDWARE REQUIREMENTS
US 63/123,252	2020-12-09	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR CONFIGURING WEARABLE DEVICES
US 63/167,497	2021-03-29	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING SECURE MULTIPARTY TRANSACTIONS WITH REDUCED HARDWARE REQUIREMENTS
US 63/167,502	2021-03-29	MARS, Denis RATNER, Simon	--	METHODS AND APPARATUS FOR FACILITATING DISTRIBUTION OF AUTHENTICATED DATA WITH REDUCED HARDWARE REQUIREMENTS
US 63/183,372	2021-05-03	MARS, Denis RATNER, Simon	--	WEARABLE DEVICE SYNCHRONIZATION SYSTEM AND METHODS
US 63/185,827	2021-05-07	MARS, Denis RATNER, Simon	--	SMART RING AND METHODS FOR MANUFACTURING
US 63/227,950	2021-07-30	MARS, Denis RATNER, Simon	--	DISPLAY READER DEVICE AND METHODS
US 63/227,965	2021-07-30	MARS, Denis RATNER, Simon	--	IDENTITY VERIFICATION WITH REDUCED HARDWARE RESOURCES AND METHODS
US 63/245,079	2021-09-16	MARS, Denis RATNER, Simon	--	SECURITY MODULE AND METHODS
US 63/282,009	2021-11-22	MARS, Denis RATNER, Simon	--	IDENTITY SENSOR AND METHODS
PCT/US2014/067823	2014-11-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
CA 2931973	2014-11-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
CN 201480074476.8	2014-11-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	CN 106104408 B (ZL2014800744768)	WEARABLE COMPUTING DEVICE
CN 202110786269.7	2021-07-12	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
EP 14866236.4	2014-11-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
EP 21205293.0	2021-10-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
JP 2016-535040	2014-11-28	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
HK 17102435.0	2017-09-03	VON BADINSKI, Curt C. STRASSER, Michael J. TWISS, Peter	--	WEARABLE COMPUTING DEVICE
PCT/US2021/021376	2021-03-08	MARS, Denis RATNER, Simon	--	AUTHORIZED OFF-LINE ACCESS METHODS AND APPARATUS
PCT/US2021/027156	2021-04-13	MARS, Denis RATNER, Simon	--	AUTHORIZED REMOTE CONTROL DEVICE GESTURE CONTROL METHODS AND APPARATUS
PCT/US2019/037553	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
AU 2019286536	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
CA 3103863	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
CN 201980053412.2	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL

ASSIGNMENT
Twin Merger Sub II, LLC / Ouraring Inc.

<i>Appl. No.</i>	<i>Filing Date</i>	<i>Inventors</i>	<i>Patent No.</i>	<i>Title</i>
EP 19819403.7	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
KR 10-2021-7001425	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
JP 2021-519531	2019-06-17	MARS, Denis RATNER, Simon	--	UNIVERSAL PERSONAL IDENTIFICATION SIGNAL
AU 202114484	2021-07-28	VON BADINSKI, Curt C.	AU 202114484	RING
AU 202116343	2021-10-13	VON BADINSKI, Curt C.	AU 202116343	RING
CA 205571	2021-08-04	VON BADINSKI, Curt C.	--	RING
CN 202130515499.0	2021-08-10	VON BADINSKI, Curt C.	--	RING
EP 008643852	2021-08-05	VON BADINSKI, Curt C.	EP 8643852	FINGER RINGS
GB 6153742, 6153743, 6153744	2021-08-10	VON BADINSKI, Curt C.	GB 6153742, 6153743, 6153744	RING
JP 2021-017515, 2021-017516, 2021- 017517	2021-08-10	VON BADINSKI, Curt C.	JP 1731879, 1731801	RING
KR 30-2021-0037880	2021-08-10	VON BADINSKI, Curt C.	KR 30-1154656	RING
SG 30202109610T	2021-08-04	VON BADINSKI, Curt C.	SG 30202109610T	RING

Doc Code: MFEE.C.AD

Document Description: Maintenance Fee Address Change

PTO/AIA/47 (11-21)

Approved for use through 11/30/2024. OMB 0651-0016

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

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When to check the first box below: If you have a Customer Number to represent the fee address.

When to check the second box below: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:



Customer Number: 179918

OR



The attached Request for Customer Number form (PTO/SB/125)

PATENT NUMBER
(if known)

11,599,147

APPLICATION NUMBER

17/519,201

Completed by (check one):



Applicant/Inventor

/Nathan J. Mutter/

Signature



Attorney or Agent of record 70,107

Nathan J. Mutter

Typed or printed name



Assignee of record of the entire interest. See
37 CFR 3.71. Statement under 37 CFR 3.73(c)
(Form PTO/AIA/96) is enclosed or was filed on

303-473-2700

Requester's telephone number

(Date)

June 23, 2023

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. If the assignee is a juristic entity, this form must be signed by a patent practitioner (attorney or agent) of record. Submit multiple forms if more than one signature is required, see below*.



*Total of _____ forms are submitted

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UNITED STATES
PATENT AND TRADEMARK OFFICEP.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov**ELECTRONIC ACKNOWLEDGEMENT RECEIPT**APPLICATION #
17/519,201RECEIPT DATE / TIME
06/23/2023 06:31:37 PM ETATTORNEY DOCKET #
984SPM00048US12**Title of Invention**

WEARABLE COMPUTING DEVICE

Application InformationAPPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # 11599147

CONFIRMATION # 6157

FILED BY Sherry Soares

PATENT CENTER # 62329429

FILING DATE 11/04/2021

CUSTOMER # 163435

FIRST NAMED INVENTOR Curt C. von BADINSKI

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY Nathan Mutter

Documents**TOTAL DOCUMENTS: 3**

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
175192016157_373STMT.pdf	29	Assignee showing of ownership per 37 CFR 3.73	4553 KB
175192016157_POA.pdf	2	Power of Attorney	720 KB
175192016157_FAC.pdf	1	Maintenance Fee Address Change	178 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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175192016157_373STMT.pdf	5ED2B32339F0D34A57905FF79D2F8571D12A537E5D46509790 338C3F1457D1CC0FDB61841554A120116536D9B7595FDC4010 8ECA89AEA7CC5719099F5FF3209E
175192016157_POA.pdf	97045F479FEBFCD1888A58842A4A3396EDB983E7D7C8D8067 C7B2305DEBD1665372A1DD180EE7DD256DE372E540E8363A3 55D3500D05F6E616248A157B8E018E
175192016157_FAC.pdf	353C252B8C490C6479BAEBDCD4DE658C2D64472E63511980F 73123861F9239641F4FE0CBE77DCDD3C9DF3FAE86ED259C7 FF9A824955AF5886B2EBD76DD56F26C

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 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.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	17/519,201
Filing Date	11/04/2021
First Named Inventor	VON BADINSKI et al.
Title	WEARABLE COMPUTING DEVICE
Art Unit	2689
Examiner Name	TRAVIS R. HUNNINGS
Attorney Docket Number	984SPMO0048US12

SIGNATURE of Applicant or Patent Practitioner

Signature	/Nathan J. Mutter/	Date (Optional)	June 23, 2023
Name	Nathan J. Mutter	Registration Number	70,107
Title (if Applicant is a juristic entity)	Attorney		
Applicant Name (if Applicant is a juristic entity)			

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

☐

*Total of _____ forms are submitted.

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.

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

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 179918
- OR
- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

- ☒ The address associated with the above-mentioned Customer Number
- OR
- ☐ The address associated with Customer Number:
- OR

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

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Ouraring 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	Thomas Hale	Date (Optional)	May 26, 2023
Name	Thomas Hale		
Title	CEO		

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 _____ forms are submitted.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12

CONFIRMATION NO. 6157

163435

Proxy, Inc.

c/o AMPACC Law Group, PLLC
6100 219th Street SW, Suite 580
Mountlake Terrace, WA 98043

POWER OF ATTORNEY NOTICE



OC000000058795150

Date Mailed: 06/30/2023

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/23/2023.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/qmjackson/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/519,201	11/04/2021	Curt C. von BADINSKI	984SPMO0048US12

CONFIRMATION NO. 6157

POA ACCEPTANCE LETTER



OC000000058795193

179918
Holland & Hart LLP/Oura Health Oy
P.O. Box 11583
Salt Lake City, UT 84147

Date Mailed: 06/30/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/23/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/qmjackson/