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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**06/03/2024 11:55:58 AM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	65756723	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
IPVCP003X1C4X1C2_Request_Rescind_AIAStatement_5-24.pdf		1	Make/Rescind America Invents Act(AIA) (First Inventor to File) 1.55/1.78 Statement	16 KB
IPVCP003X1C4X1C2_Request_Corrected_OFR_wADS_5-24.pdf		13	-	190 KB
IPVCP003X1C4X1C2_Request_Corrected_OFR_wADS_5-24-CFILE.pdf	(1-1)	1	Request for Corrected Filing Receipt	13 KB
IPVCP003X1C4X1C2_Request_Corrected_OFR_wADS	(2-13)	12	Application Data Sheet	174 KB

_5-24-ADS.pdf

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

34071 7590 05/06/2024

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

EXAMINER
CENTRAL, DOCKET

ART UNIT	PAPER NUMBER
OPAP	

MAIL DATE	DELIVERY MODE
05/06/2024	PAPER

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
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In re Application of	:	
Howell et al.	:	
Application No. 18/597,874	:	
Filed: March 6, 2024	:	DECISION ON PETITION
For: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS	:	

This is a decision on the petition under 37 CFR 1.102(c)(1), filed March 20, 2024, to make the above-identified application special based on applicant's age as set forth in MPEP § 708.02, Section II.

The petition is **GRANTED**.

A grantable petition to make an application special under 37 CFR 1.102(c)(1) and MPEP § 708.02, Section II: Applicant's Age, must be accompanied by evidence showing that the applicant is 65 years of age, or more, such as applicant's statement or a statement from a registered practitioner that he or she has evidence that the applicant is 65 years of age or older. No fee is required.

The instant petition includes a statement from the registered attorney or agent attesting to having evidence of the joint inventor's age being 65 years of age or more. Accordingly, the above-identified application has been accorded "special" status.

Telephone inquiries concerning this decision should be directed to Paralegal Specialist Lara Willsey at 571-270-1501. All other inquiries concerning the examination or status of the application are accessible in the Patent Center at https://patentcenter.uspto.gov.

/Lara C. Willsey/
Paralegal Specialist
Office of Petitions

Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2014/0049831 A1	Feb-14	Takeda et al.			
	2.	2021/0373595 A1	Dec-21	Castaneda et al.			
	3.	2023/0393422 A1	Dec-23	Moubedi et al.			
	4.	2023/0408850 A1	Dec-23	Howell et al.			
	5.	2024/0094800 A1	Mar-24	Howell et al.			
	6.						
	7.						
	8.						
	9.						
	10.						

Foreign Documents

							Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	A	Office Action for U.S. Patent Application No. 17/949,029, dated February 29, 2024.
	B	Notice of Allowance for U.S. Patent Application No. 18/144,557, dated January 11, 2024.
	C	Notice of Allowance for U.S. Patent Application No. 18/238,467, dated April 1, 2024.
	D	Office Action for U.S. Patent Application No. 18/519,802, dated January 25, 2024.
	E	Notice of Allowance for U.S. Patent Application No. 18/519,802, dated March 4, 2024.
	F	Notice of Allowance for U.S. Patent Application No. 18/519,802, dated April 8, 2024.
	G	
	H	
	I	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HOWELL et al.	Attorney Docket No.: IPVCP003X1C4X1C2
Application No.: 18/597,874	Examiner: DOCKET CENTRAL
Filed: March 6, 2024	Group: OPAP
Title: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PESONAL ELECTRONIC APPARATUS	

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

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

Dear Sir:

The references listed in the attached PTO Form 1449, copies of which are attached, may be material to examination of the above-identified patent application. Applicants submit these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114.

Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
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18/597,874	**04/23/2024 03:28:00 PM Z ET**	**IPVCP003X1C4X1C2**

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CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	65211062	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IPVCP003X1C4X1C2_IDSTrans2_4-24.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	19 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
IPVCP003X1C4X1C2_1449-2_4-24.pdf	1	Letter specifying the conditions for filing under 37 CFR 1.97	22 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

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IPVCP003X1C4X1C2_1449-2_4-24.pdf	008A81F639182C6F04C482EC2A0C052AB972551241BB2F4ADFE6C5642B1C8A6CD5BF39E8A1AFC733071A69AA5345FF478EDCFCD162BB836257725FA74F3A0543

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18/597,874	**04/04/2024 01:47:15 PM Z ET**	**IPVCP003X1C4X1C2**

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CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	64947308	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 30

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
CA2233047_Mann_CUTE.pdf	59	Foreign Reference	4220 KB
CA2316473_Mann_CUTE.pdf	63	Foreign Reference	3679 KB
CA2435873C_Aughey_CUTE.pdf	40	Foreign Reference	3167 KB
EP04417918 1_Chance_CUTE.pdf	12	Foreign Reference	1154 KB
JP_H02-102521_Okamoto_CUTE.pdf	24	Foreign Reference	1103 KB

JP_H02-159272A_Ishida.pdf	12	Foreign Reference	379 KB
JP_Patent_6275987_wTranslation_CUTE.pdf	23	Foreign Reference	663 KB
JP_Patent_63153218.pdf	73	Foreign Reference	1673 KB
CA2362895_Mann_CUTE.pdf	26	Foreign Reference	1569 KB
WO200184095_Jain.pdf	28	Foreign Reference	1270 KB
WO2002086599A1_DaPra.pdf	12	Foreign Reference	418 KB
WO2003062906A1_daPra.pdf	14	Foreign Reference	536 KB
WO2005036110A1_Marmaropoulos.pdf	24	Foreign Reference	799 KB
WO2004001373_Abreu.pdf	179	Foreign Reference	7026 KB
US_Prov_60460154_Jannard.pdf	66	Other reference-Patent/Application/Search Documents	2669 KB
Rolland_HeadMountedDisplaySystems_CUTE.pdf	14	Non Patent Literature	588 KB
24-02-29_ITC_1383_RespondentsJointInvalidityContentions_wExhibits.pdf	1516	Non Patent Literature	11057 KB
Hollerer_MobileAugmentedReality_CUTE.pdf	39	Non Patent Literature	1106 KB
Mann_IntelligentImageProcessing_CUTE1.pdf	121	Non Patent Literature	18569 KB

Mann_IntelligentImageProcessing_CUTE2.pdf	130	Non Patent Literature	18987 KB
Mann_IntelligentImageProcessing_CUTE3.pdf	110	Non Patent Literature	17566 KB
Mann_VideoOrbits_CUTE.pdf	8	Non Patent Literature	625 KB
Milgram_TaxonomyOfMixedReality_CUTE.pdf	15	Non Patent Literature	290 KB
DeVaul_MIThrilProjectOverview.pdf	5	Non Patent Literature	139 KB
Rolland_HighResolutionInsetHeadMountedDisplay_CUTE.pdf	11	Non Patent Literature	781 KB
Yoshida_DesignAndApplicationsOfHighResolutionInsertHeadMoutnedDisplay_CUTE.pdf	13	Non Patent Literature	325 KB
Nortel_922_CUTE.pdf	3	Non Patent Literature	1001 KB
IPVCP003X1C4X1C2_1449_4-24.pdf	3	Information Disclosure Statement (IDS) Form (SB08)	41 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
IPVCP003X1C4X1C2_IDSTrans_4-24.pdf	2	Letter specifying the conditions for filing under 37 CFR 1.97	22 KB
CA2388766_Mann_CUTE.pdf	36	Foreign Reference	3022 KB

Digest

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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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HOWELL et al.	Attorney Docket No.: IPVCP003X1C4X1C2
Application No.: 18/597,874	Examiner: DOCKET CENTRAL
Filed: March 6, 2024	Group: OPAP
Title: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS	

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

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

Dear Sir:

The references listed in the attached PTO Form 1449, copies of which are attached, may be material to examination of the above-identified patent application. Applicants submit these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application.

Under their duty of disclosure, Applicants hereby submit copies of the cited references. Applicants respectfully request that the Examiner consider these references and make these references of official record in this application.

Applicants would also like to inform the Patent Office of a potentially related case, as follows:

> United States International Trade Commission Investigation No. 337-TA-1383, filed on December 20, 2023 pertaining to US Patent Nos.8,770,742; 10,310,296; 11,762,224; 11,803,069.

Additionally, for your reference, the following items (though not specifically listed on the enclosed Form 1449) were denoted within the document listed at item B on the enclosed Form 1449:

> Nu Vision 60 GX Wireless Glasses; ELSA Revelator; Sun UV, Personal UV Monitor; SafeSun, Personal UV Meter, Optix Tech, Inc.; UV Index Solarmeter, Solartech, Inc.; Saitek Sunwatch II; Oakley Thump products, including at least Thump, Thump 1.5, Thump 2.0. (Item B, on pages 7 and/or 21)

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114.

Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
Registration No. 32,947

4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2003/0030597 A1	Feb-03	Geist			
	2.	2005/0281440 A1	Dec-05	Pemer			
	3.	2006/0203183 A1	Sep-06	Jannard et al.			
	4.	2007/0182812 A1	Aug-07	Ritchey			
	5.	2008/0024594 A1	Jan-08	Ritchey			
	6.	2020/0363835 A1	Nov-20	Blum et al.			
	7.	4,852,988	Aug-89	Velez et al.			
	8.	4,882,598	Nov-89	Wulf			
	9.	4,975,584	Dec-90	Benjamin et al.			
	10.	5,184,156	Feb-93	Black et al.			
	11.	5,495,576	Feb-96	Ritchey			
	12.	5,583,795	Dec-96	Smyth			
	13.	5,841,507	Nov-98	Barnes			
	14.	5,966,680	Oct-99	Butnaru			
	15.	6,099,124	Aug-00	Hidaji			
	16.	6,163,281	Dec-00	Torch			
	17.	6,244,703 B1	Jun-01	Resnikoff et al.			
	18.	6,433,760 B1	Aug-02	Vaissie et al.			
	19.	6,491,391 B1	Dec-02	Blum et al.			
	20.	6,563,532 B1	May-03	Strub et al.			
	21.	6,771,294 B1	Aug-04	Pulli et al			
	22.	6,847,336 B1	Jan-05	Lemelson et al.			
	23.	6,943,754 B2	Sep-05	Aughey et al.			
	24.	6,977,776 B2	Dec-05	Volkenandt et al.			
	25.	7,148,489 B2	Dec-06	Yagi			
	26.	7,150,526 B2	Dec-06	Jannard et al.			
	27.	7,278,734 B2	Oct-07	Jannard et al			

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
Information Disclosure Statement By Applicant	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
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	28.	7,347,551 B2	Mar-08	Fergason et al.			
	29.	7,488,294 B2	Feb-09	Torch			
	30.	7,651,220 B1	Jan-10	Pattikonda			
	31.	8,408,699 B2	Apr-13	Blum et al.			
	32.	8,931,896 B2	Jan-15	Blum et al.			

Foreign Documents

							Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No
		CA 2,233,047C	Mar-98	Canada				
		CA 2,316,473 A1	Jul-00	Canada				
		CA 2,362,895 A1	Dec-02	Canada				
		CA 2,388,766 A1	Dec-03	Canada				
		CA 2,435,873C	Mar-04	Canada				
		EP 0441791B1	Aug-91	Europe				
		H02-102521 U	Aug-90	Japan			X	
		H02-159272 A	Jun-90	Japan			X	
		JP 6275987	Feb-18	Japan			X	
		JP 63-153218	Oct-88	Japan			X	
		WO 01/84095 A1	Nov-01	WIPO				
		WO 02/086599 A1	Oct-02	WIPO				
		WO 03/062906 A1	July-03	WIPO				
		WO 04/001373 A2	Dec-03	WIPO				
		WO 05/036110 A1	Apr-05	WIPO				

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	A	US Provisional Appl. No. 60/460154 filed April 3, 2003, to Jannard.
	B	Respondent's Disclosure of Invalidity Contentions with Exhibits A1-A13, Exhibits B1-B5, and Exhibits C1-C6, International Trade Commission Investigation No. 337-TA-1383, filed February 29, 2024, pp. 1-1516.
	C	Höllerer, T. and Feiner, S., "Mobile augmented reality." *Telegeoinformatics: Location-based computing and services* 21 (2004), pp. 1-39.
	D	Mann, Steve and S. Mann. *Intelligent image processing.* IEEE, 2002, 121 pgs. [Part 1 of 3]
	E	Mann, Steve and S. Mann. *Intelligent image processing.* IEEE, 2002, 130 pgs. [Part 2 of 3]

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	Application No.:	18/597,874
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	Group	OPAP
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	F	Mann, Steve and S. Mann. *Intelligent image processing.* IEEE, 2002, 110 pgs. [Part 3 of 3]
	G	Mann, S., & Fung, J. "VideoOrbits on Eye Tap devices for deliberately diminished reality or altering the visual perception of rigid planar patches of a real world scene." *EYE*, 3, pp. 1-8.
	H	Milgram, Paul, and Fumio Kishino. "A taxonomy of mixed reality visual displays." *IEICE TRANSACTIONS on Information and Systems* 77.12 (1994), pp. 1-15.
	I	DeVaul et al. MIThril Project Overview. https://www.media.mit.edu/wearables/mithril/overview.html, downloaded March 2, 2022, pp. 1-5.
	J	Rolland, Jannick P., and Hong Hua. "Head-mounted display systems." *Encyclopedia of optical engineering* 2 (2005), pp. 1-14.
	K	Rolland, Jannick P., et al. "High-resolution inset head-mounted display." *Applied optics* 37.19 (1998), pp. 1-11.
	L	Yoshida, Akitoshi, Jannick P. Rolland, and John H. Reif. "Design and Applications of a High Resolution Insert Head Mounted Display." (1994), pp. 1-13.
	M	Nortel 922, Mobile Phone Museum, pp. 1-3.

Examiner	Date Considered

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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						

Foreign Documents

							Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No
		CA 2 487 391	Dec-03	Canada				
		CN 88203065	Nov-88	China			X abstract	
		CN 89214222.7	Mar-90	China			X abstract	
		CN 90208199.3	Nov-90	China			X abstract	
		DE 10123226 A1	Nov-02	Germany			X	
		EP 1027626 B1	Mar-16	Europe				
		EP 1134491 A2	Sep-01	Europe				
		EP 2290433 B1	Apr-16	Europe				
		FR 2530039 A1	Jan-84	France			X abstract	
		GB 1467982	Mar-77	Great Britain				
		JP 02-181722	Jul-90	Japan			X abstract	
		JP 09-017204	Jan-97	Japan			X	
		JP 10-161072	Jun-98	Japan			X	
		JP 2000-039595	Feb-00	Japan			X	
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		JP 2005-151292	Jun-05	Japan			X abstract	
		JP 2005-167902	Jun-05	Japan			X	
		JP 58-113912	Jul-83	Japan			X	
		JP-58-113914	Jul-83	Japan			X abstract	
		KR 2002-0044416 A	Jun-02	Korea			X	
		TW 484711	Jun-01	Taiwan			X abstract	

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		WO 01/06298 A1	Jan-01	WIPO				
		WO 01/24576 A1	Apr-01	WIPO				
		WO 02/06881 A2	Jan-02	WIPO				
		WO 03/069394 A1	Aug-03	WIPO			X abstract	
		WO 03/100368 A1	Dec-03	WIPO				
		WO 03/100503 A2	Dec-03	WIPO				
		WO 04/012477 A2	Feb-04	WIPO				
		WO 04/025554 A1	Mar-04	WIPO				
		WO 99/50706 A1	Oct-99	WIPO				

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	A	Notice of Allowance for U.S. Patent Application No. 11/183,269, dated December 10, 2010.
	B	Office Action for U.S. Patent Application No. 11/183,269, dated May 25, 2010.
	C	Final Office Action for U.S. Patent Application No. 11/183,269, dated February 17, 2010.
	D	Office Action for U.S. Patent Application No. 11/183,269, dated June 23, 2009.
	E	Office Action for U.S. Patent Application No. 11/183,269, dated December 4, 2008.
	F	Final Office Action for U.S. Patent Application No. 11/183,269, dated June 5, 2008.
	G	Office Action for U.S. Patent Application No. 11/183,269, dated October 18, 2007.
	H	Restriction Requirement for U.S. Patent Application No. 11/183,269, dated June 25, 2007.
	I	Office Action for U.S. Patent Application No. 13/085,402, dated April 19, 2012.
	J	Notice of Allowance for U.S. Patent Application No. 13/085,402, dated August 2, 2012.
	K	Notice of Allowance for U.S. Patent Application No. 13/085,402, dated November 13, 2012.
	L	Notice of Allowance for U.S. Patent Application No. 13/085,402, dated February 20, 2013.
	M	Notice of Allowance for U.S. Patent Application No. 13/085,402, dated June 14, 2013.
	N	Office Action for U.S. Patent Application No. 13/955,336, dated December 5, 2013.
	O	Notice of Allowance for U.S. Patent Application No. 13/955,336, dated April 28, 2014.
	P	Notice of Allowance for U.S. Patent Application No. 13/955,336, dated August 18, 2014.
	Q	Notice of Allowance for U.S. Patent Application No. 13/955,336, dated October 7, 2014.
	R	Notice of Allowance for U.S. Patent Application No. 13/955,336, dated November 3, 2014.
	S	Office Action for U.S. Patent Application No. 14/557,409, dated June 11, 2015.
	T	Notice of Allowance for U.S. Patent Application No 14/557,409, dated January 14, 2016.

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
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	U	Notice of Allowance for U.S. Patent Application No. 14/557,409, dated April 28, 2016.
	V	Notice of Allowance for U.S. Patent Application No. 14/557,409, dated August 8, 2016.
	W	Notice of Allowance for U.S. Patent Application No. 14/557,409, dated November 4, 2016.
	X	Corrected Notice of Allowance for U.S. Patent Application No. 14/557,409, dated December 12, 2016.
	Y	Office Action for U.S. Patent Application No. 15/375,423, dated March 27, 2017.
	Z	Notice of Allowance for U.S. Patent Application No. 15/375,423, dated July 5, 2017.
	AA	Notice of Allowance for U.S. Patent Application No. 15/375,423, dated October 31, 2017.
	AB	Notice of Allowance for U.S. Patent Application No. 15/375,423, dated March 23, 2018.
	AC	Notice of Allowance for U.S. Patent Application No. 15/375,423, dated July 13, 2018.
	AD	Office Action for U.S. Patent Application No. 16/049,120, dated February 28, 2020.
	AE	Notice of Allowance for U.S. Patent Application No. 16/049,120, dated June 3, 2020.
	AF	Notice of Allowance for U.S. Patent Application No. 16/049,120, dated September 21, 2020.
	AG	Notice of Allowance for U.S. Patent Application No. 16/049,120, dated February 23, 2021.
	AH	Notice of Allowance for U.S. Patent Application No. 16/049,120, dated June 3, 2021.
	AI	Notice of Allowance for U.S. Patent Application No. 16/049,120, dated September 20, 2021.
	AJ	Notice of Allowance for U.S. Patent Application No. 16/574,254, dated April 16, 2021.
	AK	Notice of Allowance for U.S. Patent Application No. 16/574,254, dated August 9, 2021.
	AL	Office Action for U.S. Patent Application No. 16/821,810, dated February 2, 2022.
	AM	Notice of Allowance for U.S. Patent Application No. 16/821,810, dated April 6, 2022.
	AN	Notice of Allowance for U.S. Patent Application No. 16/821,810, dated October 19, 2022.
	AO	Office Action for U.S. Patent Application No. 17/484,080, dated January 21, 2022.
	AP	Notice of Allowance for U.S. Patent Application No. 17/484,080, dated May 31, 2022.
	AQ	Notice of Allowance for U.S. Patent Application No. 17/484,080, dated September 13, 2022.
	AR	Notice of Allowance for U.S. Patent Application No. 17/484,080, dated January 31, 2023.
	AS	Notice of Allowance for U.S. Patent Application No. 17/484,080, dated June 1, 2023.
	AT	Office Action for U.S. Patent Application No. 17/949,029, dated November 23, 2022.
	AU	Notice of Allowance for U.S. Patent Application No. 17/949,029, dated March 1, 2023.
	AV	Notice of Allowance for U.S. Patent Application No. 17/949,029, dated July 3, 2023.
	AW	Notice of Allowance for U.S. Patent Application No. 17/949,029, dated October 30, 2023.
	AX	Office Action for U.S. Patent Application No. 17/873,104, dated October 6, 2022.
	AY	Office Action for U.S. Patent Application No. 17/873,104, dated November 4, 2022.

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

	AZ	Notice of Allowance for U.S. Patent Application No. 17/873,104, dated December 16, 2022.
	BA	Notice of Allowance for U.S. Patent Application No. 17/873,104, dated March 22, 2023.
	BB	Office Action for U.S. Patent Application No. 18/144,557, dated August 23, 2023.
	BC	Office Action for U.S. Patent Application No. 18/144,557, dated November 24, 2023.
	BD	Restriction Requirement for U.S. Patent Application No. 11/580,222, dated June 18, 2008.
	BE	Office Action for U.S. Patent Application No. 11/580,222, dated September 12, 2008.
	BF	Office Action for U.S. Patent Application No. 11/580,222, dated January 28, 2009.
	BG	Notice of Allowance for U.S. Patent Application No. 11/580,222, dated April 20, 2009.
	BH	U.S. Patent Application No. 12/462,286, filed July 31, 2009.
	BI	Restriction Requirement for U.S. Patent Application No. 12/462,286, dated September 17, 2010.
	BJ	Office Action for U.S. Patent Application No. 12/462,286, dated January 13, 2011.
	BK	Notice of Allowance for U.S. Patent Application No. 12/462,286, dated June 24, 2011.
	BL	Notice of Allowance for U.S. Patent Application No. 12/462,286, dated November 22, 2011.
	BM	Office Action for U.S. Patent Application No. 13/367,346, dated May 15, 2013.
	BN	Notice of Allowance for U.S. Patent Application No. 13/367,346, dated October 10, 2013.
	BO	Office Action for U.S. Patent Application No. 13/367,346, dated January 28, 2014.
	BP	Notice of Allowance for U.S. Patent Application No. 13/367,346, dated August 15, 2014.
	BQ	Notice of Allowance for U.S. Patent Application No. 13/367,346, dated March 19, 2015.
	BR	Office Action ffor U.S. Patent Application No. 14/715,501, dated September 23, 2015.
	BS	Office Action for U.S. Patent Application No. 14/715,501, dated March 25, 2016.
	BT	Office Action for U.S. Patent Application No. 14/715,501, dated October 17, 2016.
	BU	Office Action for U.S. Patent Application No. 14/715,501, dated July 20, 2017.
	BV	Office Action for U.S. Patent Application No. 14/715,501, dated January 8, 2018.
	BW	Notice of Allowance for U.S. Patent Application No. 14/715,501, dated May 9, 2018.
	BX	Notice of Allowance for U.S. Patent Application No. 14/715,501, dated September 11, 2018.
	BY	Office Action for U.S. Patent Application No. 16/127,957, dated June 4, 2020.
	BZ	Office Action for U.S. Patent Application No. 16/127,957, dated September 30, 2020.
	CA	Notice of Allowance for U.S. Patent Application No. 16/127,957, dated December 21, 2020.
	CB	Notice of Allowance for U.S. Patent Application No. 17/395,509, dated May 6, 2022.
	CC	Notice of Allowance for U.S. Patent Application No. 17/395,509, dated September 9, 2022.

Examiner	Date Considered

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	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
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	CD	Notice of Allowance for U.S. Patent Application No. 17/395,509, dated December 19, 2022.
	CE	Notice of Allowance for U.S. Patent Application No. 17/395,509, dated April 26, 2023.
	CF	Notice of Allowance for U.S. Patent Application No. 17/737,866, dated September 16, 2022.
	CG	Notice of Allowance for U.S. Patent Application No. 17/737,866, dated January 17, 2023.
	CH	Notice of Allowance for U.S. Patent Application No. 17/737,866, dated May 15, 2023.
	CI	Notice of Allowance for U.S. Patent Application No. 18/238,467, dated November 21, 2023.
	CJ	Notice of Allowance for U.S. Patent Application No. 16/182,969, dated January 28, 2022.
	CK	Office Action for U.S. Patent Application No. 16/182,969, dated June 24, 2020.
	CL	Notice of Allowance for U.S. Patent Application No. 16/182,969, dated October 14, 2020.
	CM	Notice of Allowance for U.S. Patent Application No. 16/182,969, dated September 1, 2021.
	CN	Office Action for U.S. Patent Application No. 16/182,969, dated January 24, 2023.
	CO	Notice of Allowance for U.S. Patent Application No. 16/182,969, dated June 30, 2023.
	CP	Notice of Allowance for U.S. Patent Application No. 16/182,969, dated October 25, 2023.
	CQ	Election of Species Requirement for U.S. Patent Application No. 18/375,893, dated November 14, 2023.
	CR	Office Action for U.S. Patent Application No. 18/375,893, dated December 14, 2023.
	CS	U.S. Patent Application No. 12/806,312, filed August 10, 2010.
	CT	Office Action for U.S. Patent Application No. 12/806,312, dated April 20, 2012.
	CU	Office Action for U.S. Patent Application No. 12/806,312, dated September 25, 2012.
	CV	Notice of Allowance for U.S. Patent Application No. 12/806,312, dated December 14, 2012.
	CW	Notice of Allowance for U.S. Patent Application No. 12/806,312, dated March 29, 2013.
	CX	U.S. Patent Application No. 13/831,512, filed March 14, 2013.
	CY	Office Action for U.S. Patent Application No. 13/831,512, dated June 4, 2013.
	CZ	Office Action for U.S. Patent Application No. 13/831,512, dated February 24, 2014.
	DA	Office Action for U.S. Patent Application No. 13/831,512, dated July 2, 2014.
	DB	Office Action for U.S. Patent Application No. 13/831,512, dated January 21, 2015.
	DC	Office Action for U.S. Patent Application No. 13/831,512, dated May 29, 2015.
	DD	Office Action for U.S. Patent Application No. 13/831,512, dated February 24, 2016.
	DE	Notice of Allowance for U.S. Patent Application No. 13/831,512, dated August 1, 2016.
	DF	Notice of Allowance for U.S. Patent Application No. 13/831,512, dated October 25, 2016.
	DG	Notice of Allowance for U.S. Patent Application No. 13/831,512, dated January 30, 2017.

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	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
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	DH	Notice of Allowance for U.S. Patent Application No. 13/831,512, dated February 21, 2017.
	DI	Office Action for U.S. Patent Application No. 15/396,428, dated February 16, 2018.
	DJ	Office Action for U.S. Patent Application No. 15/396,428, dated June 21, 2018.
	DK	Office Action for U.S. Patent Application No. 15/409,723, dated April 23, 2018.
	DL	Office Action for U.S. Patent Application No. 15/409,723, dated October 31, 2018.
	DM	Notice of Allowance for U.S. Patent Application No. 11/183,256, dated January 13, 2009.
	DN	Office Action for U.S. Patent Application No. 11/183,256, dated September 12, 2008.
	DO	Notice of Allowance for U.S. Patent Application No. 11/183,256, dated July 8, 2008.
	DP	Office Action for U.S. Patent Application No. 11/183,256, dated January 25, 2008.
	DQ	Restriction Requirement for U.S. Patent Application No. 11/183,256, dated October 17, 2007.
	DR	Restriction Requirement for U.S. Patent Application No. 11/183,256, dated June 28, 2007.
	DS	Notice of Allowance for U.S. Patent Application No. 11/546,685, dated February 17, 2010.
	DT	Notice of Allowance for U.S. Patent Application No. 11/546,685, dated September 18, 2009.
	DU	Office Action for U.S. Patent Application No. 11/546,685, dated March 5, 2009.
	DV	Restriction Requirement for U.S. Patent Application No. 11/546,685, dated January 27, 2009.
	DW	US Patent Application No. 12/803,732, filed July 1, 2010.
	DX	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated September 1, 2011.
	DY	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated November 15, 2011.
	DZ	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated January 30, 2012.
	EA	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated April 17, 2012.
	EB	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated July 5, 2012.
	EC	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated October 19, 2012.
	ED	Notice of Allowance for U.S. Patent Application No. 12/803,732, dated February 13, 2013.
	EE	Office Action for U.S. Patent Application No. 13/291,020, dated June 4, 2012.
	EF	Office Action for U.S. Patent Application No. 13/291,020, dated April 23, 2012.
	EG	Notice of Allowance for U.s. Patent Application No. 13/291,020, dated August 2, 2012.
	EH	Notice of Allowance for U.S. Patent Application No. 13/291,020, dated November 2, 2012.
	EI	Notice of Allowance for U.S. Patent Application No. 13/291,020, dated February 11, 2013.
	EJ	U.S. Patent Application No. 13/831,419, filed March 14, 2013.
	EK	Office Action for U.S. Patent Application No. 13/831,419, dated April 27, 2015.
	EL	Office Action for U.S. Patent Application No. 13/831,419, dated August 12, 2015.

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
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	EM	Notice of Allowance for U.S. Patent Application No. 13/831,419, dated January 28, 2016.
	EN	Office Action for U.S. Patent Application No. 13/831,419, dated April 28, 2016.
	EO	Office Action for U.S. Patent Application No. 13/831,419, dated November 17, 2016.
	EP	Office Action for U.S. Patent Application No. 13/831,419, dated February 1, 2017.
	EQ	Notice of Allowance for U.S. Patent Application No. 13/831,419, dated June 6, 2017.
	ER	Office Action for U.S. Patent Application No. 13/831,419, dated October 20, 2017.
	ES	Office Action for U.S. Patent Application No. 13/831,419, dated June 8, 2018.
	ET	U.S. Patent Application No. 13/831,445, filed March 14, 2013.
	EU	Office Action for U.S. Patent Application No. 13/831,445, dated February 20, 2015.
	EV	Notice of Allowance for U.S. Patent Application No. 13/831,445, dated October 21, 2016.
	EW	Notice of Allowance for U.S. Patent Application No. 13/831,445, dated January 9, 2017.
	EX	Corrected Notice of Allowance for U.S. Patent Application No. 13/831,445, dated January 23, 2017.
	EY	Notice of Allowance for U.S. Patent Application No. 13/831,445, dated April 25, 2017.
	EZ	Office Action for U.S. Patent Application No. 13/831,445, dated February 6, 2018.
	FA	Notice of Allowance for U.S. Patent Application No. 13/831,445, dated August 8, 2018.
	FB	Office Action for U.S. Patent Application No. 16/429,181, dated September 30, 2020.
	FC	Notice of Allowance for U.S. Patent Application No. 16/429,181, dated February 1, 2021.
	FD	Notice of Allowance for U.S. Patent Application No. 16/429,181, dated June 17, 2021.
	FE	Notice of Allowance for U.S. Patent Application No. 16/429,181, dated August 19, 2021.
	FF	Notice of Allowance for U.S. Patent Application No. 16/429,181, dated October 4, 2021.
	FG	Office Action for U.S. Patent Application No. 16/429,181, dated February 9, 2022.
	FH	Notice of Allowance for U.S. Patent Application No. 16/429,181, dated August 10, 2022.
	FI	Office Action for U.S. Patent Application No. 16/424,018, dated June 10, 2020.
	FJ	Notice of Allowance for U.S. Patent Application No. 16/424,018, dated October 20, 2020.
	FK	Notice of Allowance for U.S. Patent Application No. 16/424,018, dated March 8, 2021.
	FL	Office Action for U.S. Patent Application No. 16/424,018, dated May 13, 2021.
	FM	Office Action for U.S. Patent Application No. 16/424,018, dated September 3, 2021.
	FN	Notice of Allowance for U.S. Patent Application No. 16/424,018, dated November 2, 2021
	FO	Office Action for U.S. Patent Application No. 16/424,018, dated January 24, 2022.
	FP	Notice of Allowance for U.S. Patent Application No. 16/424,018, dated June 10, 2022.
	FQ	Office Action for U.S. Patent Application No. 16/424,018, dated September 6, 2022.
	FR	Office Action for U.S. Patent Application No. 16/424,018, dated November 25, 2022.
	FS	Notice of Allowance for U.S. Patent Application No. 16/424,018, dated February 21, 2023.

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	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
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	FT	Notice of Allowance for U.S. Patent Application No. 17/942,347, dated April 19, 2023.
	FU	Notice of Allowance for U.S. Patent Application No 17/942,347, dated July 3, 2023.
	FV	Notice of Allowance for U.S. Patent Application No. 17/942,347, dated August 14, 2023.
	FW	Notice of Allowance for U.S. Patent Application No.17/964,853, dated March 8, 2023.
	FX	Office Action for U.S. Patent Application No. 17/964,853, dated September 15, 2023.
	FY	Office Action for U.S. Patent Application No. 18/129,660, dated May 19, 2023.
	FZ	Office Action for U.S. Patent Application No. 18/129,660, dated July 7, 2023.
	GA	Notice of Allowance for U.S. Patent Application No. 18/129,660, dated August 24, 2023.
	GB	Office Action for U.S. Patent Application No. 18/224,793, dated September 7, 2023.
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	GJ	"Eyetop", Product-Features", eyetop eyewear, eyetop belt worn, http://www.eyetop.net/products/eyetop/features.asp., downloaded November 6, 2003, pp. 1-2.
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	GQ	"SafeSun Personal Ultraviolet Light Meter", http://healthchecksystems.com/safesun.htm, downloaded July 12, 2004, pp. 1-4.

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	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
		Page 9 of 11

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Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
		Page 10 of 11

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Examiner	Date Considered

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Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	18/597,874
	Applicant	HOWELL et al.
	Filing Date	March 6, 2024
	Group	OPAP
		Page 11 of 11

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UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**03/20/2024 10:49:51 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	64766003	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IPVCP003X1C4X1C2_Petition_reAge_3-24.pdf	2	Petition to make special based on Age/Health	253 KB
IPVCP003X1C4X1C2_IDSTrans_3-24.pdf	2	Letter specifying the conditions for filing under 37 CFR 1.97	20 KB
IPVCP003X1C4X1C2_1449_3-24.pdf	11	Information Disclosure Statement (IDS) Form (SB08)	93 KB

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Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
IPVCP003X1C4X1C2_Petition_reAge_3-24.pdf	B57208CA557B8DAB88AE6D17AFB772F558BB801E9DD36F5707C7DE0D02758B1B6AF0937934ED3989C6F7DF0D76615EC1DF07DBA9B3588D278E81990AAA4E05A6
IPVCP003X1C4X1C2_IDSTrans_3-24.pdf	707246E8B56B09AB120EB3D3C3582F3CA0B692A8A660E2DBFAD9417308CDDB65AE49061AB838C444821B08D2B4BE07441B2EED016141C1AAA945669EA7C605EE
IPVCP003X1C4X1C2_1449_3-24.pdf	4A6D234E2A31E81FE835BE5DB82D4123B5E9484955FA7949C7E4F708956EEDBB3B29E7C23CAA10D26F2570D49D3F53D77D4BEF7561A5D11F4526A6762CD3CD9F

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HOWELL et al.	Attorney Docket No.: IPVCP003X1C4X1C2
Application No.: 18/597,874	Examiner: OPAP
Filed: March 6, 2024	Group: DOCKET CENTRAL
Title: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS	

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

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

Dear Sir:

The references listed in the attached PTO Form 1449 may be material to examination of the above-identified patent application. Applicants submit the list of these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application. The above-identified application is a Continuation of prior application U.S. Patent Application No. 18/375,893. This prior application is being relied upon for an earlier filing date under 35 U.S.C. § 120. Because the listed references (to the extent that copies are required) were either cited by the PTO, or submitted to the PTO in the prior application, under 37 CFR § 1.98(d) Applicants submit that copies need not be provided.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material

to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114.

Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
Registration No. 32,947

4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

Doc code: PET.OP.AGE
Description: Petition to make special based on age/health

PTO/SB/130 (01-19)
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

PETITION TO MAKE SPECIAL BASED ON AGE FOR ADVANCEMENT OF EXAMINATION UNDER 37 CFR 1.102(c)(1)

Application Information

Application Number	18597874	Confirmation Number	7223	Filing Date	March 6, 2024
Attorney Docket Number (optional)	IPVCP003X1C4X1C2	Art Unit	OPAP	Examiner	DOCKET CENTRAL
First Named Inventor	HOWELL et al.				
Title of Invention	SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS				

Attention: Office of Petitions

An application may be made special for advancement of examination upon filing of a petition showing that the applicant is 65 years of age, or more. No fee is required with such a petition. See 37 CFR 1.102(c)(1) and MPEP 708.02 (II).

APPLICANT HEREBY PETITIONS TO MAKE SPECIAL FOR ADVANCEMENT OF EXAMINATION IN THIS APPLICATION UNDER 37 CFR 1.102(c)(1) and MPEP 708.02 (II) ON THE BASIS OF THE APPLICANT'S AGE.

A grantable petition requires one of the following items:

(1) Statement by one named inventor in the application that he/she is 65 years of age, or more; or

(2) Certification by a registered attorney/agent having evidence such as a birth certificate, passport, driver's license, etc. showing one named inventor in the application is 65 years of age, or more.

Name of inventor who is 65 years of age, or older

Given Name	Middle Name	Family Name	Suffix
Peter	P.	Tong	

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the format of the signature.

Select (1) or (2):

☐ (1) I am an inventor in this application and I am 65 years of age, or more.

☒ (2) I am an attorney or agent registered to practice before the Patent and Trademark Office, and I certify that I am in possession of evidence, and will retain such in the application file record, showing that the inventor listed above is 65 years of age, or more.

Signature	/C. Douglass Thomas/	Date (YYYY-MM-DD)	2024-03-20
Name	C. Douglass Thomas	Registration Number	32947

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
18/597,874	03/06/2024		1820	IPVCP003X1C4X1C2	4	3

CONFIRMATION NO. 7223

34071
IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

FILING RECEIPT

OC000000069832866

Date Mailed: 03/19/2024

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.

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Inventor(s)

Thomas A. Howell, San Jose, CA;
David Chao, Saratoga, CA;
C. Douglass Thomas, Saratoga, CA;
Peter P. Tong, Mountain View, CA;

Applicant(s)

IngenioSpec, LLC, San Jose, CA;

Power of Attorney: The patent practitioners associated with Customer Number 34071

Domestic Priority data as claimed by applicant

and said 18/375,893 10/02/2023 is a CON of 16/182,969 11/07/2018
which is a CON of 16/127,957 09/11/2018 PAT 11,086,147
which is a CON of 14/715,501 05/18/2015 PAT 10,330,956
which is a CON of 13/367,346 02/06/2012 PAT 9,033,493
which is a CON of 12/462,286 07/31/2009 PAT 8,109,629
which is a CON of 11/580,222 10/11/2006 PAT 7,581,833
which claims benefit of 60/725,999 10/11/2005
and claims benefit of 60/725,896 10/11/2005
and claims benefit of 60/787,850 04/01/2006
and claims benefit of 60/846,150 09/20/2006
and said 16/182,969 11/07/2018 is a CON of 16/049,120 07/30/2018 PAT 11,243,416
which is a CON of 15/375,423 12/12/2016 PAT 10,061,144
which is a CON of 14/557,409 12/01/2014 PAT 9,547,184

which is a CON of 13/955,336 07/31/2013 PAT 8,905,542
which is a CON of 13/085,402 04/12/2011 PAT 8,500,271
and said 16/182,969 11/07/2018 is a CON of 15/409,723 01/19/2017 ABN
which is a CON of 13/831,512 03/14/2013 PAT 9,690,121
which is a CON of 12/806,312 08/10/2010 PAT 8,465,151
which is a CIP of 12/462,286 07/31/2009 PAT 8,109,629
and is a CIP of 12/317,043 12/18/2008 PAT 7,771,046
which is a CON of 12/214,435 06/19/2008 PAT 7,481,531
which is a CON of 11/891,411 08/09/2007 PAT 7,401,918
This application is a CON of 18/375,893 10/02/2023

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.

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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: 03/18/2024

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/597,874**

Projected Publication Date: 06/27/2024

Non-Publication Request: No

Early Publication Request: No
Title

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Preliminary Class

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

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

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 18/597,874

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	4 minus 20 =	* 0			OR	x =	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x =	0
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
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1820

APPLICATION AS AMENDED - PART II

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

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

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

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

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Kathi Vidal

Kathi Vidal
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office

Derrick Brent
Deputy Under Secretary of Commerce for Intellectual Property and
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention:	EYEWEAR SUPPORTING ONE OR MORE ELECTRICAL COMPONENTS

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 13/831,512 filed on March 14, 2013

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: THOMAS A. HOWELL Date (Optional): 12/22/2016

Signature: Thomas A. Howell

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

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
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LEGAL NAME OF INVENTOR

Inventor: DAVID CHAO Date (Optional): _____

Signature: _____

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

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LEGAL NAME OF INVENTOR

Inventor: PETER P. TONG Date (Optional): 12/22/16

Signature: Peter Tong

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

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Approved for use through 01/31/2014. OMB 0651-0032
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	EYEWEAR SUPPORTING ONE OR MORE ELECTRICAL COMPONENTS

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 13/831,512 filed on March 14, 2013.

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 application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: C. DOUGLASS THOMAS Date (Optional): 12/22/2016

Signature: C. Douglass Thomas

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

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**03/06/2024 10:22:22 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	64570777	AUTHORIZED BY	Peter Tong
CUSTOMER #	34071	FILING DATE	-
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Thomas A. Howell

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 6200	**E202436M24109712**	**Angela Nijim**

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
503874	**37 CFR 1.21 (Miscellaneous fees and charges)**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1111	UTILITY PATENT APPL. SEARCH FEE	700.00	1	700.00
1011	BASIC FILING FEE - UTILITY (PAPER FILING ALSO REQUIRES NON-ELECTRONIC FILING FEE UNDER 1.16(T))	320.00	1	320.00
1311	PATENT APPL. EXAMINATION FEE	800.00	1	800.00
			TOTAL AMOUNT:	**$1,820.00**

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.

Application Data Sheet 37 CFR 1.76

The Application Data Sheet is part of the provisional or non-provisional 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.

Inventor Information

of inventors: 4

1. **Thomas A. Howell**

Residence Information
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San Jose, CA
UNITED STATES

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3. **C. Douglass Thomas**

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4. **Peter P. Tong**

Residence Information
US Residency
Mountain View, CA
UNITED STATES

Mailing Address
1807 Limetree Lane
Mountain View, CA 94040
UNITED STATES

Application Information

Customer number	**34071 -**
Correspondence address	---
Title of invention	**SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS**
Attorney docket number	**IPVCP003X1C4X1C2**
Entity status	Regular Undiscounted
Application type	Nonprovisional Application under 35 USC 111(a)
Subject matter	Utility
Total number of drawing sheets	28

Apple Inc. EX1002 Page 1102

Suggested figure for publication	4
Filing by reference	No
Publication request	Normal eighteen-month publication

Representative Information

of representatives: 1

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).

Customer number 34071

Domestic Benefit/National Stage Information

of benefit claims: 24

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c), 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(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior app status	Pending
Application number	**18375893**
Continuity type	**Continuation of**
Prior app number	**16182969**
Filing Date	11/07/2018

Prior app status	Patented
Application number	**16182969**
Continuity type	**Continuation of**
Prior app number	**16127957**
Filing Date	09/11/2018
Patent number	11086147

Issue date	08/10/2021

Prior app status	Patented
Application number	**16127957**
Continuity type	**Continuation of**
Prior app number	**14715501**
Filing Date	05/18/2015
Patent number	10330956
Issue date	06/25/2019

Prior app status	Patented
Application number	**14715501**
Continuity type	**Continuation of**
Prior app number	**13367346**
Filing Date	02/06/2012
Patent number	9033493
Issue date	05/19/2015

Prior app status	Patented
Application number	**13367346**
Continuity type	**Continuation of**
Prior app number	**12462286**
Filing Date	07/31/2009
Patent number	8109629
Issue date	02/07/2012

Prior app status	Patented
Application number	**12462286**
Continuity type	**Continuation of**
Prior app number	**11580222**
Filing Date	10/11/2006
Patent number	7581833
Issue date	09/01/2009

Prior app status	Pending
Application number	**11580222**
Continuity type	**Claims benefit of provisional**
Prior app number	**60725999**
Filing Date	10/11/2005

Prior app status	Pending
Application number	**11580222**
Continuity type	**Claims benefit of provisional**
Prior app number	**60725896**
Filing Date	10/11/2005

Prior app status	Pending
Application number	**11580222**
Continuity type	**Claims benefit of provisional**
Prior app number	**60787850**
Filing Date	04/01/2006

Prior app status	Pending
Application number	**11580222**
Continuity type	**Claims benefit of provisional**
Prior app number	**60846150**
Filing Date	09/20/2006

Prior app status	Patented
Application number	**16182969**
Continuity type	**Continuation of**
Prior app number	**16049120**
Filing Date	07/30/2018
Patent number	11243416
Issue date	02/08/2022

Prior app status	Patented
Application number	**16049120**

Continuity type	**Continuation of**
Prior app number	**15375423**
Filing Date	12/12/2016
Patent number	10061144
Issue date	08/28/2018

Prior app status	Patented
Application number	**15375423**
Continuity type	**Continuation of**
Prior app number	**14557409**
Filing Date	12/01/2014
Patent number	9547184
Issue date	01/17/2017

Prior app status	Patented
Application number	**14557409**
Continuity type	**Continuation of**
Prior app number	**13955336**
Filing Date	07/31/2013
Patent number	8905542
Issue date	12/09/2014

Prior app status	Patented
Application number	**13955336**
Continuity type	**Continuation of**
Prior app number	**13085402**
Filing Date	04/12/2011
Patent number	8500271
Issue date	08/06/2013

Prior app status	Abandoned
Application number	**16182969**
Continuity type	**Continuation of**
Prior app number	**15409723**
Filing Date	01/19/2017

Prior app status	Patented
Application number	**15409723**
Continuity type	**Continuation of**
Prior app number	**13831512**
Filing Date	03/14/2013
Patent number	9690121
Issue date	06/27/2017

Prior app status	Patented
Application number	**13831512**
Continuity type	**Continuation of**
Prior app number	**12806312**
Filing Date	08/10/2010
Patent number	8465151
Issue date	06/18/2013

Prior app status	Patented
Application number	**12806312**
Continuity type	**Continuation in part of**
Prior app number	**12462286**
Filing Date	07/31/2009
Patent number	8109629
Issue date	02/07/2012

Prior app status	Patented
Application number	**12462286**
Continuity type	**Continuation of**
Prior app number	**11580222**
Filing Date	10/11/2006
Patent number	7581833
Issue date	09/01/2009

Prior app status	Patented
Application number	**12806312**
Continuity type	**Continuation in part of**
Prior app number	**12317043**

Filing Date	12/18/2008
Patent number	7771046
Issue date	08/10/2010

Prior app status	Patented
Application number	**12317043**
Continuity type	**Continuation of**
Prior app number	**12214435**
Filing Date	06/19/2008
Patent number	7481531
Issue date	01/27/2009

Prior app status	Patented
Application number	**12214435**
Continuity type	**Continuation of**
Prior app number	**11891411**
Filing Date	08/09/2007
Patent number	7401918
Issue date	07/22/2008

Prior app status	Pending
Application number	**---**
Continuity type	**Continuation of**
Prior app number	**18375893**
Filing Date	10/02/2023

Foreign Priority Information

of foreign priority claims: 0

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. 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) 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).

Data was not provided for this section.

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

Checking this box will cause the application to be examined under the first inventor to file provisions of the AIA.

☑ 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 2016, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization or Opt-Out of Authorization to Permit Access

When this Application Data Sheet is properly signed and filled 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 the 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.

Applicant Information

of applicants: 1

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.

1. **IngenioSpec, LLC**
4010 Moorpark Avenue, Suite 211
San Jose, CA 95117
UNITED STATES

Phone: 6519039200
Fax: 6509039800
Email: doug@ipventure.com

Applicant: Organization
Applicant type: Assignee

Assignee Information including Non-Applicant Assignee Information

of assignees: 0

An assignee-applicant identified in the "Applicant" section will appear on the patent application as an applicant.

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.

Data was not provided for this section.

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

Signature	First name	Last name	Registration #	Date
/C. Douglass Thomas/	C.	Thomas	32947	03/06/2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HOWELL et al.	Attorney Docket No.: IPVCP003X1C4X1C2
Application No.: Not Yet Assigned	Examiner: Not Yet Assigned
Filed: Herewith	Group: Not Yet Assigned
Title: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS	

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

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

Dear Sir:

The references listed in the attached PTO Form 1449 may be material to examination of the above-identified patent application. Applicants submit the list of these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application. The above-identified application is a Continuation of prior application U.S. Patent Application No. 18/375,893. This prior application is being relied upon for an earlier filing date under 35 U.S.C. § 120. Because the listed references (to the extent that copies are required) were either cited by the PTO, or submitted to the PTO in the prior application, under 37 CFR § 1.98(d) Applicants submit that copies need not be provided.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material

to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114.

Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
Registration No. 32,947

4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

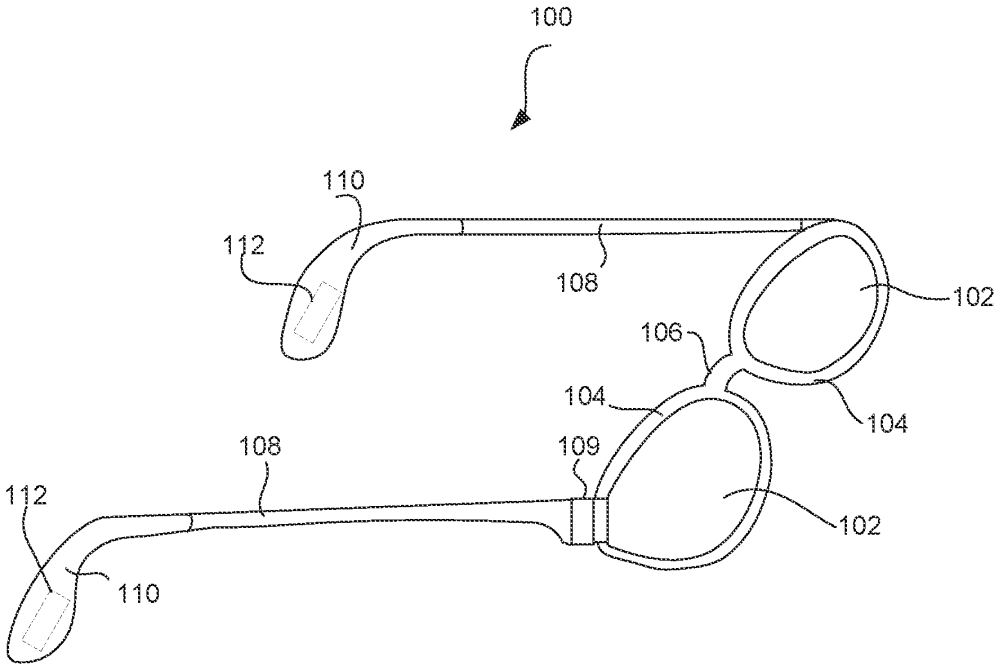


FIG. 1

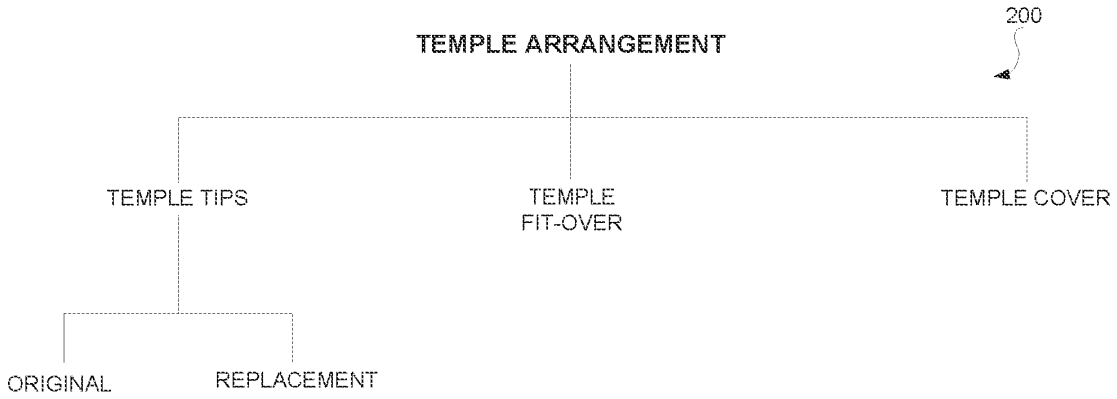

TEMPLE ARRANGEMENT
200
TEMPLE TIPS
TEMPLE FIT-OVER
TEMPLE COVER
ORIGINAL
REPLACEMENT

FIG. 2

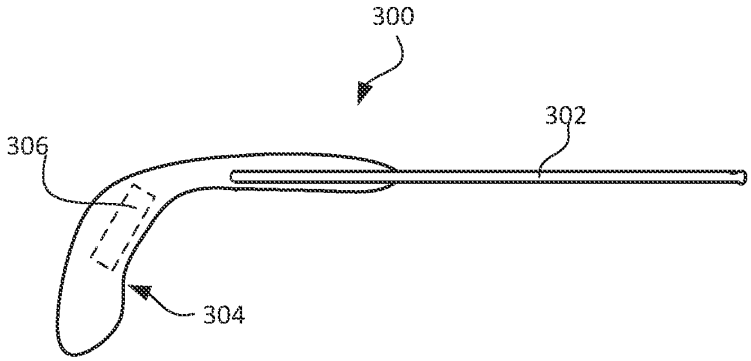


FIG. 3A

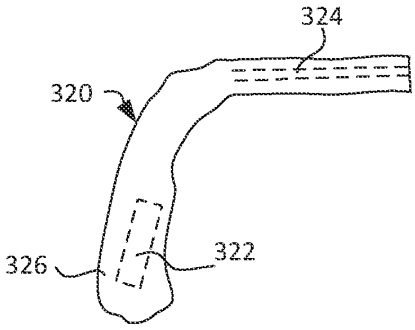


FIG. 3B

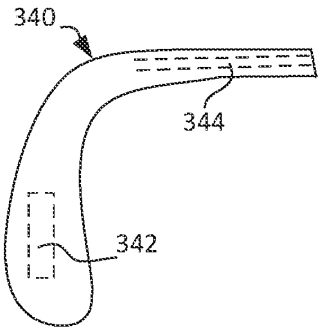


FIG. 3C

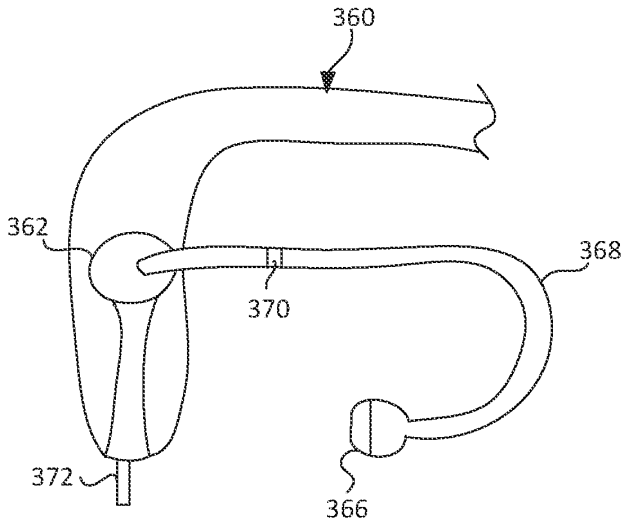


FIG. 3D

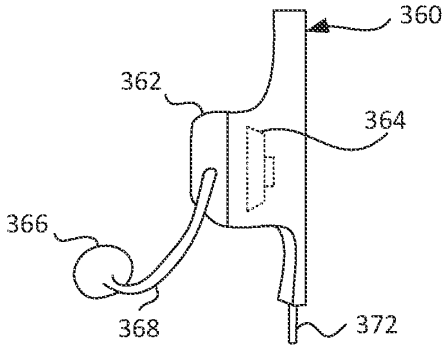


FIG. 3E

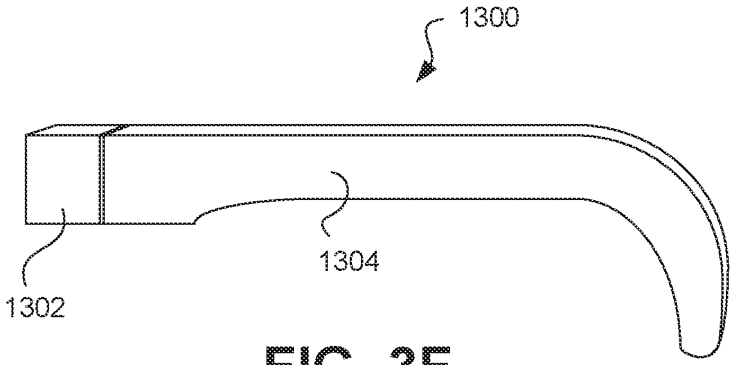


FIG. 3F

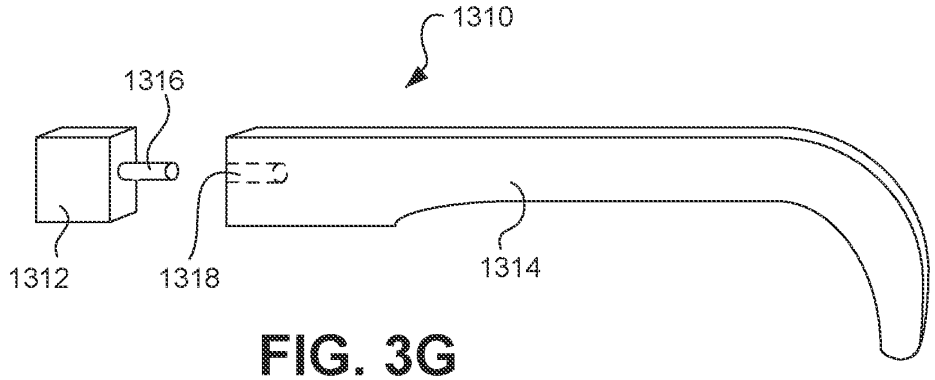


FIG. 3G

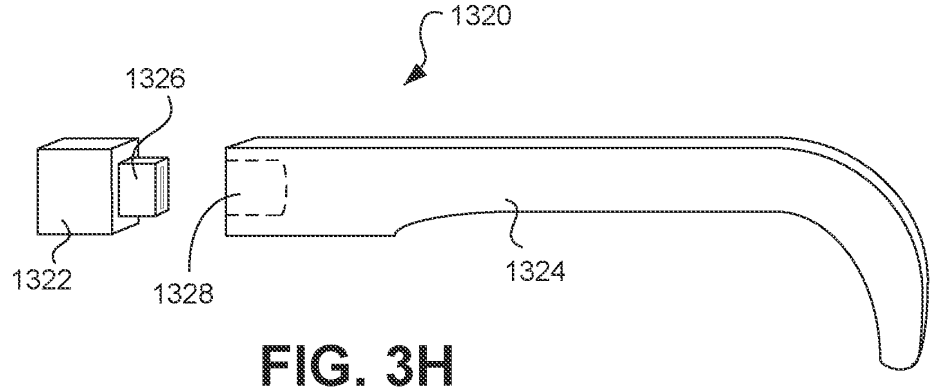


FIG. 3H

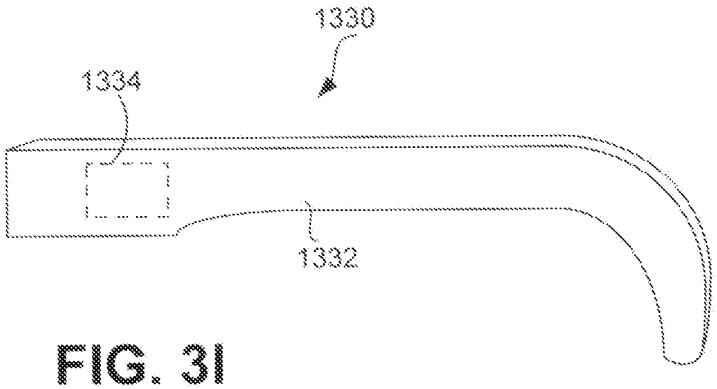


FIG. 3I

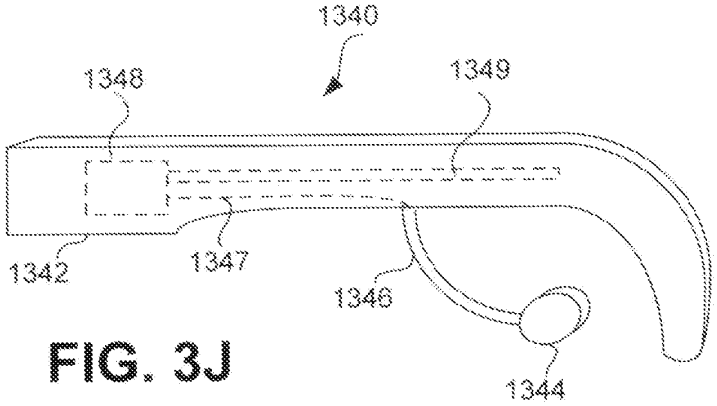


FIG. 3J

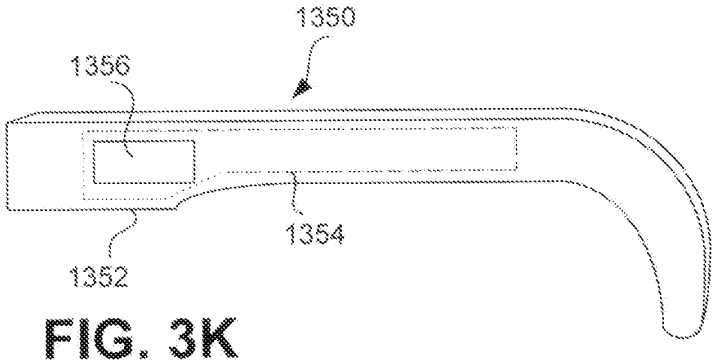


FIG. 3K

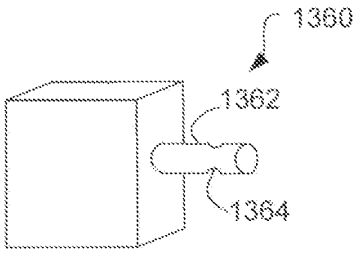


FIG. 3L

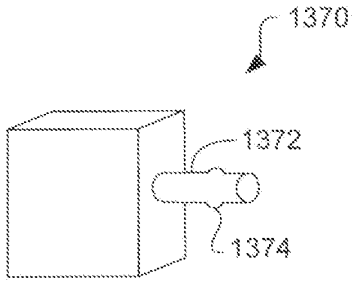


FIG. 3M

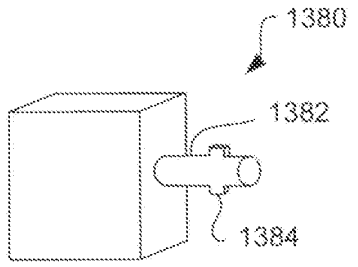


FIG. 3N

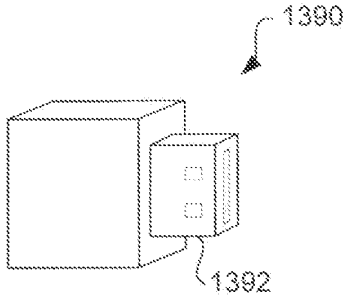


FIG. 3O

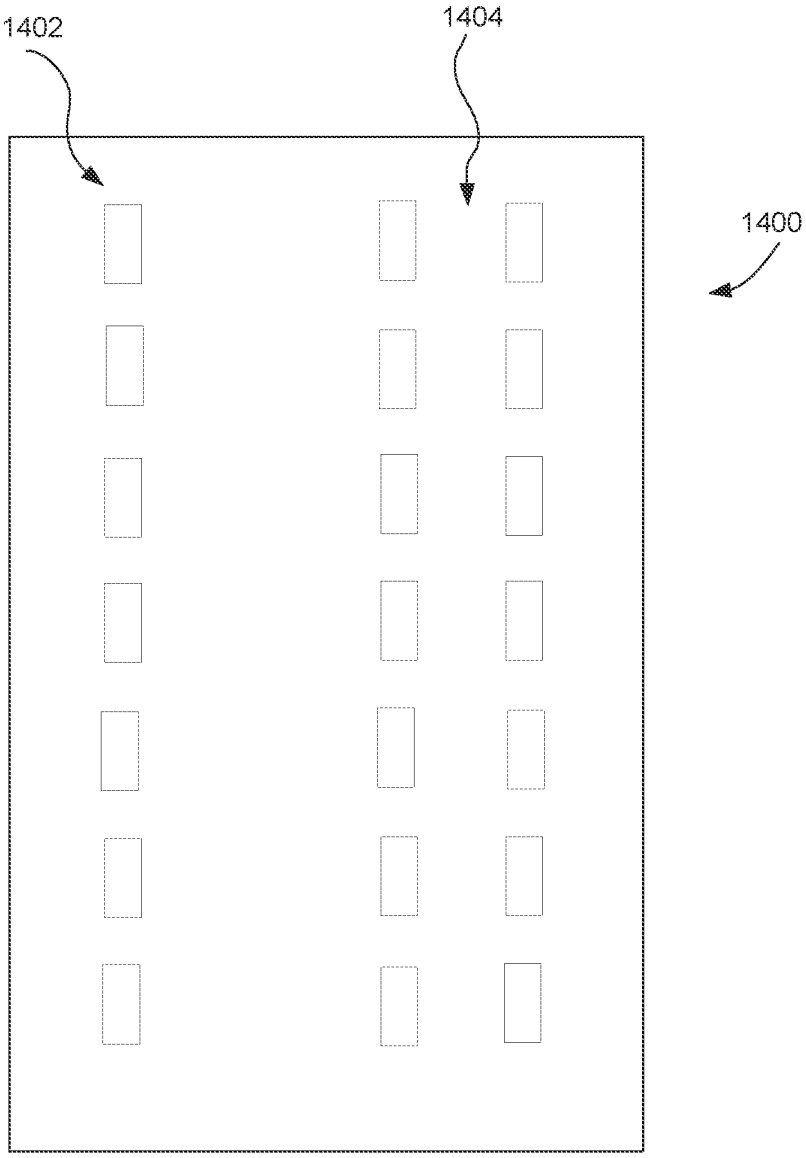


FIG. 3P

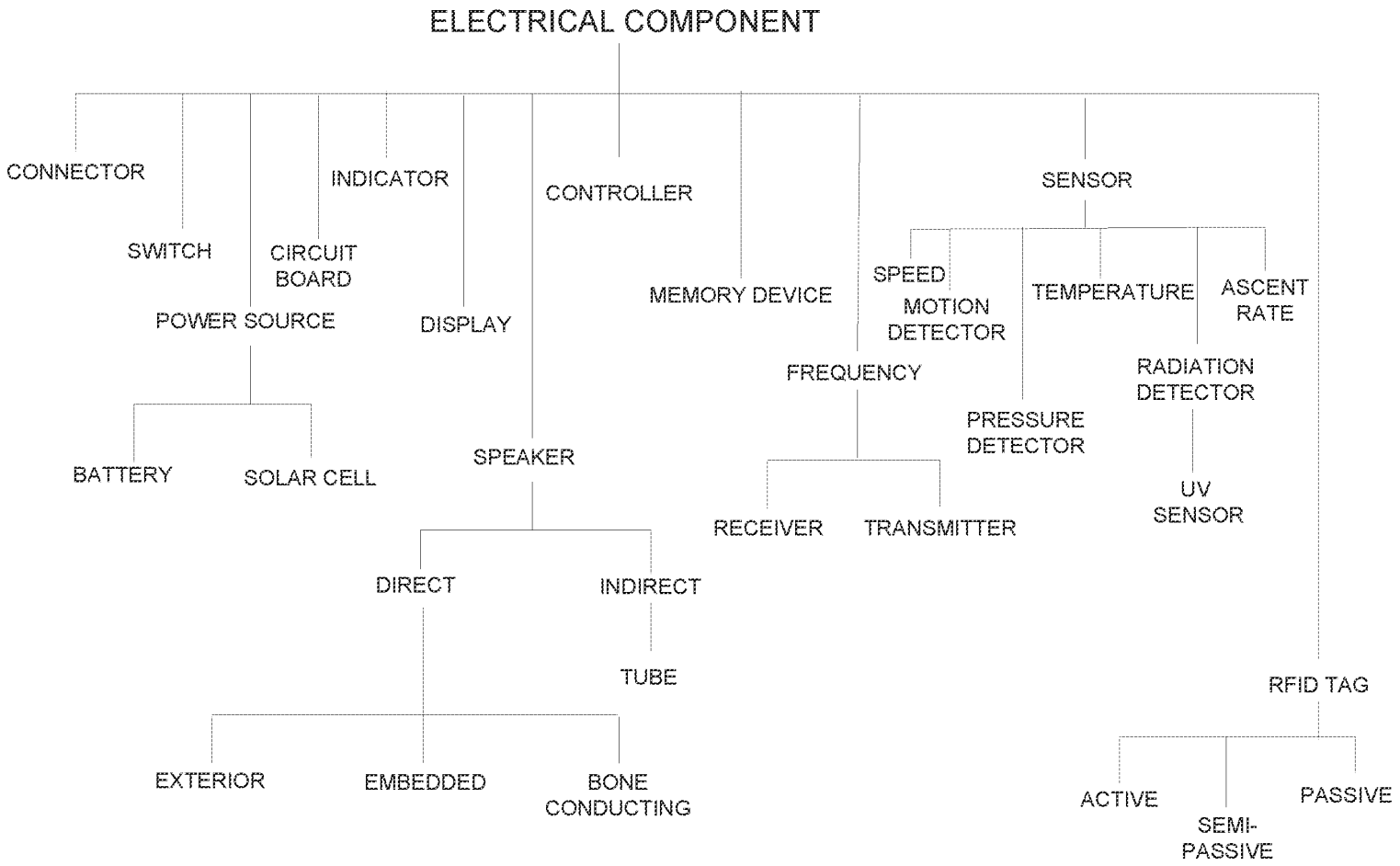


FIG. 4

Apple Inc. EX1002 Page 1122

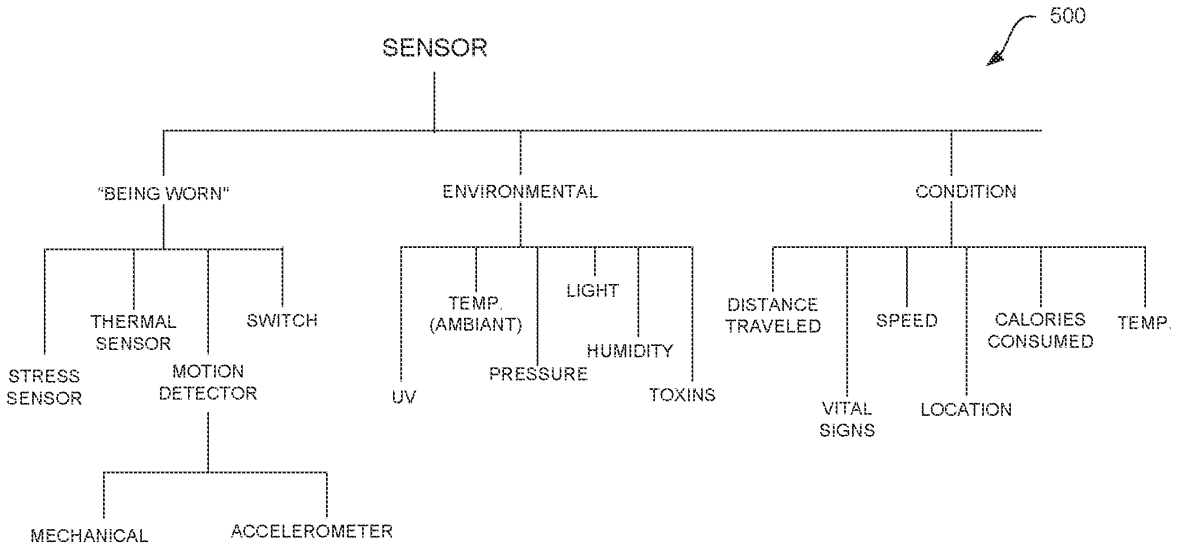

500
SENSOR
"BEING WORN"
ENVIRONMENTAL
CONDITION
STRESS SENSOR
THERMAL SENSOR
MOTION DETECTOR
SWITCH
MECHANICAL
ACCELEROMETER
UV
TEMP. (AMBIANT)
PRESSURE
LIGHT
HUMIDITY
TOXINS
DISTANCE TRAVELED
VITAL SIGNS
SPEED
LOCATION
CALORIES CONSUMED
TEMP.

FIG. 5

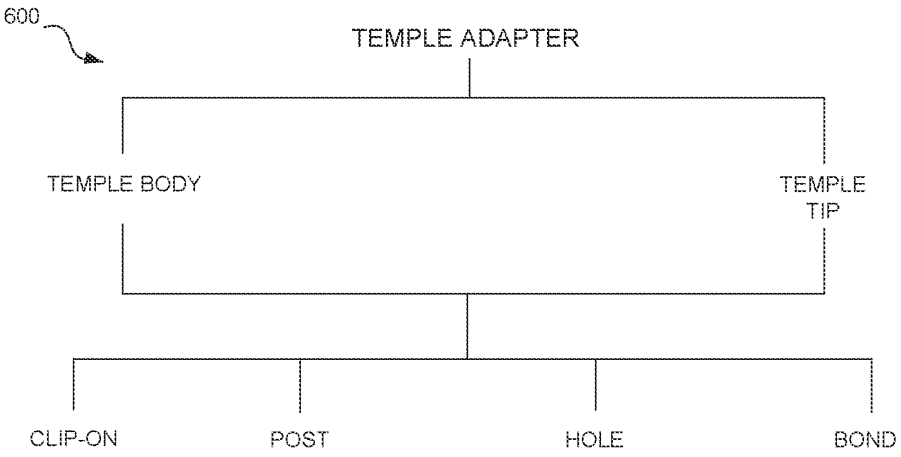

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TEMPLE ADAPTER
TEMPLE BODY
TEMPLE TIP
CLIP-ON
POST
HOLE
BOND

FIG. 6

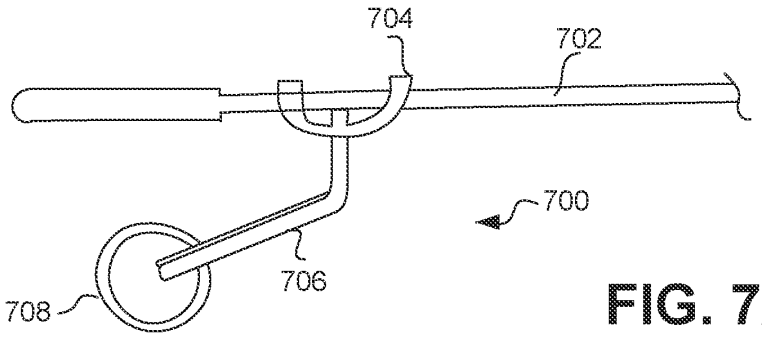


FIG. 7A

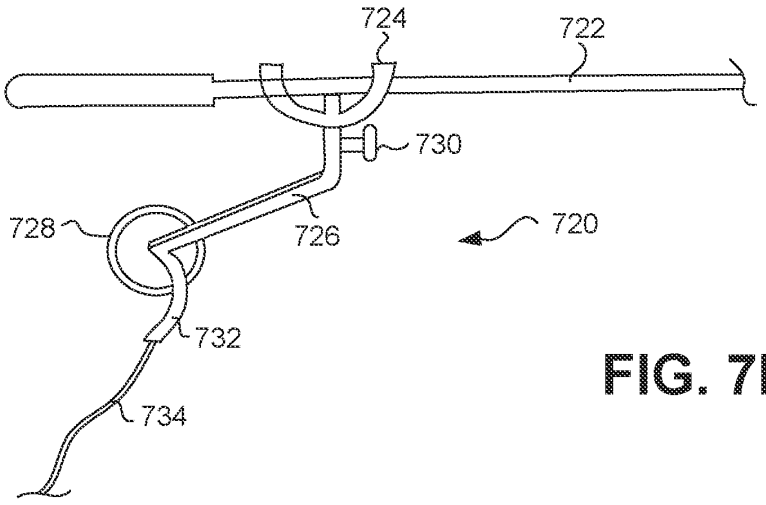


FIG. 7B

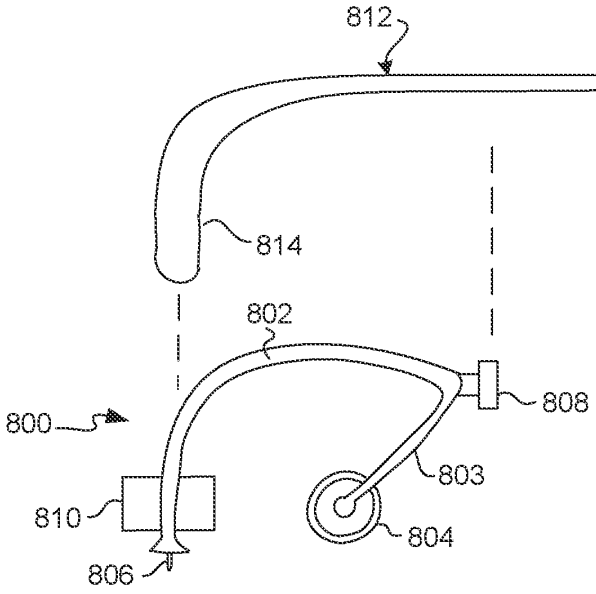


FIG. 8A

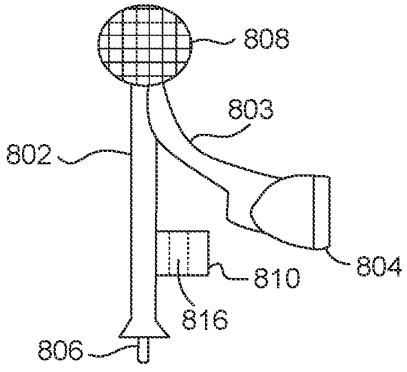


FIG. 8B

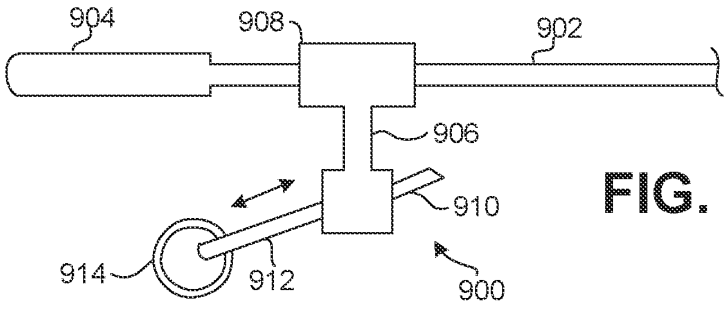


FIG. 9A

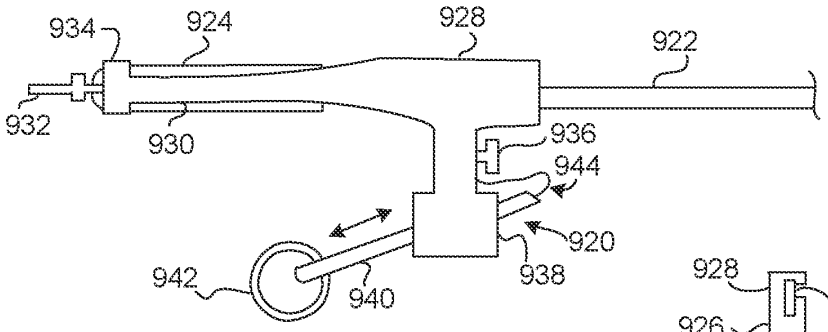


FIG. 9B

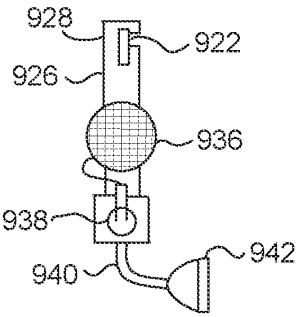


FIG. 9C

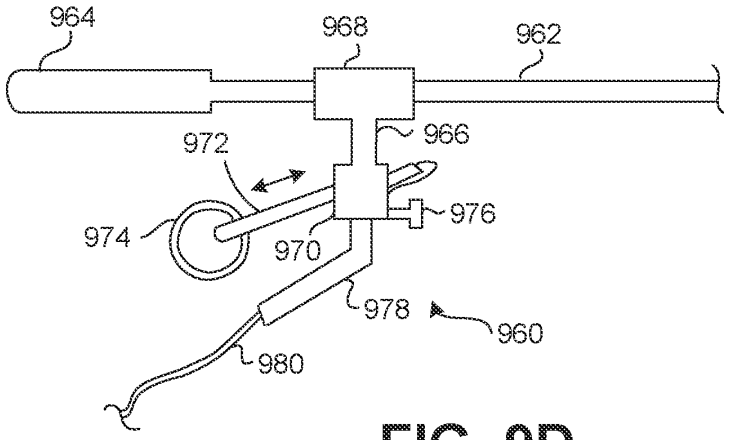


FIG. 9D

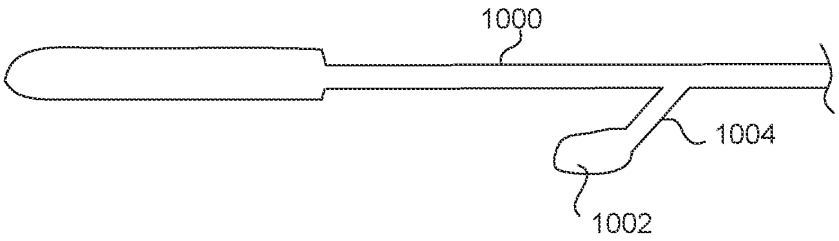


FIG. 10A

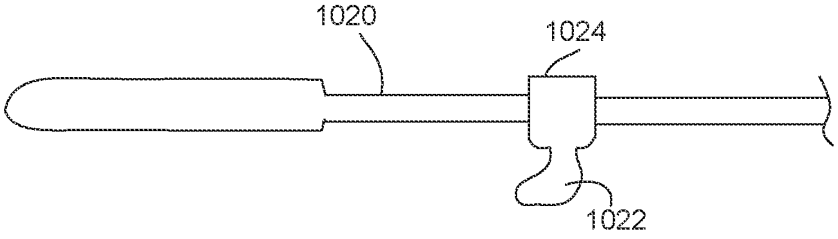


FIG. 10B

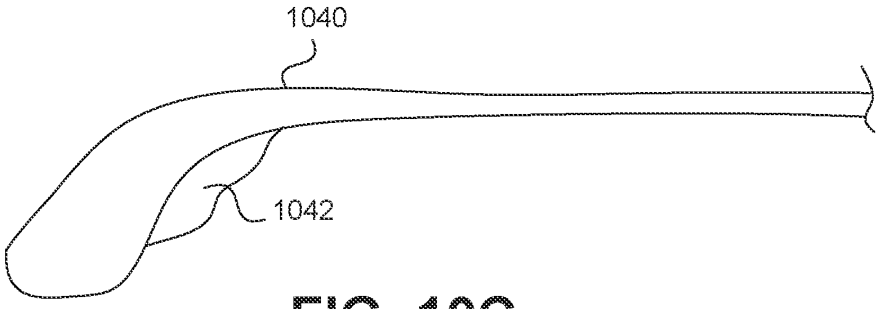


FIG. 10C

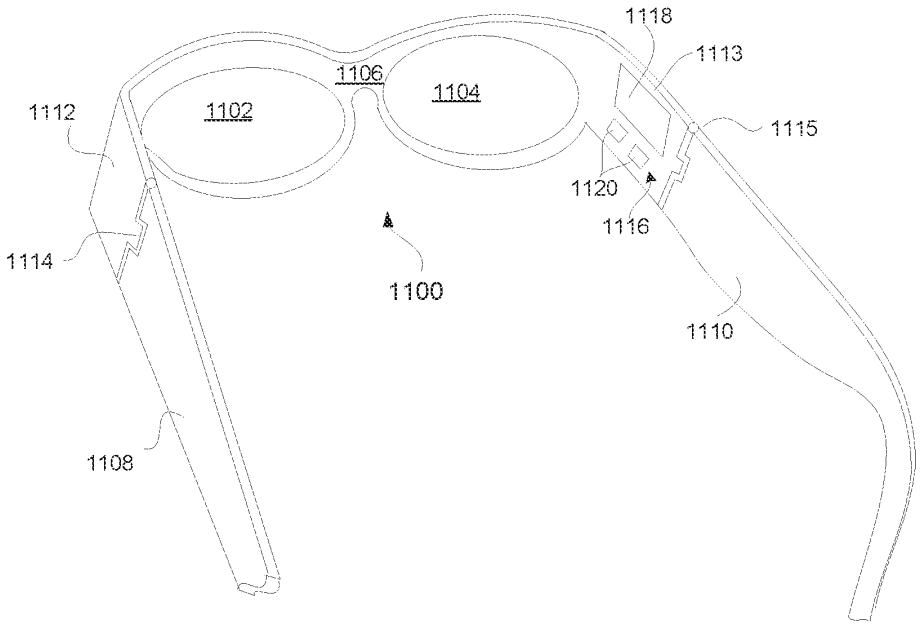

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FIG. 11A

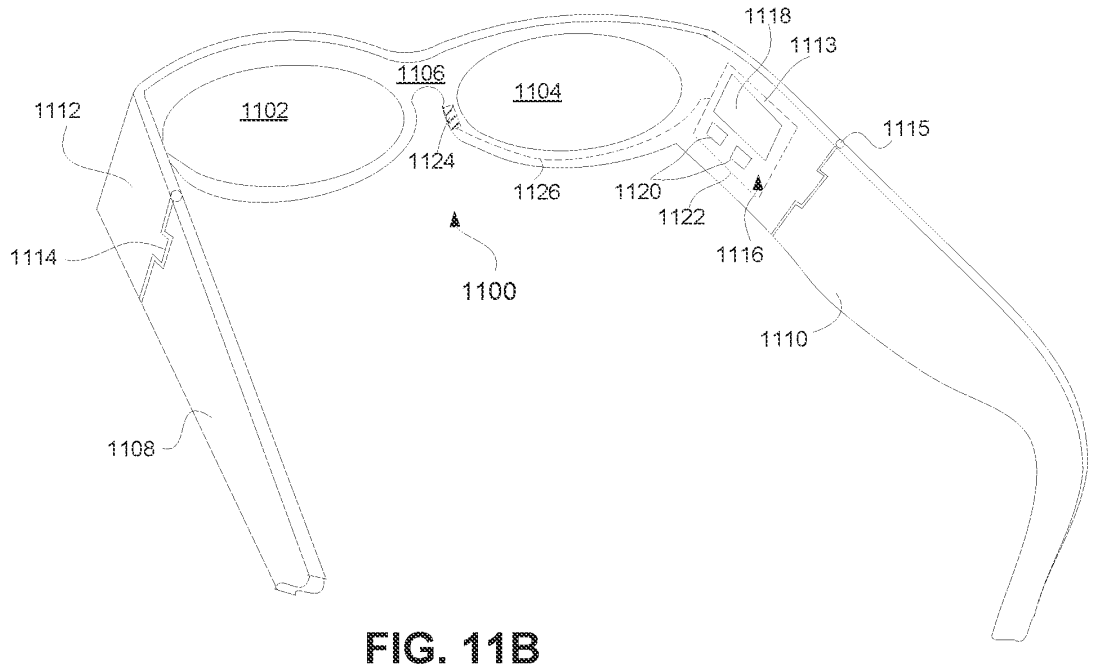

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FIG. 11B

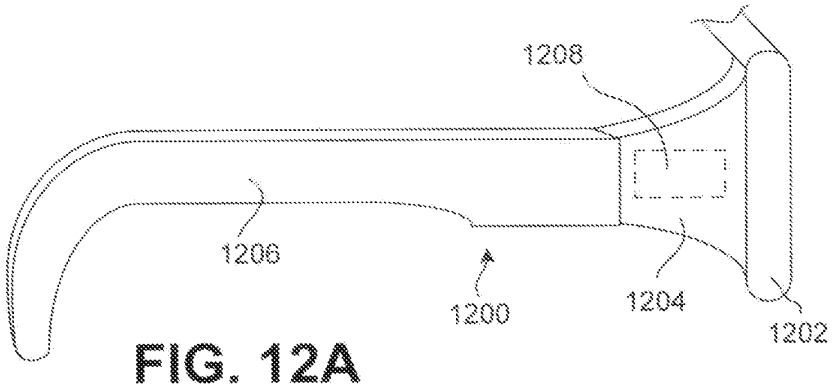


FIG. 12A

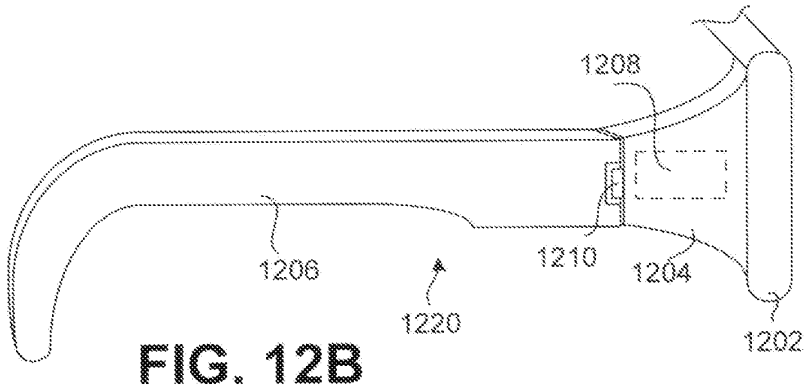


FIG. 12B

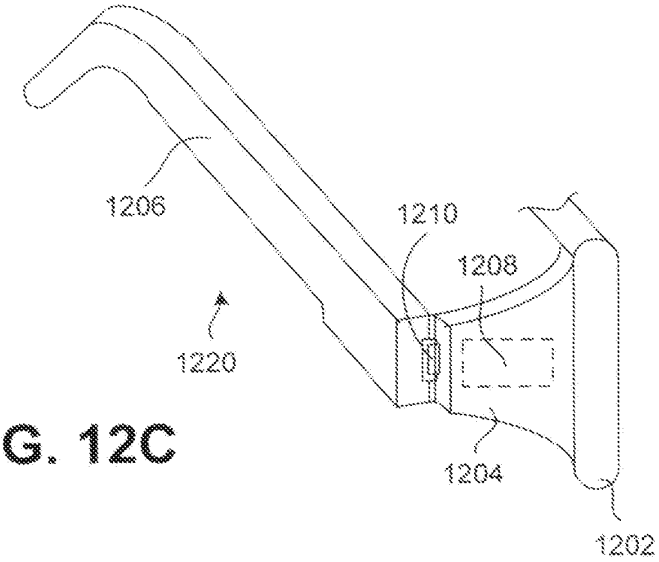


FIG. 12C

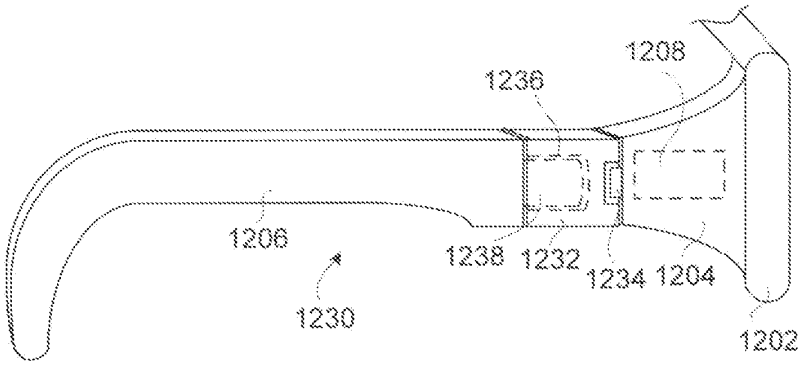


FIG. 12D

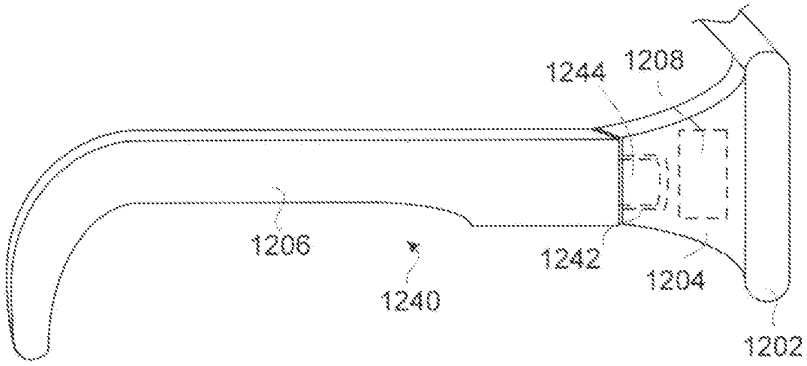


FIG. 12E

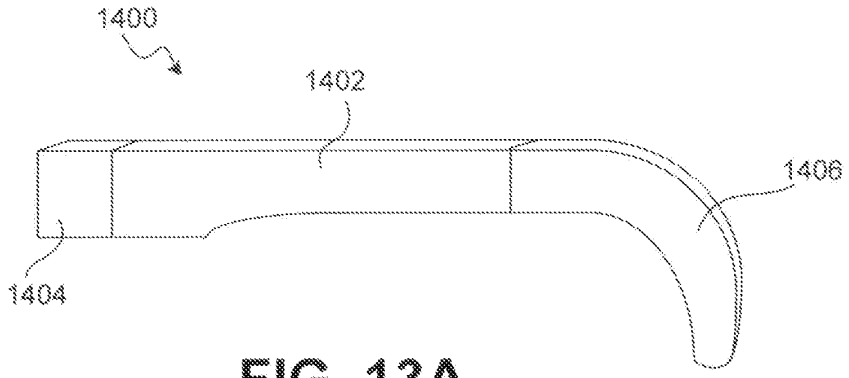


FIG. 13A

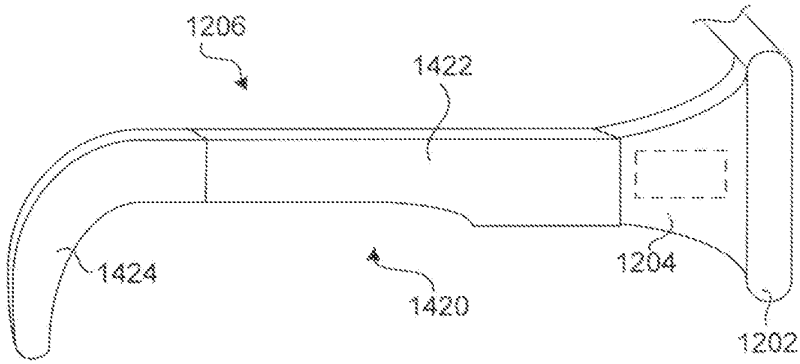


FIG. 13B

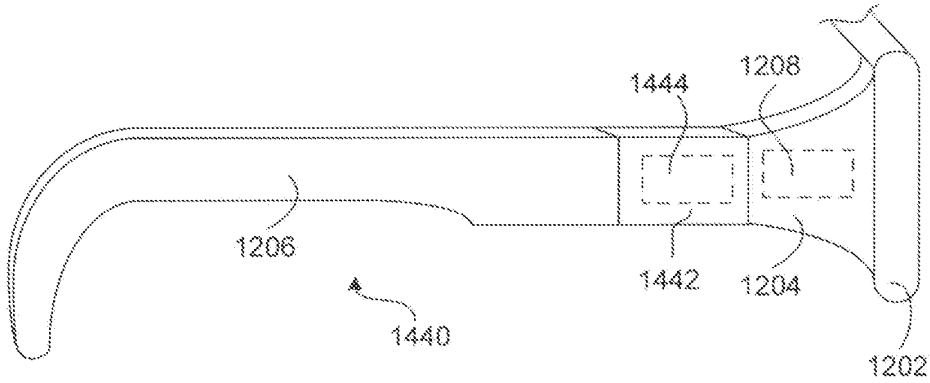


FIG. 13C

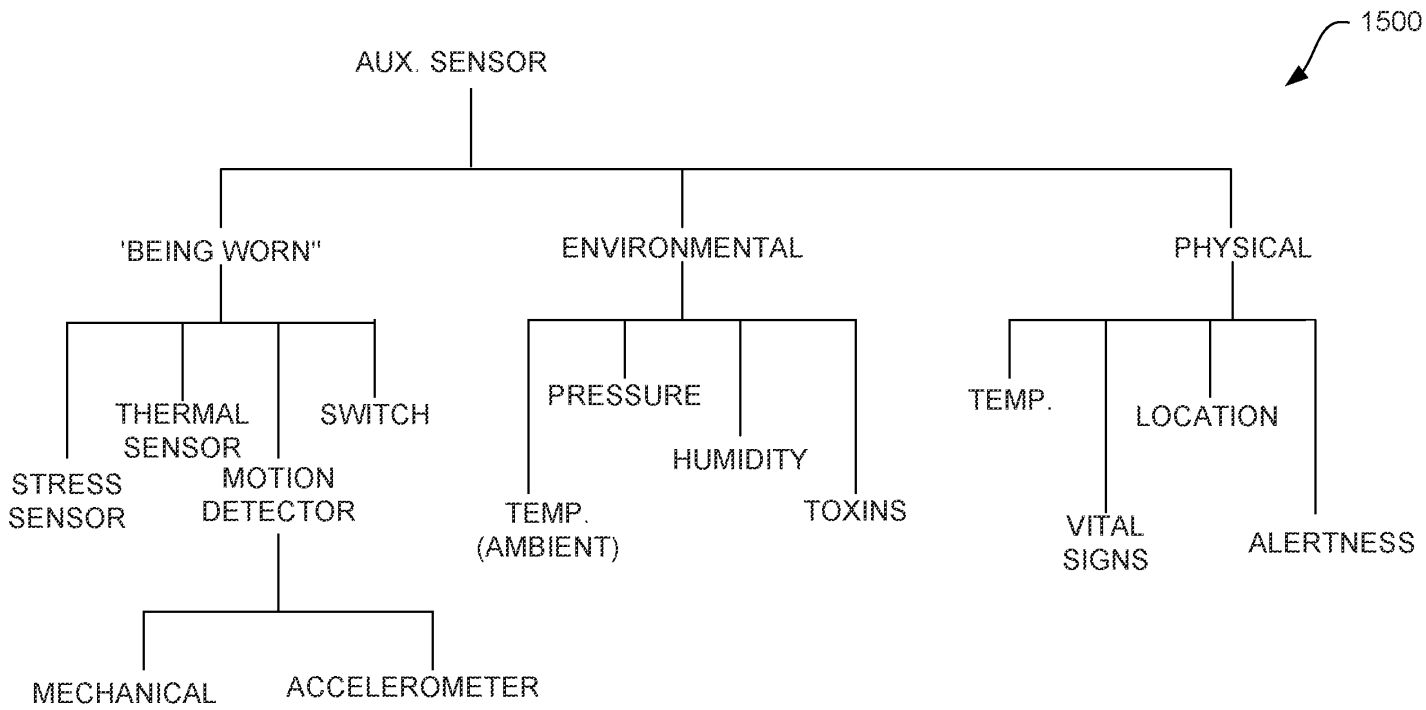


FIG. 14

Apple Inc. EX1002 Page 1134

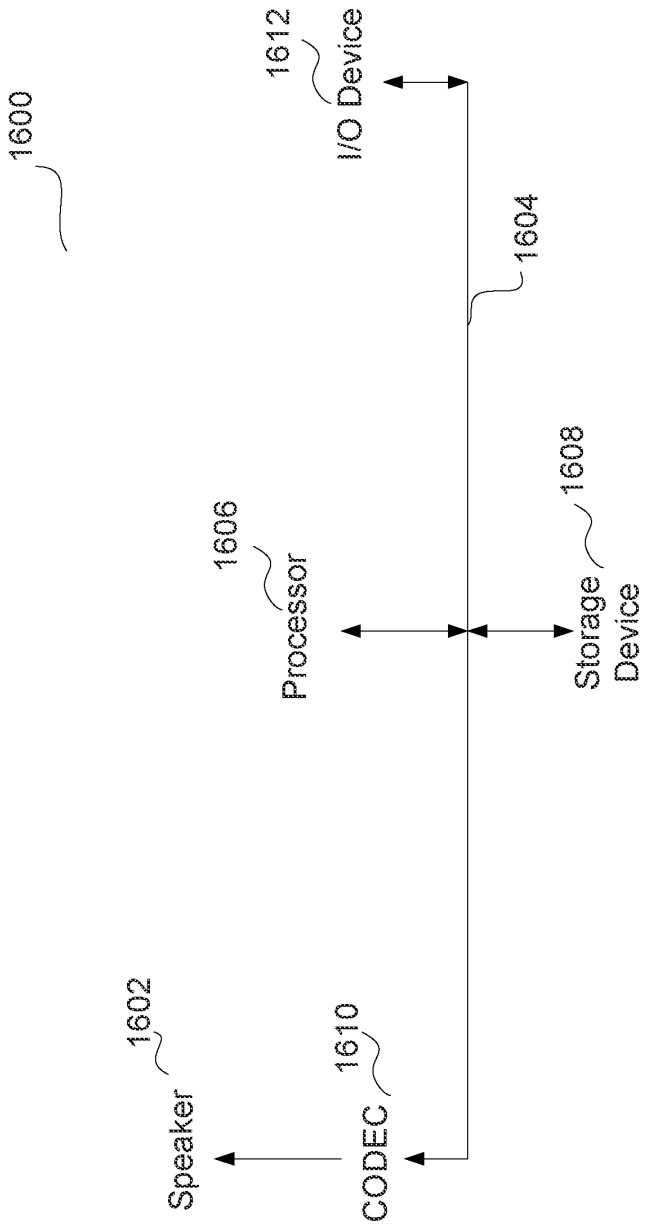

1600
1612
I/O Device
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Processor
1608
Storage Device
1602
Speaker
1610
CODEC

FIG. 15

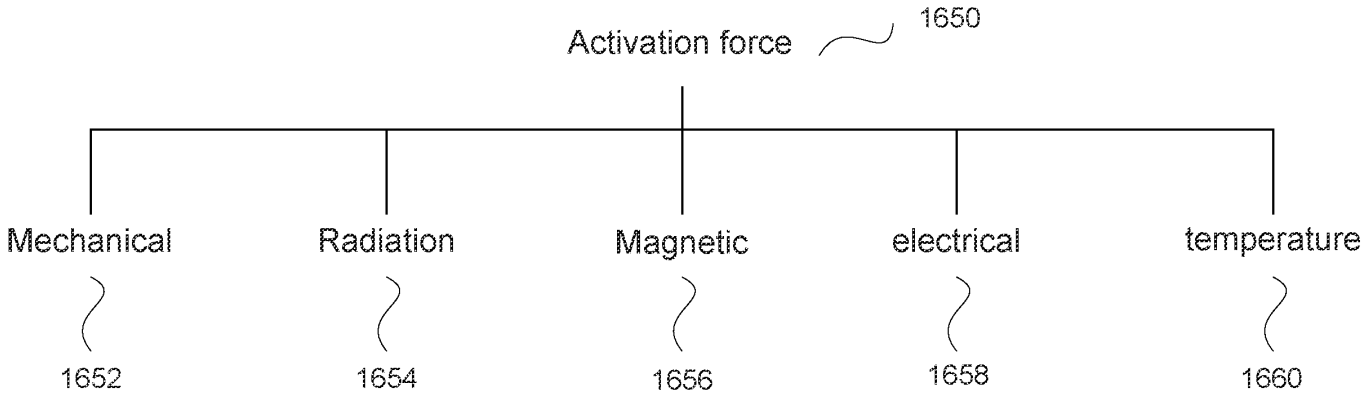


FIG. 16

Apple Inc. EX1002 Page 1136

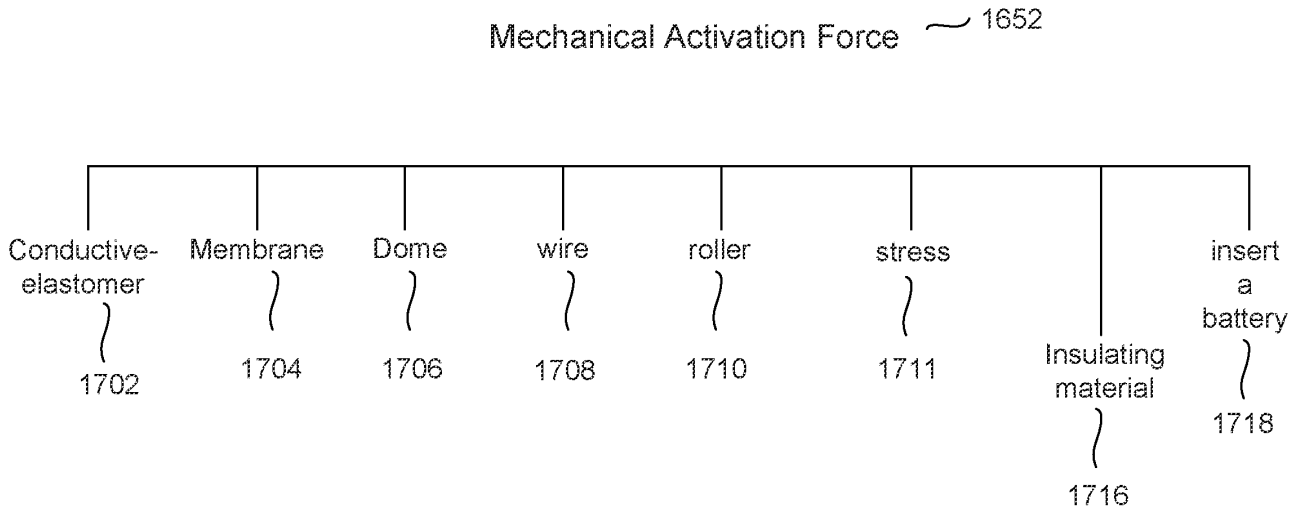


FIG. 17

Apple Inc. EX1002 Page 1137

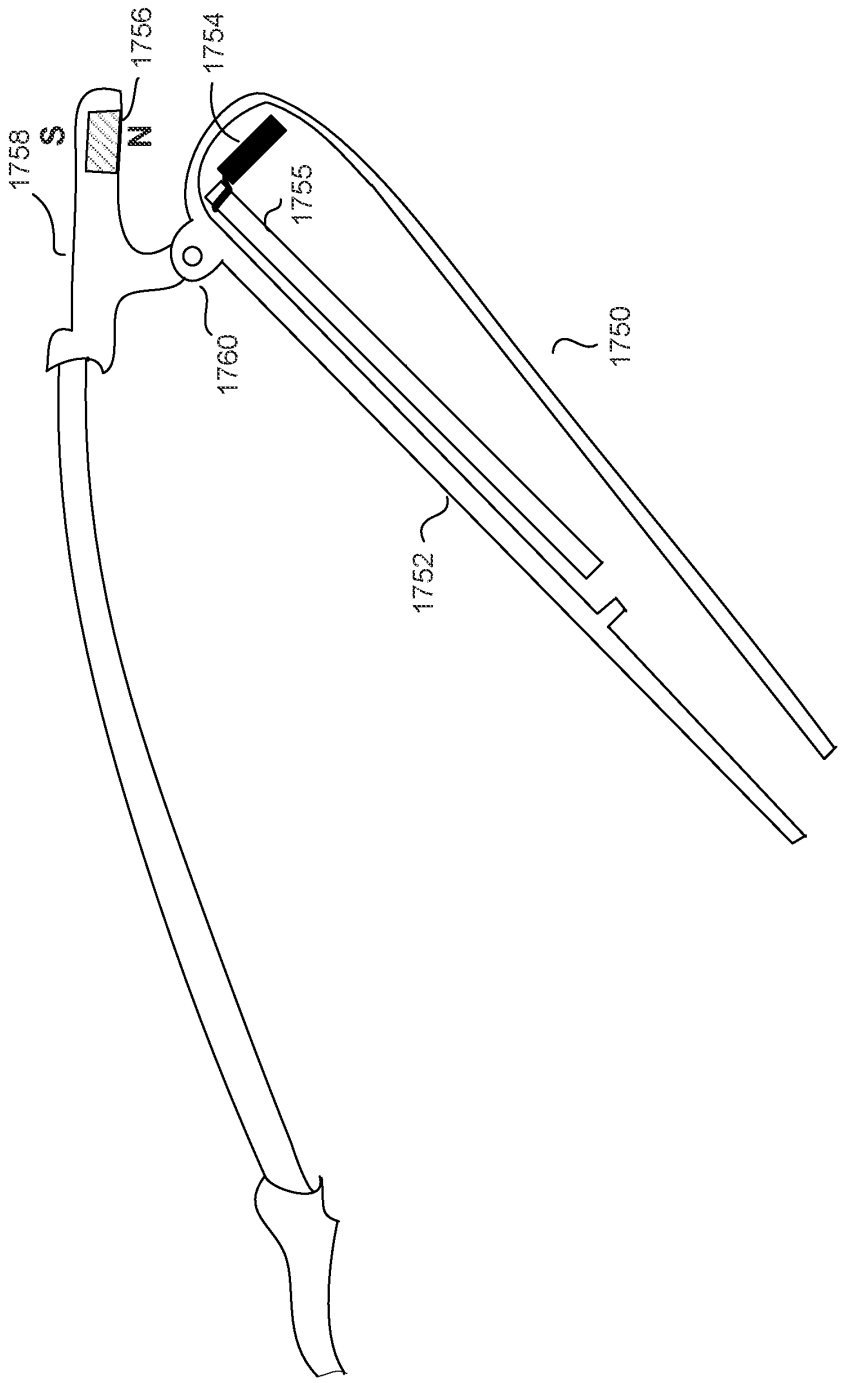


FIG. 18

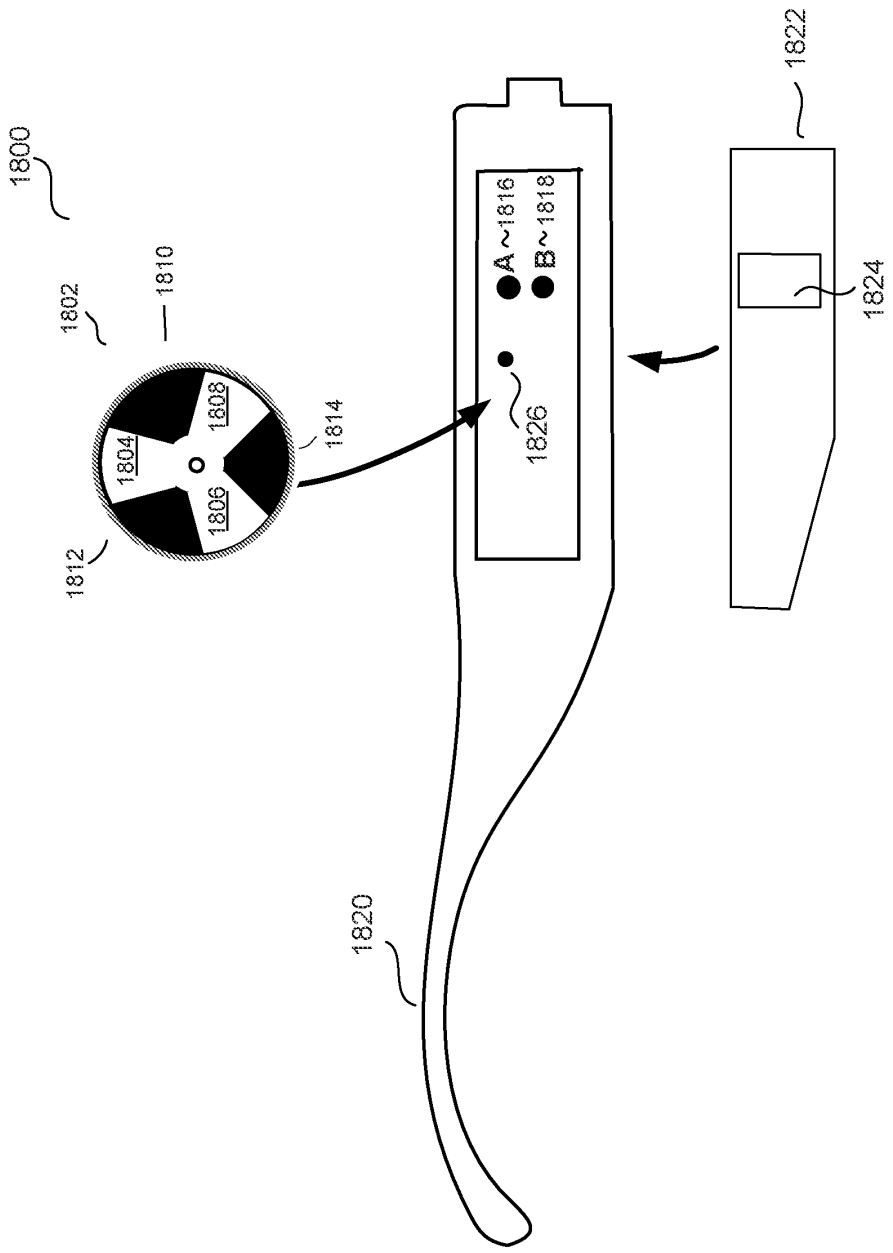

1800
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FIG. 19A

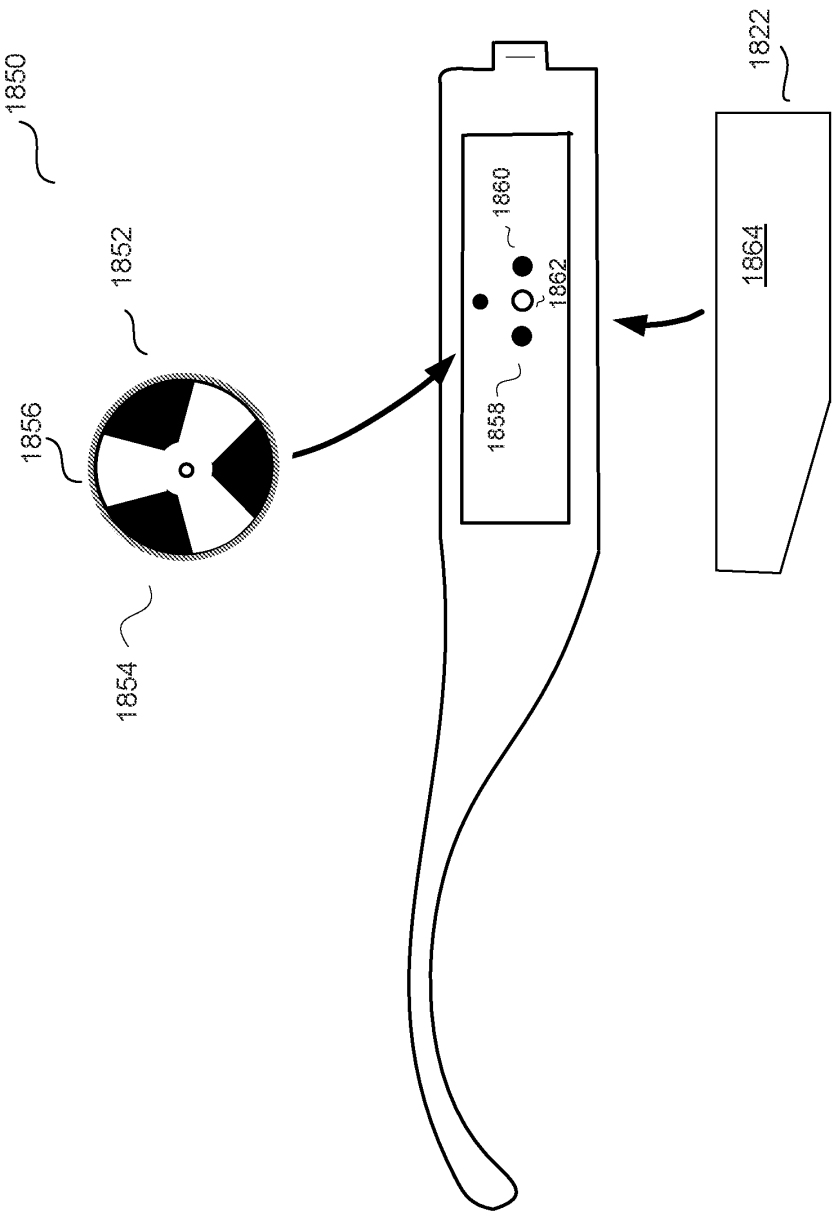


FIG. 19B

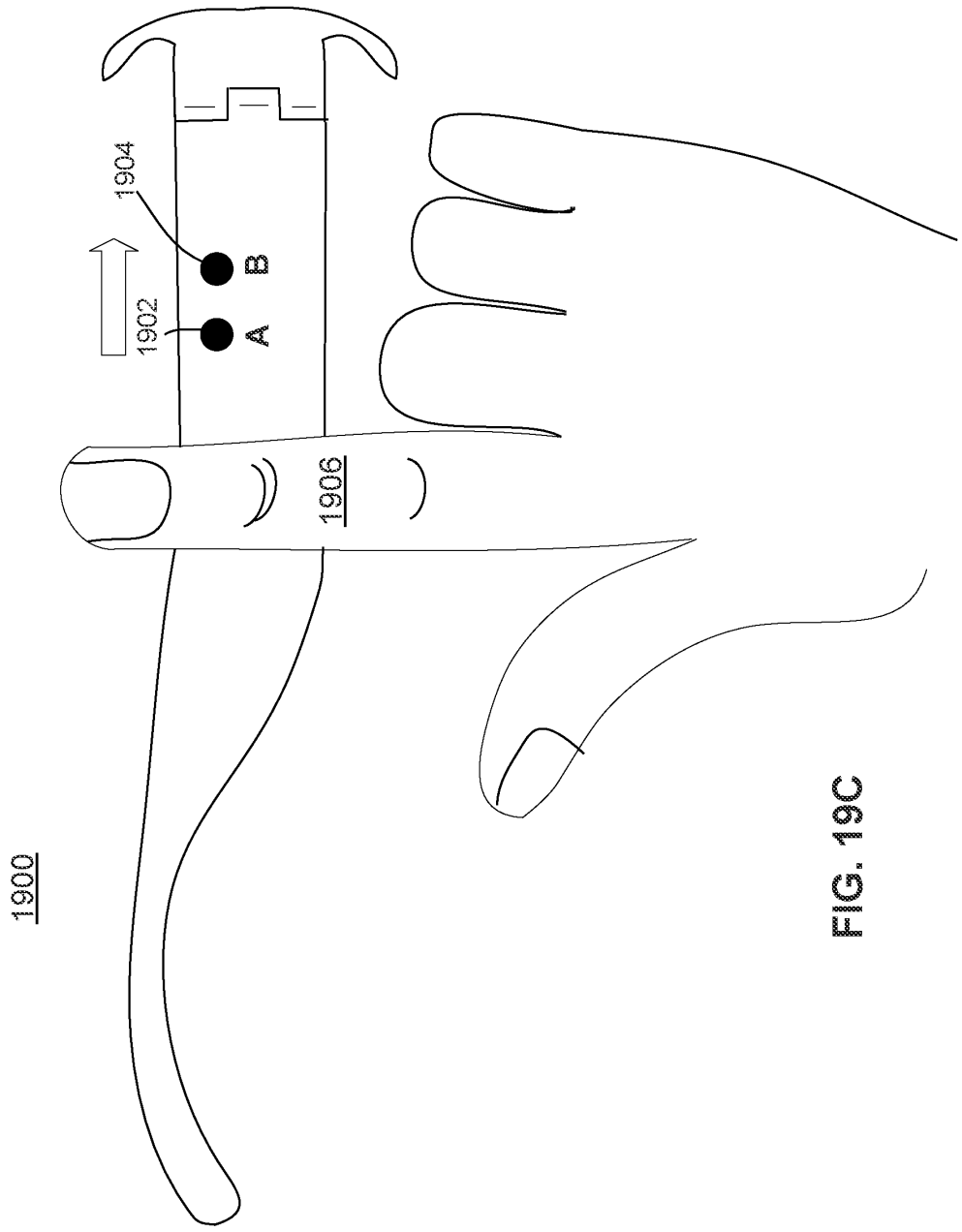


FIG. 19C

PTO/AIA/80 (07-17)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

[X] Practitioners associated with Customer Number: 34071

OR

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

Name	Registration Number	Name	Registration Number

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

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

[X] The address associated with Customer Number: 34071

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: IngenioSpec, LLC
4010 Moorpark Avenue
Suite 211
San Jose, CA 95051

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

SIGNATURE of Assignee of Record

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

Signature /C. Douglass Thomas/	Date March 6, 2024
Name C. Douglass Thomas	Telephone 650-903-9200, x103
Title Member	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 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.

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.

PTO/AIA/15 (10-17)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	IPVCP003X1C4X1C2
First Named Inventor	HOWELL et al.
Title	SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PER
Priority Mail Express® Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. [✓] **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. [ ] **Applicant asserts small entity status.** See 37 CFR 1.27
3. [ ] **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. [✓] **Specification** [*Total Pages* 79] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. [✓] **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 28]
6. **Inventor's Oath or Declaration** [*Total Pages* 4] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. [ ] Newly executed (original or copy)
   b. [✓] A copy from a prior application (37 CFR 1.63(d))
7. [✓] **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   [ ] Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. [ ] Computer Readable Form (CRF)
   b. [ ] Specification Sequence Listing on:
      i. [ ] CD-ROM or CD-R (2 copies); or
      ii. [ ] Paper
   c. [ ] Statements verifying identity of above copies

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

ACCOMPANYING APPLICATION PAPERS

10. [ ] **Assignment Papers** (cover sheet & document(s))
    Name of Assignee _____
11. [✓] **37 CFR 3.73(c) Statement** (*when there is an assignee*) [✓] **Power of Attorney**
12. [ ] **English Translation Document** (*if applicable*)
13. [✓] **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    [ ] Copies of citations attached
14. [ ] **Preliminary Amendment**
15. [ ] **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. [ ] **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
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18. [ ] **Other:** _____

*Note: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
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Name (Print/Type)	C. Douglass Thomas	Registration No. (Attorney/Agent)	32947

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SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 18/375,893, filed October 2, 2023, and entitled "SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS," which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 16/182,969, filed November 7, 2018, and entitled "EYEWEAR HOUSING FOR CHARGING EMBEDDED BATTERY IN EYEWEAR FRAME" which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 16/127,957, now U.S. Patent No. 11,086,147, filed September 11, 2018, and entitled "EYEWEAR SUPPORTING ELECTRICAL COMPONENTS AND APPARATUS THEREFOR" which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 14/715,501, now U.S. Patent No. 10,330,956, filed May 18, 2015, and entitled "EYEWEAR SUPPORTING ELECTRICAL COMPONENTS AND APPARATUS THEREFOR" which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 13/367,346, filed February 6, 2012, now U.S. Patent No. 9,033,493, and entitled "EYEWEAR SUPPORTING ELECTRICAL COMPONENTS AND APPARATUS THEREFOR" which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 12/462,286, filed July 31, 2009, now U.S. Patent No. 8,109,629, and entitled "EYEWEAR SUPPORTING ELECTRICAL COMPONENTS AND APPARATUS THEREFOR" which is incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 11/580,222, filed October 11, 2006, now U.S. Patent No. 7,581,833, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS" which is hereby incorporated herein by reference.

[0002] This application and U.S. Patent Application No. 11/580,222 references U.S. Patent Application No. 11/183,269, filed July 15, 2005, now U.S. Patent No. 7,922,321, and entitled "EYEGLASSES SUPPORTING AFTER MARKET ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference, which references U.S. Patent Application No. 10/964,011, filed October 12, 2004, now U.S. Patent No. 7,192,136, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES" which is hereby incorporated herein by reference, which in turn references each of: (i) U.S. Provisional Patent Application No. 60/509,631, filed October 9, 2003, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/527,565, filed December 8, 2003, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," which is hereby incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/562,798, filed April 15, 2004, entitled "EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM," and which is hereby incorporated herein by reference; (iv) U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," and which is hereby incorporated herein by reference; (v) U.S. Provisional Patent Application No. 60/592,045, filed July 28, 2004, entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," and which is hereby incorporated herein by reference; and (vi) U.S. Provisional Patent Application No. 60/605,191, filed August 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," and which is hereby incorporated herein by reference.

[0003] This application and U.S. Patent Application No. 11/580,222 also claim priority to each of: (i) U.S. Provisional Patent Application No. 60/725,999, filed October 11, 2005, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/725,896, filed October 11, 2005, and entitled "EYEGLASSES WITH ELECTRICAL COMPONENTS," which is hereby

incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/787,850, filed April 1, 2006, and entitled "EYEGLASSES WITH A HEART RATE MONITOR," which is hereby incorporated herein by reference; and (iv) U.S. Provisional Patent Application No. 60/846,150, filed September 20, 2006, and entitled "EYEGLASSES WITH ACTIVITY MONITORING," which is hereby incorporated herein by reference.

[0004] This application, by way of U.S. Patent Application No. 16/182,969, is a continuation of U.S. Patent Application No. 16/049,120, filed July 30, 2018, and entitled "EYEWEAR SUPPORTING EMBEDDED ELECTRONIC COMPONENTS," which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 15/375,423, filed December 12, 2016, and entitled "EYEWEAR SUPPORTING EMBEDDED ELECTRONIC COMPONENTS," which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 14/557,409, filed December 1, 2014, and entitled "EYEWEAR SUPPORTING EMBEDDED ELECTRONIC COMPONENTS," now U.S. Patent No. 9,547,184, which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 13/955,336, filed July 31, 2013, and entitled "EYEWEAR SUPPORTING BONE CONDUCTING SPEAKER," now U.S. Patent No. 8,905,542, which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No 13/085,402, filed April 12, 2011, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS," now U.S. Patent No. 8,500,271, which is hereby incorporated herein by reference, which in turn references U.S. Patent Application No. 11/183,269, filed July 15, 2005, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS," now U.S. Patent No. 7,922,321, which is hereby incorporated herein by reference, which in turn references U.S. Patent Application No. 10/964,011, filed October 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," now U.S. Patent No. 7,192,136, which in turn references each of: (i) U.S. Provisional Patent Application No. 60/509,631, filed October 9, 2003, and entitled "TETHERED ELECTRICAL COMPONENTS

FOR EYEGLASSES," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/527,565, filed December 8, 2003, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," which is hereby incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/562,798, filed April 15, 2004, entitled "EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM," which is hereby incorporated herein by reference; (iv) U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," which is hereby incorporated herein by reference; and (v) U.S. Provisional Patent Application No. 60/592,045, filed July 28, 2004, entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," which is hereby incorporated herein by reference; and (vi) U.S. Provisional Patent Application No. 60/605,191, filed August 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," which is hereby incorporated herein by reference.

[0005] This application, by way of U.S. Patent Application No. 11/183,269, also references each of: (i) U.S. Provisional Patent Application No. 60/592,045, filed July 28, 2004, entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/605,191, filed August 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," which is hereby incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/618,107, filed October 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (iv) U.S. Provisional Patent Application No. 60/620,238, filed October 18, 2004, entitled "EYEGLASSES WITH HEARING ENHANCED AND OTHER AUDIO SIGNAL-GENERATING CAPABILITIES," which is hereby incorporated herein by reference; (v) U.S. Provisional Patent Application No. 60/647,836, filed January 31, 2005, and entitled "EYEGLASSES WITH HEART RATE MONITOR," which is hereby incorporated herein by reference; and (vi) U.S. Provisional Patent Application No. 60/647,826, filed

January 31, 2005, and entitled "EYEWEAR WITH ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference.

[0006] This application, by way of U.S. Patent Application No. 16/182,969, is a continuation of U.S. Patent Application No. 15/409,723, filed January 19, 2017, and entitled "EYEWEAR HOUSING FOR CHARGING EMBEDDED BATTERY IN EYEWEAR FRAME" which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 13/831,512, filed March 14, 2013, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS" which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 12/806,312, filed August 10, 2010, and entitled "EYEWEAR WITH MULTI-PART TEMPLE FOR SUPPORTING ONE OR MORE ELECTRICAL COMPONENTS" (now U.S. Patent No. 8,465,151) which is hereby incorporated herein by reference, which in turn is a continuation-in-part of U.S. Patent Application No. 12/462,286, filed July 31, 2009, and entitled "EYEWEAR SUPPORTING ELECTRICAL COMPONENTS AND APPARATUS THEREFOR" (now U.S. Patent No. 8,109,629) which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 11/580,222, filed October 11, 2006, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS" (now U.S. Patent No. 7,581,833) which is hereby incorporated herein by reference.

[0007] This application, by way of U.S. Patent Application No. 10/964,011, also references each of: (i) U.S. Provisional Patent Application No. 60/509,631, filed October 9, 2003, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/527,565, filed December 8, 2003, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," which is hereby incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/562,798, filed April 15, 2004, entitled "EYEWEAR WITH ULTRAVIOLET DETECTION SYSTEM," and which is hereby incorporated herein by reference; (iv) U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR,

AND METHODS THEREFOR," and which is hereby incorporated herein by reference; (v) U.S. Provisional Patent Application No. 60/592,045, filed July 28, 2004, entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," and which is hereby incorporated herein by reference; and (vi) U.S. Provisional Patent Application No. 60/605,191, filed August 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," and which is hereby incorporated herein by reference.

[0008] This application via U.S. Patent Application No. 12/806,312 is also a continuation-in-part of U.S. Patent Application No. 12/317,043, filed December 18, 2008, and entitled "EYEGLASSES WITH MONITORING CAPABILITY," (now U.S. Patent No. 7,771,046) which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 12/214,435, filed June 19, 2008, and entitled "EYEGLASSES WITH USER MONITORING," (now U.S. Patent No. 7,481,531), which is hereby incorporated herein by reference, which in turn is a continuation of U.S. Patent Application No. 11/891,411, filed August 9, 2007, and entitled "EYEGLASSES WITH ACTIVITY MONITORING" (now U.S. Patent No. 7,401,918), which is hereby incorporated herein by reference, which in turn references U.S. Patent Application No. 11/183,276, filed July 15, 2005, and entitled "EYEGLASSES WITH ACTIVITY MONITORING" (now U.S. Patent No. 7,255,437), which is hereby incorporated herein by reference, which in turn references U.S. Patent Application No. 10/964,011, filed October 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES" (now U.S. Patent No. 7,192,136), which is hereby incorporated herein by reference.

[0009] This application via U.S. Patent Application No. 11/183,276 also references each of: (i) U.S. Provisional Patent Application No. 60/592,045, filed July 28, 2004, entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," and which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/605,191, filed August 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," and which is hereby incorporated herein by reference; (iii) U.S. Provisional Patent Application No. 60/618,107, filed October 12, 2004, and entitled

"TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (iv) U.S. Provisional Patent Application No. 60/620,238, filed October 18, 2004, entitled "EYEGLASSES WITH HEARING ENHANCED AND OTHER AUDIO SIGNAL-GENERATING CAPABILITIES," and which is hereby incorporated herein by reference; (v) U.S. Provisional Patent Application No. 60/647,836, filed January 31, 2005, and entitled "EYEGLASSES WITH HEART RATE MONITOR," which is hereby incorporated herein by reference; and (vi) U.S. Provisional Patent Application No. 60/647,826, filed January 31, 2005, and entitled "EYEWEAR WITH ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference.

[0010] This application via U.S. Patent Application No. 12/806,312 also references U.S. Patent Application No. 10/822,218, filed April 12, 2004, and entitled "EYEGLASSESS FOR WIRELESS COMMUNCIATIONS," (now U.S. Patent No. 7,792,552, which is hereby incorporated herein by reference, which in turn references each of: (i) U.S. Provisional Patent Application No. 60/462,591, filed April 15, 2003, and entitled "EYEGLASSES FOR WIRELESS COMMUNICATION," which is hereby incorporated herein by reference; (ii) U.S. Provisional Patent Application No. 60/509,631, filed October 9, 2003, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; and (iii) U.S. Provisional Patent Application No. 60/527,565, filed December 8, 2003, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," which is hereby incorporated herein by reference.

[0011] In addition, this application is related to each of: (i) U.S. Patent Application 10/822,218, filed April 12, 2004, and entitled "EYEGLASSES FOR WIRELESS COMMUNICATIONS," which is hereby incorporated herein by reference; (ii) U.S. Patent Application No. 10/964,011, filed October 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (iii) U.S. Patent Application No. 11/006,343, filed December 7, 2004, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," (now U.S.

Patent No. 7,116,976) which is hereby incorporated herein by reference; (iv) U.S. Patent Application No. 11/078,855, filed March 11, 2005, and entitled "EYEWEAR WITH RADIATION DETECTION SYSTEM," (now U.S. Patent No. 7,500,746) which is hereby incorporated herein by reference; (v) U.S. Patent Application No. 11/078,857, filed March 11, 2005, and entitled "RADIATION MONITORING SYSTEM," which is hereby incorporated herein by reference; (vi) U.S. Patent Application No. 11/183,283, filed July 15, 2005, and entitled "EVENT EYEGLASSES," which is hereby incorporated herein by reference; (vii) U.S. Patent Application No. 11/183,262, filed July 15, 2005, and entitled "EYEGLASSES WITH HEARING ENHANCED AND OTHER AUDIO SIGNAL-GENERATING CAPABILITIES," (now U.S. Patent No. 7,760,898) which is hereby incorporated herein by reference; (viii) U.S. Patent Application No. 11/183,256, filed July 15, 2005, and entitled "EYEGLASSES WITH ELECTRICAL COMPONENTS," (now U.S. Patent No. 7,500,747) which is hereby incorporated herein by reference; (ix) U.S. Patent Application No. 11/183,263, filed July 15, 2005, and entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT," (now U.S. Patent No. 7,380,936) which is hereby incorporated herein by reference; (x) U.S. Patent Application No. 11/183,276, filed July 15, 2005, and entitled "EYEGLASSES WITH ACTIVITY MONITORING," now U.S. Patent No. 7,255,437) which is hereby incorporated herein by reference; and (xi) U.S. Patent Application No. 11/546,685, filed October 11, 2006, and entitled "EYEGLASSES HAVING A CAMERA", (now U.S. Patent No. 7,806,525) which is hereby incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0012] Traditionally, eyeglasses have not contained or made any use of electrical components. In recent years, attempts to include electrical components within eyeglasses have had limited success. Even incorporating a small electrical component, such as a microphone, into an eyeglass frame may not be a simple task because, for example, of the necessary electrical connections with the electrical component. Clearly, larger scale electrical components would be more difficult to be provided in or attached to eyeglass frames. Many eyeglass frames tend to be very compact and lightweight and thus may not have a lot of space for electrical components. Moreover, since eyeglass frames are often fashionable items whose designs are important, there are substantial design tradeoffs involved with providing or attaching electrical components to eyeglass frames.

[0013] Even if electrical components are provided in an eyeglass frame, the ability to alter or change electrical components is problematic. Conventionally, once an eyeglass frame is manufactured, electrical components embedded in the eyeglass frame may not be removed, nor can addition electrical components be added into the eyeglass frame. Attachment of electrical components to eyeglass frames has not proven to be reliable, design friendly or commercially successful. Hence, there is a need for improved approaches to facilitate modifications or alterations to electrical components used with eyeglasses.

[0014] Typically, to participate in wireless communications, a user holds a mobile phone (e.g., wireless or a cellular phone) against his ear to hear an audio communication received in a wireless manner. The user usually also speaks towards a microphone embedded in the mobile phone to participate in the audio communication, again in a wireless manner. More recently, to facilitate hands-free operation of mobile phones, head-sets have been produced and utilized. Typically, a headset clips over or into an ear of the user to provide a speaker and a microphone in proximity to the ear and the mouth, respectively, of the user. Traditionally, the head-set was connected to the mobile phone by a cord (i.e., wire). In recent times, head-sets have been developed to operate in a wireless manner, without the need of a cord connected to the mobile phone. For example, one

popular type of wireless head-set uses Bluetooth wireless transmissions to communicate between the head-set and the corresponding mobile phone.

[0015] Mobile phones often support both voice calls and text messaging. When the user does not make use of a head-set, the user often holds the mobile phone against their ear when participating in a voice call. One problem this presents is that the user is not able to see the screen of the mobile phone. As a result, the user has difficultly interacting with the keypad or screen of the mobile phone when the mobile phone is held against the user's head. Alternatively, when the user of a mobile phone makes use of a head-set, the user can receive and participate in voice calls in a hands-free manner. Unfortunately, however, the user would need to view a screen of the mobile phone to participate in text messaging.

[0016] Accordingly, there is a need for improved wireless communication techniques for users of mobile communication devices.

SUMMARY

[0017] Generally speaking, the invention pertains to techniques for providing eyewear or other head-worn personal electronic apparatus with electrical components. The electrical components can provide electrical technology to eyewear (e.g., eyeglasses) or other head-worn personal electronic apparatus without having to substantially compromise aesthetic design principles of the eyewear. The electrical components can operate independently or together with other electrical components provided elsewhere. Apparatus can also be provided to present after-market electrical components.

[0018] The electrical components can support signal capturing, signal processing, signal transmission, signal display, signal storage and/or power provision. The signals can be, for example, analog or digital signals. The electrical components can, for example, be used to provide audio output and/or audio pick-up. The electrical components may include and/or control one or more sensors to monitor and/or signal the conditions of a user of the eyewear. The electrical components may also include and/or control one or more operation indicators to signal operational status of at least some other electrical components. In addition, the electrical components can be or pertain to a circuit board or module, which includes a plurality of electrical components.

[0019] The invention can be implemented in numerous ways, including a method, system, device, apparatus, and a computer readable medium. Several embodiments of the invention are discussed below.

[0020] Other aspects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

[0022] FIG. 1 is a perspective view of a pair of glasses according to one embodiment of the invention.

[0023] FIG. 2 illustrates a diagram of a number of different embodiments of temple arrangements according to the invention.

[0024] FIG. 3A is a diagram of a temple arrangement according to one embodiment of the invention.

[0025] FIG. 3B is a diagram of a temple cover that at least partially covers a temple (e.g., temple and/or temple tip) according to one embodiment of the invention.

[0026] FIG. 3C is a diagram of a fit-over temple that at least partially fits over a temple (e.g., temple and/or temple tip) according to one embodiment of the invention.

[0027] FIG. 3D and 3E are diagrams of a temple arrangement according to another embodiment of the invention.

[0028] FIGs. 3F-3H are diagrams of exemplary multi-part temples according to different embodiments of the invention.

[0029] FIGs. 3I-3K are diagrams of exemplary rearward portions of multi-part temples according to several embodiments of the invention.

[0030] FIGs. 3L-3O are diagrams of exemplary forward portions of multi-part temples according to several embodiments of the invention.

[0031] FIG. 3P is a diagram of an eyewear products display apparatus according to one embodiment of the invention.

[0032] FIG. 4 shows examples of different electrical components according to the invention.

[0033] FIG. 5 is a chart that depicts examples of sensors suitable for use according to the invention.

[0034] FIG. 6 illustrates a diagram of a number of different embodiments of temple adapters according to the invention.

[0035] FIG. 7A is a diagram of a temple adapter according to one embodiment of the invention.

[0036] FIG. 7B is a diagram of a temple adapter according to another embodiment of the invention.

[0037] FIGs. 8A and 8B are diagrams of a temple adapter according to another embodiment of the invention.

[0038] FIG. 9A is a diagram of a temple adapter according to one embodiment of the invention.

[0039] FIGs. 9B and 9C are diagrams of a temple adapter according to another embodiment of the invention.

[0040] FIG. 9D is a diagram of a temple adapter according to still another embodiment of the invention.

[0041] FIGs. 10A-10C are diagrams of a temple having a bone conducting element according to still other embodiments of the invention.

[0042] FIG. 11A illustrates a pair of glasses according to one embodiment of the invention.

[0043] FIG. 11B illustrates a pair of glasses according to another embodiment of the invention.

[0044] FIGs. 12A-12E illustrate a side view of eyeglass frames having an extended temples according to several embodiment of the invention.

[0045] FIG. 13A illustrates a temple having multiple parts according to one embodiment of the invention.

[0046] FIG. 13B illustrates a portion of an eyeglass frame according to one embodiment of the invention.

[0047] FIG. 13C illustrates a portion of an eyeglass frame according to another embodiment of the invention.

[0048] FIG. 14 is a chart that depicts examples of auxiliary sensors that can be utilized with the eyewear.

[0049] FIG. 15 shows some electrical components of a player according to an embodiment of the invention.

[0050] FIG. 16 illustrates a number of forces activating a switch according to a number of embodiments of the invention.

[0051] FIG. 17 illustrates a number of mechanical forces activating a switch according to a number of embodiments of the invention.

[0052] FIG. 18 shows a Hall-effect detector at a joint of a pair of glasses according to an embodiment of the invention.

[0053] FIGs. 19A-19C illustrate different embodiments of a quadrature sensor according to the invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS OF THE INVENTION

[0054] The invention pertains to techniques for providing eyewear or other head-worn personal electronic apparatus with electrical components. The electrical components can provide electrical technology to eyewear (e.g., eyeglasses) or other head-worn personal electronic apparatus without having to substantially compromise aesthetic design principles of the eyewear. The electrical components can operate independently or together with other electrical components provided elsewhere. Apparatus can also be provided to present after-market electrical components.

[0055] One aspect of the invention relates to temple arrangements for use with eyeglasses. According to this aspect, a temple arrangement includes one or more electrical components. The one or more electrical components are attached to or at least partially embedded in the temple arrangement.

[0056] Another aspect of the invention relates to a temple adapter for use with eyeglasses. According to this aspect, a temple adapter includes one or more electrical components that are able to be mechanically (and optionally electrically) coupled to a temple (including a temple tip) of the eyeglasses.

[0057] Still another aspect of the invention relates to one or more swappable temple portions for a pair of glasses. In one aspect, a temple has a forward portion and a rearward portion which can removably couple to one another. In one embodiment, different rearward portions can be used with the same forward portion. In other words, the different rearward portions can be swapped with one another. In one implementation, the different rearward portions can offer different electrical components/functionalities to the pair of glasses. For example, the different rearward portions can provide different electrical components/functionalities such as: battery/power, wireless communication, radio, headset, GPS, pedometer, sun sensor, hearing enhancement, image/video capturing, etc. In another embodiment, different forward portions can be used with the same rearward portion.

[0058] The electrical components can support signal capturing, signal processing, signal transmission, signal display, signal storage and/or power provision. The signals can be, for example, analog or digital signals. The electrical components can, for example, be used to provide audio output and/or audio pick-up. The electrical components may include and/or control one or more sensors to monitor and/or signal the conditions of a user of the eyewear. The electrical components may also include and/or control one or more operation indicators to signal operational status of at least some other electrical components. In addition, the electrical components can be or pertain to a circuit board or module, which includes a plurality of electrical components.

[0059] Embodiments of different aspects of the invention are discussed below with reference to FIGs. 1 – 13C. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments.

[0060] FIG. 1 is a perspective view of a pair of glasses 100 according to one embodiment of the invention. The glasses 100 include a frame and a pair of lenses 102. The frame has lens holders 104 that hold the lenses 102 in position. The frame also has a bridge 106. The glasses 100 further include a pair of temples (or arms) 108. The temples 108 are considered part of the frame. As shown in FIG. 1, each of the temples 108 is coupled to one of the lens holders 104 by a hinge 109. In one embodiment, the temples 108 can be removed from the frame (e.g., at the hinge 109).

[0061] In addition, temple arrangements 110 are attached to the temples 108. Here, one or both of the temples 108 can include a temple arrangement 110. A temple arrangement 110 can include one or more electrical components 112. In one embodiment, the temple arrangements 110 can be considered separate parts that can be attached to respective temples 108. Once attached, the temple arrangements 110 can be considered part of, or an extension to, the temples 108.

[0062] By having one or more electrical components 112 in one or more of the temple arrangements 110, electrical capabilities can be provided to the glasses 100 without burdensome impact to the design of other parts of the frames. Moreover, by providing electrical components in one or more of the temple arrangements 112, electrical capabilities can be added to eyeglasses in an after-market manner. Still further, by replacing temple arrangements, a user could alter the electrical capabilities of his eyeglasses.

[0063] In one embodiment, the glasses 100 do not have any other embedded electrical components, such as within the frame, except those in one or both of the temple arrangements 112. In another embodiment, the glasses 100 include one or more other electrical components embedded or attached to the frame of the glasses 100 and the components are electrically coupled to the one or more electrical components 112 in one or both of the temple arrangements 110.

[0064] In different embodiments, the glasses 100 can be, for example, a pair of sunglasses, fit-over glasses, prescription glasses, reading glasses, or safety glasses.

[0065] FIG. 2 illustrates a diagram of a number of different embodiments of temple arrangements 200 according to the invention. A temple arrangement 200 can be a temple tip, a temple fit-over, or a temple cover. In one embodiment, a temple tip is a structure that attaches to a rearward portion of a temple. In one embodiment, a temple tip can pertain to an enclosure that grabs onto a rearward portion of a temple. A temple tip is particularly common for wire frame eyeglass where the temple tip attaches to the rearward end of the temple and provides a surface suitable for positioning proximate to the user's ear. For example, FIG. 1 illustrates the temple arrangement 112 implemented as a temple tip.

[0066] In one embodiment, a temple tip is removable from its corresponding temple so that it can be replaced. The temple tip can be originally provided with the purchase of a pair of eyeglasses. Alternatively, the temple tip can be a replacement part that can be purchased separately and subsequently mounted onto a rearward portion of a temple of a pair of eyeglasses after removing any

original temple tip. In another embodiment, a temple tip is permanently held onto the corresponding temple, for example, by an adhesive (e.g., epoxy, glue, etc.).

[0067] In one embodiment, a temple fit-over fits over at least a portion of the rearward end of a temple. If the rearward end of the temple has a temple tip, at least a portion of the temple tip can be fitted over by the temple fit-over. In one embodiment, a temple cover slides over and at least partially covers a portion of the rearward end of a temple. If the rearward end of the temple has a temple tip, at least a portion of the temple tip can be covered by the temple cover.

[0068] A temple cover is typically made of a material that is more flexible than a temple fit-over. For example, a temple cover can be made of a fabric or other materials, such as a sock or sleeve; while a temple fit-over can be made of plastic.

[0069] A temple arrangement 200 can be made of the same or different materials than the temple or other parts of the frame of the pair of eyeglasses. To illustrate, a pair of glasses with a metal frame can have non-metallic temple tips. A temple arrangement 200 can be of a color that is the same as, or similar to, or different from, that of the temple.

[0070] A temple arrangement 200 can be held onto a temple by frictional force. For example, if the temple arrangement 200 is a temple fit-over, it can be held onto an existing temple or temple tip by frictional force. Here, the temple fit-over is often removable. In another embodiment, the temple arrangement 200 can be permanently held onto its corresponding temple or temple tip. For example, the temple arrangement can be permanently held onto the corresponding temple or temple tip, for example, by an adhesive (e.g., epoxy, glue, etc.).

[0071] Depending on applications, a temple arrangement can be of different shapes. The shape can depend on the type of glasses. For example, a temple arrangement for fit-over glasses can be bigger than a temple arrangement for prescription glasses. The shape of the temple arrangement can also depend on applications for the electronic component(s) that are fully or partially embedded in

the temple arrangement. Of course, aesthetic reasons can also influence shape (e.g., design, size, style) of a temple arrangement.

[0072] In one embodiment, the temple arrangement is a structure that has at least one electrical component attached thereto or at least partially embedded therein. In another embodiment, all of the electrical components to be provided with the temple arrangement are at least partially embedded in the temple arrangement.

[0073] FIG. 3A is a diagram of a portion 300 of a pair of eyeglasses according to one embodiment of the invention. The portion 300 includes a temple 302 that is associated with a pair of eyeglasses. Over the end of the temple 302 that is opposite the associated lens holder, a temple tip 304 is provided. The temple tip 304 can, for example, be held to the temple 302 by frictional forces and/or adhesive. The temple tip 304 includes at least one electrical component 306 that is at least partially embedded therein. A wide range of functionalities can be provided by the at least one electrical component 306. The temple tip 304 can be considered separate from or part of the temple 302. For example, when the temple tip 304 is not attached to the temple 302, the temple tip 304 is considered a separate part. As another example, when the temple tip 304 is attached to the temple 302, the temple tip 304 can be considered separate from or part of the temple 302.

[0074] The temple tip 304 can be manufactured and delivered to resellers or retailers and thereafter sold attached to eyeglasses. Alternatively, the temple tip 304 can be separately provided as an optional replacement temple tip for an original temple tip. Hence, after or during purchasing a pair of eyeglasses, upgrade of the eyeglasses can be had by replacing an existing temple tip with a replacement temple tip. The colors and shapes of the temple tip 304 can vary widely. In the after-manufacturing environment, the reseller or retailer can be provided with a range of different colors and shapes so that a user can receive a replacement temple tip that reasonably matches the color and shape of the temple or that provides an altered appearance as desired by the user.

[0075] A number of embodiments have been described regarding one or more electrical components at least partially embedded in a pair of glasses. In one embodiment, one or more electrical components are at least partially embedded in a temple tip of a pair of glasses. Temple tips are relatively common for wire or metal frames which have wire or metal temples. The pair of glasses has a first and a second lens holders for receiving lenses. Each of the lens holders has a first side and a second side. The pair of glasses has a bridge element that couples the first side of the first lens holder to the second side of the second lens holder. The pair of glasses also includes a first temple and a second temple. The first temple is pivotally secured to the second side of the first lens holder through a joint, while the second temple is pivotally secured to the first side of the second lens holder through another joint. A temple typically has two ends, a first end and a second end. The first end can be the end that is pivotally secured to a lens holder through a joint, and the second end can be the other end of the temple. It is not uncommon that a temple includes a main body and an enclosure that grabs onto the main body of the temple. The second end is typically where the enclosure grabs onto the main body. The enclosure can be made of a different material than the main body of the temple. In one embodiment, such an enclosure is a temple tip, and there is an electrical component, partially or fully, embedded in the temple tip. There can also be a connector at the temple tip. In another embodiment, the temple tip can include a female connector. In still another embodiment, as a temple tip grabs onto the main body of the temple, a connector at the temple tip (such as a female connector) can make electrical contact with another connector (such as a male connector) at the main body of the temple. Typically, particularly before a pair of glasses has been extensively worn, the temple tip can be removed and re-inserted back on to the main body of the temple without much difficulty. Such a temple tip can be an after-market component, with different temple tips having different electrical components to serve different functions.

[0076] Besides a temple tip such as illustrated in FIG. 3A, a temple tip can also be effectively modified by a fit-over temple or temple cover.

[0077] FIG. 3B is a diagram of a temple cover 320 that at least partially covers a temple (e.g., temple and/or temple tip) according to one embodiment of the invention. As an example, the temple cover 320 can be made of a fabric or other material, such as a sock or sleeve, that slides over and at least partially covers a temple or a temple tip. The temple cover 320 can include at least one electrical component 322 that is either attached thereto or at least partially embedded therein. The temple cover 320 can also include an opening 324 so as to receive a temple or a temple tip. In one embodiment, the temple cover 320 is placed over a substantial portion of a temple tip, and the opening 324 can extend to a far end 326 so as to receive all or a substantial part of the temple tip. The temple cover 320 can, for example, be held to a temple or a temple tip by frictional forces and/or adhesive.

[0078] FIG. 3C is a diagram of a fit-over temple 340 that at least partially fits over a temple (e.g., temple and/or temple tip) according to one embodiment of the invention. For example, the fit-over temple 340 can at least partially fit-over a temple tip. The fit-over temple 340 includes at least one electrical component 342 that is either attached thereto or at least partially embedded therein. The fit-over temple 340 can also include an opening 344 so as to receive a temple or a temple tip. The depth and/or width of the opening 344 within the fit-over temple 340 can vary depending on the extent to which it is being fit over a temple or a temple tip. The fit-over temple 340 can, for example, be held to a temple or temple tip by frictional forces and/or adhesive. As an example, the fit-over temple 340 can be plastic or other material. The colors and shapes of the fit-over temple 340 can have a lot of variations.

[0079] A wide range of functionalities can be provided by the at least one electrical component (e.g., electrical component 322 and 342). In the after-manufacturing environment, the reseller or retailer can be provided with a range of different colors and shapes so that a user can receive a replacement temple cover or fit-over temple that reasonably matches the color and shape of the temple or that provides an altered appearance as desired by the user.

[0080] FIG. 3D and 3E are diagrams of a temple arrangement 360 according to another embodiment of the invention. FIG. 3D is a side view of the temple arrangement 360, and FIG. 3E is a front view of the temple arrangement 360. In this embodiment, the temple arrangement 360 is a temple tip that can be attached to a temple (e.g., temple body) of a pair of eyeglasses. The temple arrangement 360 includes a speaker housing 362 allowing a speaker 364 to be at least partially embedded within the temple arrangement 360. An audio sound output by the speaker 364 is coupled to an ear plug 366 by way of the speaker housing 362 and a tube 368. Typically, the tube 368 is a flexible tube, such as a flexible plastic tube. A user of the eyeglasses having the temple arrangement 360 can place the ear plug 366 within her ear to facilitate coupling of the audio sound from the speaker 364 to the ear. The tube 368 can have a disconnection region 370 whereby at least a section of the tube 368 and the attached ear plug 366 can be removed from the temple arrangement 360, such as when audio output is not being listened to. The tube 368 and/or the speaker housing 362 can also be capable of rotating with respect to the temple arrangement 360 to facilitate ease of use. Still further, the temple arrangement 360 can include a connector 372, such as a male audio connector (e.g., 2.5 mm, stereo mini-phone connector). The connector 372 provides a means to electrically connect an external audio source to the speaker 364 within the temple arrangement 360. For example, at least one wire (not shown) that is internal to the temple arrangement 360 can be used to electrically connect the speaker 364 to the connector 372.

[0081] In one embodiment, an electrical component is a component of an electrical circuit or system, and the electrical circuit or system is for performing at least a desired, intended or predetermined function.

[0082] In one embodiment, a temple tip, fit-over temple or temple cover according to the invention can further include a connector or cable to facilitate electrical connection with the at least one electrical component that is either attached to a temple or a temple tip or at least partially embedded therein.

[0083] Still another aspect of the invention relates to one or more swappable temple portions for a pair of glasses. According to this aspect, a temple has a forward portion and a rearward portion which can removably couple to one another. In one embodiment, different rearward portions can be used with the same forward portion. In other words, the different rearward portions can be swapped with one another. In one implementation, the different rearward portions can offer different electrical components/functionalities to the pair of glasses. For example, the different rearward portions can provide different electrical components/functionalities such as: battery/power, wireless communication, radio, headset, GPS, pedometer, sun sensor, hearing enhancement, image/video capturing, etc. In another embodiment, different forward portions can be used with the same rearward portion.

[0084] In one embodiment, only one of the temples of an eyeglass frame has swappable part(s). In another embodiment, both of the temples of an eyeglass frame have swappable part(s). Regardless, viewed in one way, each of the swappable parts at a temple can be viewed as a removable peripheral device to the eyeglass frame.

[0085] In one embodiment, a temple is a multi-part temple. The multi-part temple includes at least a forward (or first) part and a rearward (or second) part. The forward part is typically integral with or coupled to an eyeglass frame (such as at the lens holder or hinge region of an eyeglass frame). The rearward part removably connects with the forward part. The removable connection allows the rearward part to be removed for any of a variety of reasons. For example, the rearward part can be removed to: (1) connect a different rearward part; (2) connect to a peripheral bus (e.g., for data download); or (3) charge a battery (e.g., located in forward or rearward part).

[0086] The removable connection between the forward and rearward parts of the multi-part temple physically attaches and secures the rearward part to the forward part by way of at least a mechanical connection. The mechanical

connection can be provided in a variety of ways, such as through use of one or more connectors, snaps, detents, bayonets, etc.

[0087] In addition, the removable connection between the forward and the rearward parts of the multi-part temple can provide (or facilitate) an electrical connection between the forward and rearward parts. In one embodiment, the forward part of the temple (or some other part of the eyeglass frame) includes one or more electrical components, and the rearward part includes one or more electrical components. In such case, the electrical connection serves to electrically connect one or more of the electrical components of the forward part (or other part of the eyeglass frame) with one or more of the electrical components of the rearward part. For example, the forward part of the temple can include one or more electronic components (e.g., integrated circuit) that are electrically connected to one or more electronic components in the rearward part.

[0088] However, in the event that all needed electrical components are within the rearward part of the multi-part temple, electrical connection between the forward part and the rearward part may not be needed. Accordingly, in some embodiments, no electrical components will be needed in the forward part; instead, all the needed electrical components will be provided in the rearward part.

[0089] Various embodiments of eyewear can utilize the multi-part temples to provided electrical components to eyeglass frames in a convenient and user-friendly manner. As one example, consider an eyeglass frame that supports a camera. The electrical components can include an image sensor, a memory, a microcontroller, and a battery. One or more of these electrical components can be in the forward part (or other part of the eyeglass frame) and the remaining one or more electrical components can be in the rearward part. For example, the image sensor and the microcontroller can be in the forward part and the battery and the memory can be in the rearward part. Additionally, if the camera makes use of a display (e.g., LCD), the display could be in either the forward part or the rearward part. The eyeglass frame might also include other electrical components for additional functionality. Examples of additional functionality include: global

positioning system, antenna, user interface (e.g., buttons, switches, etc), display, microphone, earphone, etc. In another example, all of the electrical components supporting the camera functionality can be provided in the rearward part of the multi-part temple.

[0090] In one embodiment, the electrical components provided in the forward part are able to be shared with different rearward parts. In other words, different rearward parts can be swapped. For example, a different rearward part can be connected to the forward part to provide the eyeglass frame with different functionality. Examples of some of the different functionality that can be provided in this matter include: radio receiver (e.g., satellite radio), media player, pedometer, wireless communication, sun monitor, hearing enhancement, global positioning, etc. In a first example, in the case of a radio receiver, the forward part can include a display, while the rearward part can include a tuner, a rechargeable battery, an amplifier, and earphones or earphone connectors. In a second example, in the case of a media player, the forward part can include a display, while the rearward part can include a media player module, a memory, a rechargeable battery, a switch and earphones or earphone connectors. In a third example, in the case of a pedometer, the forward part can include a display, while the rearward part can include an accelerometer, a rechargeable battery, a memory and a microcontroller. In a fourth example, in the case of a wireless communication device, the forward part can include a display, while the rearward part can include a battery, an antenna, a wireless module, earphones or earphone connectors, and a user interface. The user interface, for example, can include buttons, which, for example, can facilitate user input with respect to on/off, volume, and accept or decline call. In this case, information displayed can include battery status, device status, caller ID, etc. In these four examples, the forward part includes a display and thus the forward part can be used (i.e., shared) with any of the different rearward parts to thereby provide different functionality to the eyeglass frames. Hence, by swapping one of these different rearward parts, the same pair of eyeglasses can provide different functionality.

[0091] A multi-part temple can be manufactured and delivered to resellers or retailers and thereafter sold attached to eyeglasses. Alternatively, a rearward part can be separately provided as a separate part or as an optional rearward part that can be swapped with an original rearward part. Hence, after or during purchasing a pair of eyeglasses, alteration, upgrade or conversion of the eyeglasses can be had by swapping in another rearward part. The electrical components or functions supported by the rearward part can vary widely. The colors and shapes of the rearward parts also can vary widely. For example, in the retailing or after manufacturing environment, the reseller or retailer can be provided with a range of different colors and shapes so that a user can receive a rearward part that reasonably matches the color and shape of the multi-part temple or that provides an altered appearance as desired by the user.

[0092] FIG. 3F is a diagram of a multi-part temple 1300 according to one embodiment of the invention. The multi-part temple 1300 has a forward part 1302 and a rearward part 1304. The rearward part 1304 is removably connected to the forward part 1302 such that the rearward part 1304 is removable. Once removed, the same rearward part or a different rearward part can be later connected to the forward part 1302. Alternatively, a cable can be connected to the forward part 1302 when the rearward part 1304 is removed. The cable can facilitate data transfer, battery charging, etc, depending on the electrical components in the forward part 1302.

[0093] FIG. 3G is a diagram of a multi-part temple 1310 according to one embodiment of the invention. The multi-part temple 1310 can represent the multi-part temple 1300 shown in FIG. 1 in one embodiment. In FIG. 3G, a forward part 1312 and a rearward part 1314 are shown disconnected. The forward part 1312 has a mechanical element 1316 and the rearward part 1314 has a corresponding opening 1318. Once connected together, the mechanical element 1316 of the forward part 1312 is inserted into the opening 1318, thereby mechanically coupling the rearward part 1314 to the forward part 1312. Once mechanically coupled the rearward part 1314 is secured to the forward part 1312, but remains removable.

[0094] FIG. 3H is a diagram of a multi-part temple 1320 according to one embodiment of the invention. The multi-part temple 1320 can represent the multi-part temple 1300 shown in FIG. 1 in one embodiment. In FIG. 3H, a forward part 1322 and a rearward part 1324 are shown disconnected. The forward part 1322 has a connector 1326 and the rearward part 1324 has a corresponding connector 1328 embedded therein. Once connected together, the connector 1326 of the forward part 1322 is inserted into the corresponding connector 1328, thereby mechanically coupling the rearward part 1324 to the forward part 1322. Once mechanically coupled the rearward part 1324 is secured to the forward part 1322, but remains removable. Additionally, the connection of the connector 1326 and the corresponding connector 1328 can also provide an electrical connection. An electrical connection would serve to enable electrical components in the forward part 1322 (or other parts of an eyeglass frame) to electrically connect to electrical components in the rearward part 1324. For example, the electrical connection can provide electrical connections for one or more electrical wires. An example of one suitable type of connector is a USB connector which can provide mechanical and electrical connection.

[0095] As noted above, a rearward part of a multi-part temple can include one or more electrical components. FIG. 3I is a diagram of a rearward part 1330 of a multi-part temple according to one embodiment of the invention. The rearward part 1330 has a body 1332 with electrical circuitry 1334 internal to the body 1332. As one example, the electrical circuitry 1334 can pertain to data storage (e.g., memory). In such an example, the rearward part 1330 can be considered a memory stick or a memory card. As other examples, the electrical circuitry 1334 can pertain to a battery/power source, a sun sensor, a pedometer, a media player, a wireless module, etc.

[0096] FIG. 3J is a diagram of a rearward part 1340 of a multi-part temple according to another embodiment of the invention. The rearward part 1340 has a body 1342 with an ear bud 1344 and an ear bud arm 1346 extending therefrom. In addition, the body 1342 includes at least one conductor 1347 and electrical circuitry 1348 internal to the body 1342. The at least one conductor 1347 can

electrically connect the electrical circuitry 1348 with the ear bud 1344, where the at least one conductor 1347 extends through the ear bud arm 1346 to the ear bud 1344. Optionally, the body 1342 can further include an antenna 1349 internal to the body 1342. In the case where the electrical circuitry 1348 includes a wireless receiver (e.g., Bluetooth, XM, FM), the antenna 1349 can enhance reception. As an example, the electrical circuitry 1348, can be a wireless module for wireless communications or a receiver for XM or FM signals. Additionally or alternatively, the electrical circuitry 1348 can, for example, pertain to one or more of a data storage device, battery/power source, a sun sensor, a pedometer, a media player, etc.

[0097] FIG. 3K is a diagram of a rearward part 1350 of a multi-part temple according to another embodiment of the invention. The rearward part 1330 has a body 1352 with a printed circuit board 1354 internal to the body 1352. A display device 1356 (e.g., LCD) can be provided on the body 1352. In one example, the display device 1356 can be mounted to the circuit board 1354 and exposed through an opening in the body 1352 so as to be visible by a user of the eyeglasses using the multi-part temple. Optionally, at least a portion of the printed circuit board 1354 can conform to the shape of the body 1352. The ability to conform, even partially, allows the printed circuit board 1354 to yield greater surface area within a temple, which tends to be small and stylized. The integrated circuit board 1354 can have one or more electronic components (e.g., integrated circuits) mounted thereon.

[0098] FIGs. 3L – 3O are diagrams of representative forward parts for multi-part temples according to different embodiments of the invention. FIG. 3L is a diagram of an exemplary forward part 1360 having a mechanical element 1362 that includes one or more detents 1364. When a rearward part is connected to the forward part 1360, the mechanical element 1362 is inserted into an opening (e.g., opening 1318) and held securely in place by mechanical forces facilitated by the mechanical element 1362 and the detents 1364. This can be accomplished through different methods, such as with corresponding protruding portions in the

opening that can, for example, be aligned with the detents 1364. For example, the protruding portions can snap into place or biased by springs (e.g., spring–loaded).

[0099] FIG. 3M is a diagram of an exemplary forward part 1370 having a mechanical element 1372 that includes one or more protrusions 1374. When a rearward part is connected to the forward part 1370, the mechanical element 1372 is inserted into an opening (e.g., opening 1318) and held securely in place by mechanical forces facilitated by the mechanical element 1372 and the protrusions 1374. In one embodiment, the protrusions 1374 are spring-loaded to facilitate connection with the opening.

[00100] FIG. 3N is a diagram of an exemplary forward part 1380 having a mechanical element 1382 that includes one or more bayonet structures 1384. To connect a rearward part to the forward part 1380, the mechanical element 1382 is inserted into an opening (e.g., opening 1318) that has groves (in the direction substantially parallel to the axis of the mechanical element 1382) for receiving the bayonet structures 1384. The rearward part can be connected with the forward part 1380 when the groves within the opening of the rearward part are aligned with the bayonet structures 1384. Once the mechanical element 1382 is so inserted, the rearward part can be rotated with respect to the forward part 1380. The rotation causes the bayonet structures 1384 to no longer be aligned with the grooves. As a result, the rearward part is mechanically secured to the forward part 1380 (and thus the eyeglass frame) in a bayonet like manner.

[00101] In one embodiment, a connector is used to removably couple the rearward portion to the forward portion of a multi-part temple. For example, the connector can be standard connector. One example of a suitable connector is a Universal Serial Bus (USB) connector.

[00102] FIG. 3O is a diagram of an exemplary forward part 1390 having an electrical connector 1392. The connector 1392 facilitates mechanical and/or electrical connections between the forward part 1390 and a rearward part. When a rearward part is connected to the forward part 1390, the connector 1392 is inserted into an opening (e.g., opening 1328) and held securely in place by

mechanical forces. There can be additional mechanical connecting mechanisms to further secure the connection.

[00103] In one embodiment, the opening receiving the connector 1392 can include a corresponding (i.e., counterpart) connector. When the connector 1392 is connected with the corresponding connector within the opening, the rearward part is physically secured to the forward part 1390. For example, mechanical forces can hold the connector 1392 and the corresponding connector in a connected position. In addition, when the connector 1392 and the corresponding counterpart connector are coupled together, one or more electrical connections are facilitated. For example, each connector can be coupled to one or more electrical wires at the other connector so that wires from one part are able to be connected to corresponding wires on the other part. As a result, electrical component(s) in the rearward part are able to be electrically connected with electrical component(s) in the forward part 1390 (or elsewhere in the eyeglass frame). In one implementation, the connectors pertain to or resemble a Universal Serial Bus (USB) type connector.

[00104] In another embodiment, the opening receiving the connector 1392 does include a corresponding counterpart connector. In this embodiment, mechanical forces can hold the connector 1392 within the opening. Also, in this embodiment, electrical connections are not facilitated.

[00105] Although FIGs. 3G-3N pertain to connections having a male connector at the forward part and a female connector at the rearward part, it should be understood that alternatively the male connector can be at the rearward part and the female connector can be at the forward part.

[00106] Also, although FIGs. 3G-3N pertain to connections showing only one elongated portion (like a male connector) to be received by an opening (like a female connector), in other embodiments, there can be more than one elongated portion to be received by more than one opening. Also, the connections can be formed on the sides (i.e., outer surface), instead of by having elongated portions and openings positioned in the middle of (i.e., internal to) the forward and rearward parts. For example, there can be two prongs, one on the top surface and one on

the bottom surface of a forward part. Each prong can be received by a counterpart detent in a rearward part, such as the prong on the top surface of the forward part to be received by a detent on the top surface of the rearward part.

[00107] In a number of embodiments, the forward part of the multi-part temple is substantially smaller than the rearward part. For example, in FIG. 3F, the forward part 1302 is substantially smaller than the rearward part 1304. In one embodiment, a forward part is large enough to house a connection mechanism used to couple with a rearward part and not too much larger. In another embodiment, a forward part and a rearward part are about the same size. In still another embodiment, a forward part is larger than a rearward part.

[00108] In one embodiment, neither the forward part nor the rearward part of a multi-part temple contains any electrical components. In such case, the rearward part can still be removable from the forward part. Such an embodiment enables a user to swap one (which can be substantially all of the temple) or both the rearward portions of both temples, with another rearward portion(s), such as for aesthetic, configuration or design reasons.

[00109] In one implementation, a connector is used to removably couple the rearward portion to the forward portion of the multi-part temple. For example, the connector can be a Universal Serial Bus (USB) connector.

[00110] In one embodiment, a forward part can be part of or integral with a corresponding region of a lens holder. In such case, there need not be any hinges for coupling the temples to the lens holders.

[00111] As noted above, connectors can be use to removably attach a temple to an eyeglass frame (e.g., lens holder) or to removably attach different portion(s) of a temple. These connectors can be provided for one or both temples of the eyeglass frames. With such temples being easily removable by users without the need for any special skill or tools, the temple parts can be interchangeable and can be separately sold or leased.

[00112] Further, to display various eyewear products, such as in a retail environment, an eyewear products display apparatus (e.g., stand) can include corresponding connectors or connector structures so that (i) separate temples (ii) separate parts of temples and/or (iii) eyeglass frames without temples can be connected to the eyewear products display apparatus for display. For example, if the eyewear products (e.g., frames, temples, etc.) use connectors, then the eyewear products display apparatus can support those same connectors (e.g., USB connectors) or compatible structures. This eyewear products display apparatus opens up new ways to organize and present eyewear products at retail stores. It also allows users to separately select a base eyewear frame and temples to be used therewith. The temples and the frames can be displayed detached from one another, such that a user can separately select and try different temples with frames.

[00113] FIG. 3P is a diagram of an eyewear products display apparatus 1400 according to one embodiment of the invention. The apparatus 1400 has a first region 1404 of first type connectors (or compatible protrusions) integral with the apparatus 1400. A plurality of eyeglass frames having second type connectors can be attached and displayed on the apparatus 1400 by connecting one or two of the second type connector of the eyeglass frames to those of the first type connectors of the first region of the apparatus 1400.

[00114] The apparatus 1400 also can include a second region 1402 of second type connectors (or compatible openings) integral with the apparatus 1400. A plurality of removable temples (and/or removable temple parts) having first type connectors can be attached and displayed on the apparatus 1400 by connecting the first type connectors of the removable temples (and/or removable temple parts) to those of the second type connectors (or compatible openings) in the second region 1402 of the apparatus 1400.

[00115] In one embodiment, the first type connectors are male connectors and the second type connectors are corresponding female connectors which provide a secure mechanical connection. In one embodiment, the first type

connectors and/or the second type connectors provided integral with the apparatus 1400 are not electrical connectors but compatible structures (e.g., protrusions and openings) such that a secure mechanical connect can be had.

[00116] In one embodiment, the orientation of at least some of the connectors in the apparatus 1400 is substantially horizontal. In other words, for example, when a rearward part of a temple is inserted into such a connector in the apparatus 1400, the rearward part is substantially perpendicular to the surface of the apparatus 1400 as shown. In another embodiment, the orientation of at least some of the connectors in the apparatus 1400 is substantially facing upward or downward in a vertical manner. In other words, for example, when a rearward part of a temple is inserted into such a connector in the apparatus 1400, the rearward part is substantially parallel to the surface of the apparatus 1400 as shown. In yet another embodiment, the orientation is at an acute angle relative to the surface of the apparatus 1400 as shown. In other words, for example, when a rearward part of a temple is inserted into a connector in the apparatus 1400, the rearward part is at an acute angle relative to the surface of the apparatus 1440 as shown. The connectors in the apparatus 1400 can also be rotatable or movable, such as between different positions and/or angles.

[00117] Although FIG. 3P only depicts one side of the eyewear products display apparatus 1400, the apparatus can have other like sides. For example, the apparatus 1400 can be a one, two, three or four sided apparatus.

[00118] In still another embodiment, at least one connector of the apparatus 1400 is connected to at least one electrical component in the apparatus 1400. For example, when a selected temple part is connected to the connector, the at least one electrical component in the apparatus 1400 is electrically connected to an electrical component in the temple part, and together can perform an electrical operation.

[00119] In yet another embodiment, at least one connector of the apparatus 1400 is connected to another connector of the apparatus 1400. This allows electrical connection between the different eyewear parts connected to the

apparatus 1400. For example, when a selected temple part is connected to the connector and an eyeglass frame is connected to the other connector, an electrical component within the eyeglass frame is electrically connected to an electrical component in the temple part, and together can perform an electrical operation.

[00120] FIG. 4 shows examples of different electrical components according to the present invention. Different embodiments of temple arrangements, temple adapters or temple parts according to the invention can use one or more of these different electrical components.

[00121] In one embodiment, the electrical component is an electrical connector. The connector can be a male connector or a female connector. Examples of different types of connectors have previously been described in the related patent applications, which have been incorporated by reference.

[00122] In one embodiment, the embedded electrical component is an electrical switch, such as one or more of those previously described in the related patent applications, which have been incorporated by reference.

[00123] In one embodiment, one electrical component can be a power source. The power source can be a battery, a solar cell or other type of power source.

[00124] In one embodiment, one electrical component can include a circuit board. The circuit board can be a rigid or a flexible circuit board.

[00125] In one embodiment, one electrical component can be an indicator. The indicator can be audio, visual, or physical (e.g., vibration). For example, the indicator can signal an event or condition to a user of the glasses.

[00126] In one embodiment, one electrical component can be a display, such as an LCD display.

[00127] In one embodiment, one electrical component can be a speaker. The speaker can provide an audio output for the benefit of the wearer of the glasses. The speaker can directly transmit sound to a user, such as a speaker mounted on an exterior surface of an eyeglass frame, or partially or fully embedded in an

eyeglass frame, or a bone conducting type of speaker. Alternatively, the speaker can indirectly transmit sound to a user, such as through the use of a tube to deliver audio output proximate to a user's ear.

[00128] In one embodiment, one electrical component can be a controller. The controller can, for example, be a microprocessor.

[00129] In one embodiment, one electrical component can be a memory device. The memory device can be non-volatile memory, such as FLASH memory. The data stored in the memory device can be user data or data provided by other electrical components.

[00130] In one embodiment, one electrical component is a frequency receiver or a frequency transmitter. They can be in the radio frequency range.

[00131] In one embodiment, one electrical component can be a sensor. The sensor can be a temperature sensor. The temperature sensor can be used to sense the temperature of the wearer. In one embodiment, such a temperature sensor is in a temple tip. In measuring the temperature, the user can further press the temple tip towards his head to ensure better connection. One can also put the temple under one's tongue to measure body temperature.

[00132] In other different embodiments, one electrical component can be a motion detector, a speed sensor, a rate of ascent (or descent) detector, a pressure detector, or a detector for radiation, such as an ultraviolet (UV) detector.

[00133] In one embodiment, one electrical component is a radio frequency identification (RFID) tag. A RFID tag typically includes a memory chip and a radio antenna. The memory chip usually has a small storage capacity and thus does not include a large amount of information. A portion of such information can provide identifying information for the glasses. The memory chip may only have a few kilobytes, sufficient to encode information, such as a serial number, where and when the product (such as eyeglasses) was manufactured, and other relevant information.

[00134] The RFID tags can come in a number of configurations. For example, an active tag uses a battery-powered transponder to constantly emit signals which can carry information programmed into the memory chip. Active tags are more applicable to situations where readers are not close to the tags. A semi-passive tag likewise has a battery, but may not be activated until it receives a signal from a reader. They are more applicable to situations that do not need continuous connection and accessing. A passive tag has no battery; its antenna extracts power from a reader's radio wave signal to transmit the identifying information. Passive tags are typically relatively inexpensive, but may have to be within a few feet of a reader to extract power. The electrical component can be a passive RFID tag, or some other type of tag.

[00135] In one embodiment, one electrical component can be for locating the corresponding glasses. For example, the electrical component can produce a beeping tone when it receives a specific radio signal. A handheld device (such as a key chain accessory, can generate the specific radio signal (e.g., when a button is pushed). Through the beeping tone, one can locate the glasses.

[00136] As noted above, in one embodiment, the electrical component can be a sensor. More generally, a pair of glasses can include one or more sensors that can be used individually or in combination. FIG. 5 is a chart 500 that depicts examples of sensors suitable for use in or attached to the glasses.

[00137] In one embodiment, the sensor is a "being worn" sensor. The "being worn" sensor indicates whether the glasses are being worn by its user. The "being worn" operation can be performed using, for example, a thermal sensor, a motion detector, a stress sensor or a switch.

[00138] In one embodiment, a motion detector is used as a "being worn" sensor. A threshold can be set, such that if the amount of motion exceeds the threshold, the glasses are assumed to be worn. The motion detector can, for example, be achieved by a mechanical mechanism or an accelerometer.

[00139] In another embodiment, the "being worn" sensor includes two thermal sensors. One sensor can be at approximately the middle of a temple, such

as in a region that touches the head of the user wearing the glasses. The other sensor can be at one end of the temple, the end that is close to its hinge. If the temperature differential between the two sensors is beyond a certain preset value, the glasses would be assumed to be worn. The differential is presumed to be caused by a person wearing the pair of glasses.

[00140] In yet another embodiment, the "being worn" sensor includes a stress sensor at the hinge of the temple. The assumption is that when the eyewear is worn, the hinge is typically slightly stretched because typically, the width of the head of the user is slightly wider than the width between the temples when the two temples are in the extended positions. If the value of the stress sensor is beyond a certain preset value, the glasses would be assumed to be worn.

[00141] In a further embodiment, the "being worn" sensor can be a switch. For example, at the hinge between a temple and its corresponding lens holder, there is a switch. When that temple is in its extended position, i.e., fully extended outwards, the switch is turned on. The switch can be a pin-type switch. When the temple is fully extended outwards, the pin is pressed. When both temples are fully extended outwards, in one embodiment, the glasses would be assumed to be worn by the user.

[00142] In one embodiment, another type of sensor is an environmental sensor. The environmental sensor can sense environmental conditions, such as one or more of radiation (e.g., ultraviolet radiation or light), temperature (e.g., ambient temperature), pressure, humidity and toxins (e.g., chemicals, etc.).

[00143] In another embodiment, another type of sensor is a condition sensor. The condition sensor can sense the conditions of the user of the glasses. Examples of condition sensors include sensing one or more of distance traveled, location, speed, calories consumed, temperature and vital signs associated with the user of the glasses. The distance traveled could represent the horizontal distance traveled or the vertical distance (i.e., elevation) traveled. The speed can be the rate of movement along the horizontal distance traveled and/or the vertical

distance. In yet another embodiment, the condition sensor can indirectly sense emotional conditions of the user of the glasses.

[00144] The sensors can be provided in a redundant or fault-tolerant manner. For example, sensors can come in pairs in the glasses. When one malfunctions, the other one will take over its operation. In another embodiment, the sensor information can be processed in a differential manner to examine changes to the sensor information. The differential can be based on time. The sensors can be powered by a battery, solar energy, or kinetic energy. For reduced power consumption, the sensors can remain in a low-power state unless data is being acquired by the sensors. In yet another embodiment, two or more of the sensors can communicate with one another (wired or wirelessly) to exchange data or control information.

[00145] FIG. 6 illustrates a diagram of a number of different embodiments of temple adapters 600 according to the invention. The temple adapters 600 serve to adapt a temple (i.e., a temple body or temple tip) of a pair of eyeglasses to provide for at least one electrical component. In one embodiment, a temple adapter can clip onto a temple body or a temple tip. In another embodiment, a temple adapter can mount to a post provided on a temple body or a temple tip. In still another embodiment, a temple adapter can mount to a hole provided in a temple body or a temple tip. In yet another embodiment, a temple adapter can be bonded (or adhered) to a temple body or a temple tip.

[00146] The temple adapter is particularly well suited to adapt a pair of eyeglasses with communication components, such as a speaker and/or a microphone. As an example, a standard pair of eyeglasses can be transformed into an operational headset by attaching a temple adapter to a temple body or temple tip of the pair of eyeglasses, wherein the temple adapter includes at least one speaker and at least one microphone.

[00147] The temple adapter can be rigid or malleable. The benefit of being malleable is that the particular geometric arrangement/assembly of the temple adapter can be altered by its user for better user comfort or operation.

[00148] In one embodiment, the temple adapter is a structure that has at least one electrical component attached thereto or at least partially embedded therein. In another embodiment, all of the electrical components to be provided with the temple adapter are at least partially embedded in the temple adapter.

[00149] FIG. 7A is a diagram of a temple adapter 700 according to one embodiment of the invention. The temple adapter 700 attaches to a temple 702 (including any temple tip using a clip 704. The clip 704 can use force, such as an interference fit force or spring-induced force, to attach the temple adapter 700 to the temple 702. Besides the clip 704, the temple adapter 700 includes an angled arm 706 and an ear bud 708. The angled arm 706 can be malleable. When a pair of eyeglasses associated with the temple 702 is being worn by a user, the ear bud 708 can be placed in or near the user's ear canal. The ear bud 708 contains a speaker and receives electrical signals via a wire, such wire can be provided internal or external to the temple adapter 700 and can originate at the temple 702 or external to the temple 702.

[00150] FIG. 7B is a diagram of a temple adapter 720 according to another embodiment of the invention. The temple adapter 720 attaches to a temple 722 (including any temple tip) using a clip 724. The clip 724 can use force, such as an interference fit force or spring-induced force, to hold the temple adapter 720 to the temple 722. Besides the clip 724, the temple adapter 720 includes an angled arm 726, an ear bud 728, a microphone 730, an extension arm 732 and a cord 734. In this embodiment, the cord 734 includes a wire that connects to the speaker within the ear bud 728 and another wire that connects to the microphone 730. There can be one or more conductors inside a given wire. For example, a wire might have one conductor serving as a signal line and another conductor serving as ground. Such wires can be provided internal to the extension arm 732 and the angled arm 726. The arm 732 can serve to guide the cord 734 away from the user's ear or rearward. The angled arm 726 can be malleable. The placement or position of the microphone 730 can vary with implementation. As shown in FIG. 7B, the microphone 730 is directed forward to a user's front when a pair of eyeglasses associated with the temple 722 are being worn. Alternatively, the microphone 730

could be directed outward away from the user's head when the pair of eyeglasses are being worn. When a pair of eyeglasses associated with the temple 722 is being worn by a user, the ear bud 728 can be placed in or near the user's ear canal. The ear bud 728 contains a speaker and receives electrical signals via a wire of the cord 734. The cord 734 can have another end (not shown) with a connector for coupling with an audio output device (e.g., radio, MP3 player) or a communication device (e.g., mobile phone).

[00151] FIGs. 8A and 8B are diagrams of a temple adapter 800 according to another embodiment of the invention. FIG. 8A is a side view of the temple adapter 800, and FIG. 8B is a front view of the temple adapter 800. The temple adapter 800 has a support body 802 which has a support arm 803. An ear bud 804 is attached to an end of the support arm 803. A connector 806, such as a male audio connector, is attached to one end of the support body 802. A microphone 808 can be optionally provided and attached to the support body 802 or the support arm 803. Additionally, an elastic member 810 can be provided to facilitate attachment of the support body 802 to a temple 812 of a pair of eyeglasses. The temple 812 can have a tip region 814, which can be referred to as a temple tip. When the temple adapter 800 is attached to the tip region 814 of the temple 812, the tip region 814 is placed in or through an opening 816 in the elastic member 810, as shown, for example, in FIG. 8B. The temple adapter 800 is thereby held in place relative to the tip region 814. Additionally, although not shown, the support body 802 would carry a first internal wire from the connector 806 to the microphone 808, and the support body 802 and the support arm 803 would carry a second internal wire from the connector 806 to the ear bud 804.

[00152] FIG. 9A is a diagram of a temple adapter 900 according to another embodiment of the invention. In FIG. 9A, a side-view of the temple adapter 900 is depicted. The temple adapter 900 attaches to a temple 902 of a pair of eyeglasses. The temple 902 can have a tip region 904, which can be referred to as a temple tip. The temple adapter 900 has a support member 906. A first end 908 of the support member 906 couples to the temple 902 of a pair of eyeglasses. In one embodiment, the first end 908 serves to attach the temple adapter 900 to the

temple 902. For example, the first end 908 can provide a clip, clamp, post, or hole to provide or assist with the attachment. As another example, the first end 908 can alternatively or additionally use an adhesive, bonding or fastener (e.g., hook and loop system, such as Velcro) to provide or assist with the attachment. A second end 910 of the support member 906 provides an opening through which an arm 912 extends. One end of the arm 912 has an ear bud 914 attached thereto. The arm 912 can be angled and/or malleable. When a pair of eyeglasses associated with the temple 902 is being worn by a user, the ear bud 914 can be placed in or near the user's ear canal. The ear bud 914 contains a speaker and receives electrical signals via a wire, such wire can be provided internal or external to the temple adapter 900 and can originate at the temple 902 or external to the temple 902.

[00153] FIGs. 9B and 9C are diagrams of a temple adapter 920 according to still another embodiment of the invention. FIG. 9B is a side view of the temple adapter 920, and FIG. 9C is a front view of the temple adapter 920. The temple adapter 920 attaches to a temple 922 of a pair of eyeglasses. The temple 922 can have a tip region 924, which can be referred to as a temple tip. The temple adapter 920 has a support member 926. A first end 928 of the support member 926 couples to the temple 922 of a pair of eyeglasses. In one embodiment, the first end 928 serves to attach the temple adapter 920 to the temple 922. For example, the first end 928 can provide a clip, clamp, post, or hole to provide or assist with the attachment. As another example, the first end 928 can alternatively or additionally use an adhesive, bonding or fastener (e.g., hook and loop system, e.g., Velcro) to provide or assist with the attachment. The first end 928 also has a bracket 930 having a connector 932 at one end, and an elastic member 934 for coupling about the tip region 924. The connector 932, such as a male audio connector, is attached to one end of the bracket 930. A microphone 936 can be optionally provided and, for example, attached to the support body 926.

[00154] A second end 938 of the support member 926 provides an opening through which an arm 940 extends. One end of the arm 940 has an ear bud 942 attached thereto. The arm 940 can be angled and/or malleable. The arm 940 is

also re-positionable within the opening at the second end 938 so as to permit user adjustment. When a pair of eyeglasses associated with the temple 922 is being worn by a user, the ear bud 942 can be placed in or near the user's ear canal. The ear bud 942 contains a speaker and receives electrical signals via a wire, such wire can be provided internal or external to the temple adapter 920 and can originate at the temple 902 or external to the temple 902. In this embodiment, a wire 944 is shown as passing through the arm 940 to provide signals to the speaker within the ear bud 942. More particularly, in one embodiment, although not shown in FIGs. 9B and 9C, a first wire would connect the speaker within the ear bud 942 to the connector 932 (e.g., wire 944), and a second wire would connect the microphone 936 to the connector 932. Such wires can be internal or external, or partially internal and partially external, to the temple adapter 920.

[00155] FIG. 9D is a diagram of a temple adapter 960 according to still another embodiment of the invention. In FIG. 9D, a side-view of the temple adapter 960 is depicted. The temple adapter 960 attaches to a temple 962 of a pair of eyeglasses. The temple 962 can have a tip region 964, which can be referred to as a temple tip. The temple adapter 900 has a support member 966. A first end 968 of the support member 966 couples to the temple 962 of a pair of eyeglasses. In one embodiment, the first end 968 serves to attach the temple adapter 960 to the temple 962. For example, the first end 968 can provide a clip, clamp, post, or hole to provide or assist with the attachment. As another example, the first end 968 can alternatively or additionally use an adhesive, bonding or fastener (e.g., hook and loop system, e.g., Velcro) to provide or assist with the attachment. A second end 970 of the support member 906 provides an opening through which an arm 972 extends. One end of the arm 972 has an ear bud 974 attached thereto. The arm 972 can be angled and/or malleable. When a pair of eyeglasses associated with the temple 962 is being worn by a user, the ear bud 974 can be placed in or near the user's ear canal. The ear bud 974 contains a speaker and receives electrical signals via a wire, such wire can be provided internal or external to the temple adapter 960 and can originate at the temple 962 or external to the temple 962. Further, the temple adapter 960 can include a microphone 976. In this

embodiment, the microphone 976 is attached to the support member 966. In addition, an arm 978 is used to support an end of a cable 980 that is coupled to the arm 978. The cable 980 can include at least one wire for the microphone 976 and one wire for the speaker within the ear bud 974.

[00156] To the extent that any of the embodiments of the temple adapters discussed above use a microphone, a tube can be optionally attached to the microphone to facilitate voice pick-up of the user. One end of the tube can be placed over the microphone, and the other end of the tube is then positioned closer to the user's mouth than is the microphone. With a temple adapter on both temples, each providing a microphone and speaker to a pair of eyeglasses, only one temple adapter would typically make use of such a tube. Alternatively, the tube and the microphone could be replaced by a boom microphone.

[00157] FIG. 10A-10C are diagrams of a temple having a bone conducting element according to still other embodiments of the invention. The bone conducting elements can replace a traditional speaker to provide audio output to a user. Although not shown, electrical signals would be internally or externally supplied to the bone conducting element.

[00158] FIG. 10A illustrates a temple 1000 for a pair of eyeglasses. The temple 1000 includes a bone conducting element 1002 that can provide audio sound to a user by coupling vibrations to at least one bone of the user's face. The bone conducting element 1002 is held relative to the temple 1000 by an arm 1004. Hence, in this embodiment, the temple 1000, the arm 1004 and the bone conducting element 1002 can all be integrally formed.

[00159] FIG. 10B illustrates a temple 1020 for a pair of eyeglasses. The temple 1020 includes a bone conducting element 1022 that can provide audio sound to a user by coupling vibrations to at least one bone of the user's face. The bone conducting element 1022 is held relative to the temple 1020 by a support 1024 that removably attaches to the temple 1020.

[00160] FIG. 10C illustrates a temple 1040 for a pair of eyeglasses. The temple 1040 includes a bone conducting element 1042 that can provide audio

sound to a user by coupling vibrations to at least one bone of the user's head. In this embodiment, the bone conducting element 1042 is positioned in the vicinity of the user's ear, such as behind the user's ear. The placement of the bone conducting element 1042 in this embodiment can reduce impact to the design of the eyeglasses.

[00161] In one embodiment, the electrical components associated with a temple arrangement, a temple adapter or a removable temple part is for enhancing the hearing of the person wearing the corresponding pair of glasses. There can be at least a microphone and a speaker in a temple arrangement, a temple adapter or removable temple part. The microphone can be close to an ear of the user when the glasses are worn by the user, and can be a directional microphone. The microphones can be a microphone in a temple adapter, such as the microphone 730 in FIG. 7B, 808 in FIG. 8A, 936 in FIG. 9B, or 976 in FIG. 9D. The microphones can be in a temple arrangement. The microphone in a temple arrangement can be attached to a temple tip, a temple fit-over or a temple cover. The microphones can be positioned to be in front of the user's ears so that the microphones will not be affected by the shadowing effect of the ears. The speaker can be inserted into the ear, as in some of the speakers previously described.

[00162] In another embodiment, there are two sets of microphones and speakers, such as in two temple arrangements, temple adapters or removable temple part. In the vicinity of each ear, there is a temple arrangement, temple adapter or removable temple part with its corresponding microphone and speaker. The microphones again can be directional, one pointing generally outwards in a position close to the left ear, and one pointing generally outwards in a position close to the right ear. Alternatively, the microphones can point forward.

[00163] The microphone and the speaker close to an ear do not have to be in very close proximity to each other, as in many hearing aids existing nowadays. They can be spaced apart by, such as, one to several inches, with the microphone being directional and pointing to the front and to either the left or the right of the user, and with the speaker pointing toward or inserted into the corresponding ear

of the user. Such a distance apart can significantly reduce feedback effect of existing hearing aids. Another advantage of such a hearing enhancement device is that users may not need to be fitted into ears with ear molds. In any case, additional details on hearing enhancement are further described in the related applications that have been incorporated herein by reference, such as U.S. Provisional Patent Application No. 60/620,238, filed October 18, 2004, and entitled "EYEGLASSES WITH HEARING ENHANCED AND OTHER AUDIO SIGNAL-GENERATING CAPABILITIES."

[00164] The various embodiments of the invention noted above, whether temple arrangement, temple adapter or removable temple part, can have a cable or cord attached or attachable thereto. The cable or cord has one or more conductors. The cable or cord can serve to provide electrical signals to or receive electrical signals from the temple arrangement, the temple adapter or removable temple part. In one embodiment, one end of a cable or cord attaches to a temple arrangement, temple adapter or removable temple part (either permanently or via a connector) and the other end of the cable or cord attaches (either permanently or via a connector) to an electronic device. As an example, the electronic device can be an audio output device (e.g., audio player) or a communication device (e.g., mobile telephone). In a first example, the cable or cord could provide a male audio (stereo) connector at one end, and a pair of female audio connectors at the opposite end, each being for use with a different temple. In a second example, the cable or cord could provide a set of connectors, such as a male mini-phone connector (2.5 mm) and a male audio (stereo) connector, at one end, and one or a pair of female phone connectors at the opposite end.

[00165] In one embodiment, the cable or cord can also have a switch coupled thereto so as to permit a user to switch modes. For example, if the temple arrangement, temple adapter or removable temple part provides a speaker and microphone to a pair of eyeglasses, a switch on a cable or cord that connects the temple arrangement or temple adapter to an electronic device could provide different switch positions for different electronic devices or different functional modes of operation of a single electronic device. As an example, if the electronic

device is (or operates as) an audio player, a first switch position could be used. Alternatively, if the electronic device is (or operates as) a mobile telephone, a second switch position could be used. Additional discussion of suitable cables and cords is provided in the related applications that have been incorporated herein by reference.

[00166] Electrical components can form an electronic module. The electronic module can provide radiation monitoring, wireless communication, enhanced hearing, etc. A radiation monitoring system can be partially or fully contained in a temple arrangement, temple adapter or removable temple part associated with a temple of a pair of glasses. Typically, the temple arrangement or temple adapter can be removable from the temple. The removable temple part is obviously removable from a corresponding remaining temple part.

[00167] In another embodiment, an electronic component in a temple arrangement, temple adapter or removable temple part interacts with another electronic component in another part (e.g., frame) of the glasses or in a device tethered to the glasses. For example, a temple of a pair of glasses holds one portion of an electronic circuit. That portion can include generic parts, such as a battery, that are applicable to different applications. Another portion of the electronic circuit is in a temple arrangement, temple adapter or removable temple part. This portion can be application specific, such as an electronic clock without a battery, or a temperature sensor.

[00168] In yet another embodiment, the electrical components can provide audio player capabilities. In such an embodiment, the electrical components can include audio file storage, an audio player and a battery. The electrical components may or may not include wireless communication circuitry.

[00169] Further, in an alternative embodiment, the output of an operation indicator can be audio. The audio output can be from one or more speakers associated with the frame of the eyeglasses. Such audio output can signal the user using natural language, voice synthesis, pre-recorded messages, etc.

[00170] In another embodiment, the electrical components can include a memory module. The memory module provides non-volatile data storage. For example, the memory module can be a portable (or removable) memory device (e.g., memory card). The memory module can, for example, store sensor information (which can be over an extended period of time). Such memory module can be remotely interrogated using wireless communication circuitry, or can be accessed through a wired connection with a tethered device.

[00171] In one embodiment, the electrical connection(s) can alternatively be used to allow information stored in the electrical components to be accessed or queried by a device. For example, when the electrical components include a memory module, the memory module can be accessed to read data (e.g., status information) stored therein.

[00172] As previously noted, the electrical components associated with a temple arrangement, a temple adapter and/or removable temple part can pertain to radiation monitoring circuitry. In such case, the electrical components within the temple arrangement, temple adapter or removable temple part alone or together with eyeglass electrical components can implement a radiation monitoring system. The radiation being monitored can, for example, pertain to one or more of UV, infrared and gamma radiation. In one embodiment, sunlight is considered as a type of radiation. In any case, additional details on radiation monitoring are further described in the related applications that have been incorporated herein by reference.

[00173] Also, the electrical components can pertain to health or fitness monitoring circuitry. In such case, the electrical components within the temple arrangement, the temple adapter removable temple part alone or together with eyeglass electrical components can implement a health or fitness monitoring system. Additional details on health or fitness monitoring are further described in the related applications that have been incorporated herein by reference.

[00174] In yet another embodiment, an electronic component in a temple arrangement, a temple adapter or removable temple part of a frame of eyeglasses

interacts with an electronic component of an apparatus tethered to the eyeglasses to perform an operation. For example, a temple arrangement, a temple adapter removable temple part of a pair of eyeglasses holds one portion of an electronic system, and a tethered apparatus that tethers to the pair of eyeglasses includes another portion of the electronic system.

[00175] Still further, the invention can provide a new approach to marketing accessories, namely, electrical accessories, for eyewear. According to one method for providing temple arrangements, temple adapters and/or removable temple part for use with a pair of glasses, the method can initially provide a plurality of temple arrangements, temple adapters and/or removable temple part for a customer. This enables the customer to browse and select at least one temple arrangement, temple adapter or removable temple part. Each of the temple arrangements, temple adapters or removable temple part can have one or more electrical components at least partially embedded therein, with different temple arrangements, temple adapters or removable temple parts providing different electrical capabilities. Once a temple arrangement, temple adapter or removable temple part has been selected, the selected temple arrangement, temple adapter or removable temple part can be coupled to one of the corresponding temples of the eyewear (e.g., a pair of glasses). In the case where the selected temple arrangement is a temple tip, the selected temple tip is inserted onto (e.g., slid over) an end of the corresponding temple (after removing any previously installed temple tip if there was one). In the case where the selected temple adapter is to be coupled, the selected temple adapter can be attached to the corresponding temple. In the case where the selected removable temple part is to be coupled, the selected removable temple part can be attached to a remaining part (e.g., forward part) of the corresponding temple. Thereafter, the customer can make use of the eyewear with its associated electrical capabilities provided by the temple arrangement, temple adapters or removable temple part.

[00176] In one embodiment, once a temple arrangement, a temple adapter and/or removable temple part is provided to a customer, the customer can test the electrical capabilities of the pair of glasses. If the customer does not like the current

selected temple arrangement, temple adapter or removable temple part, the customer can repeat the process by selecting and testing another temple arrangement, temple adapter or removable temple part. Before providing the eyewear with the temple arrangement, temple adapter or removable temple part, the customer can be required to pay a purchase (or rental) price for at least the temple arrangement, temple adapter or removable temple part. Thereafter, the customer can be permitted to return and replace the temple arrangement, temple adapter or removable temple part with another temple arrangement, temple adapter or removable temple part. Such returns or replacements can be available only for a limited period of time following their purchase.

[00177] Yet still another aspect of the invention relates to eyewear having an extended endpiece so as to facilitate placement of one or more electrical components at the extended endpiece. In one embodiment, a conventional pair of glasses has two endpieces, one on its left and the other on its right side of the frame. For example, the left endpiece is the region of the frame approximately between the left hinge (or joint) and the left lens holder of the frame. Similarly, the right endpiece is the region of the frame approximately between the right hinge (or joint) and the right lens holder of the frame.

[00178] The one or more electrical components at an extended endpiece can operate independently or together with other electrical components provided elsewhere. For example, other electrical components can be provided in other regions of the frame for the eyewear. In another example, the other electrical components can be located in a bridge area of the frame for the eyewear. In such an example, given that the endpiece is extended, the one or more electrical components can be placed at the endpiece and thereby communicate with other electrical components in a front area (e.g., lens holder region or bridge region) or the other endpiece (which can also be extended) without having to communicate through a hinge or connector.

[00179] FIG. 11A illustrates a pair of glasses 1100 according to one embodiment of the invention. The pair of glasses 1100 includes a first lens holder

1102 and a second lens holder 1104. The lens holders 1102 and 1104 are capable of receiving lenses. The lenses can be prescription lenses or non-prescription lenses. The first lens holder 1102 has a first side and a second side. The second lens holder 1104 has a first side and a second side. The pair of glasses 1100 also has a bridge 1106 in between the first lens holder 1102 and the second lens holder 1104. The bridge 1106 is coupled to the second side of the first lens holder 1102 and the first side of the second lens holder 1104. The lens holders 1102 and 1104 and the bridge 1106 can be separate pieces or a single integral piece. The glasses 1100 can also be referred to as eyeglasses.

[00180] The pair of glasses 1100 also includes a first extended endpiece 1112 and a second extended endpiece 1113. In addition, the pair of glasses 1100 includes a pair of temples, namely, a first temple 1108 and a second temple 1110. The first extended endpiece 1112 connects to the first temple 1108 via a joint (or hinge) 1114. The second extended endpiece 1113 connects to the second temple 1110 via a joint (or hinge) 1115. In one embodiment, the extended endpieces 1112 and 1113 are larger as compared to conventional endpieces. As a result, the respective joints (or hinges) 1114 and 1115 are set back from the respective lens holders 1102 and 1104. For example, in one embodiment, the hinge 1115 is set back from the lens holder 1104 by about 1 to 5 centimeters. One advantage of utilizing enlarged (or extended) endpieces 1112 and 1113 as illustrated in FIG. 11A is that electrical components 1116 are able to be comfortably provided in the extended endpieces 1112 and 1113. Moreover, another advantage is that the electrical components 1116 within the extended endpiece 1113 can electrically couple to other electrical components provided within the forward portion or front area of the frame without having to electrically connect through a joint or hinge. As illustrated in FIG. 11A, the extended endpiece 1113 provides electrical components 1116 with at least a portion at an inner surface of the extended endpiece 1113. The electrical components 1116, in this example, include a display 1118 and a plurality of switches 1120 (e.g., buttons). As an example, the electrical components 1116 can, for example, implement an electrical system (e.g., pedometer system, UV monitoring system, or other physical condition monitoring

system, etc.). In the embodiment of the glasses 1100 illustrated in FIG. 11A, the electrical components 1116 are provided in the extended endpiece 1113.

[00181] FIG. 11B illustrates the pair of glasses 1100 according to another embodiment of the invention. More particularly, FIG. 11B illustrates the pair of glasses 1100 illustrated in FIG. 11A where the electrical components 1116 are provided as a module 1122 embedded internal to the extended endpiece 1113. The module 1122 includes a plurality of interconnected electrical components, including the display 1118 and the switches 1120. In addition, the glasses 1100 further include a separate electrical component 1124. As illustrated in FIG. 11B, the separate electrical component 1124 can be provided at the bridge 1106. Still further, a conductive element (e.g., a wire) that electrically connects the module 1122 with the separate electrical component 1124 can be provided internal to the eyeglass frame, such as internal to the lens holder of 1104. The nature of the separate electrical component 1124 can vary depending upon application. In the case in which the module 1122 pertains to a pedometer or health system, the separate electrical component 1124 can pertain to a sensor used to measure the heart rate of the user of the glasses 1100. For additional details on a sensor utilized in this context, see U.S. Provisional Patent Application No. 60/787,850, filed April 1, 2006, and entitled "EYEGLASSES WITH HEART RATE MONITOR," which is hereby incorporated herein by reference. Although not illustrated in FIG. 11B, the extended end piece 1113 can also include a cavity (or opening) and a cover or a door. The module 1122 can be inserted or removed from the cavity by way of the cover or door.

[00182] FIGs. 12A-12E illustrate a side view of eyeglass frames having an extended temples according to several embodiment of the invention. In FIG. 12A, a side view of an eyeglass frame 1200 includes a lens holder (or a region immediately proximate to a lens holder) 1202, an extended endpiece 1204 and a temple 1206. The extended endpiece 1204 includes one or more electrical components 1208 partially or completely internal to the extended endpiece 1204. In this embodiment, the manner by which the temple 1206 connects to the extended endpiece 1204 is not depicted. Hence, the temple 1206 can be integral

with the extended endpiece 1200, can be permanently coupled to the extended endpiece 1204, or can be removably or pivotally coupled to the extended endpiece 1204.

[00183] The side view of an eyeglass frame 1220 illustrated in FIG. 12B is similar to the eyeglass frame 1200 illustrated in FIG. 12A. However, in this embodiment, the temple 1206 is coupled to the extended endpiece 1204 by way of a joint (or hinge) 1210. FIG. 12C illustrates the eyeglass frame 1220 with the temple 1206 being substantially closed with respect to the eyeglass frame 1220. As noted in FIG. 12C, the temple 1206 can rotate (or pivot) with respect to the extended endpiece 1204 by way of the joint (or hinge) 1210. In this embodiment, the temple 1206 is able to be rotated (or pivoted) as in conventional eyewear such that (i) the temples can be closed or folded inwards towards the lens holders when not being worn, which can facilitate storage or (ii) the temples can be extended to an open position or extended outwards away from the lens holders, so that the eyeglasses can be worn. While retaining the traditional notion of the folding temples, the eyeglass frame 1220 causes the joint 1210 to be set back from the lens holder 1202 so that the endpiece is extended, which can facilitate including or storing one or more electoral components within the endpiece.

[00184] The side view of an eyeglass frame 1230 illustrated in FIG. 12D is similar to the eyeglass frame 1200 illustrated in FIG. 12A. However, in this embodiment, the temple 1206 is coupled to the extended endpiece 1204 by a linking temple piece 1232. The linking temple piece 1232 couples to the extended endpiece 1204 by way of a joint (or hinge) 1234. The joint 1234 allows the linking temple piece 1232 to rotate (or pivot) with respect to the extended endpiece 1204. In addition, the linking temple piece 1232 includes a connector 1236 that is capable of receiving a corresponding connector 1238 associated with the temple 1206. In this embodiment, the temple 1206 couples to the linking temple piece 1232 using the connectors 1236 and 1238 which provide physical connection (and optionally also electrical connection). The linking temple piece 1232 in turn can couple to the extended endpiece 1204 by way of the joint (or hinge) 1234. The temple 1206 is

thus easily removable from the linking temple piece 1232 of the eyeglass frame 1230.

[00185] The side view of an eyeglass frame 1240 illustrated in FIG. 12E is similar to the eyeglass frame 1200 illustrated in FIG. 12A. However, in this embodiment, the extended endpiece 1204 includes a first connector 1242, and the temple 1206 includes a corresponding connector 1244. Here, the temple 1206 can be removably connected to the extended endpiece 1204 by way of the connectors 1242 and 1244.

[00186] According to still another embodiment of the invention, temples for eyeglass frames can be not only removable but also piecewise replaceable. In other words, an entire temple can be removed and replaced with respect to an eyeglass frame. In another implementation, a portion of a temple can be removed and replaced with another portion. Allowing temples of eyeglass frames to be removed and replaced facilitates incorporating different electronic modules that are internal to, integral with, or at least partially embedded in the temples (or temple portions) to the changed. Also, the different temple portions can have different design appearances that allow the design of the eyeglasses, namely the temples, to be altered as desired by a user. In other words, the temples or temple portions can be swappable.

[00187] FIG. 13A illustrates a temple 1400 having multiple parts according to one embodiment of the invention. The temple 1400 includes a temple base 1402 that couples to a forward portion 1404 of an eyeglass frame. The forward portion 1404 can, for example, pertain to an endpiece or a portion in the vicinity of a hinge (or joint) of a temple. In addition, the temple 1400 includes a temple tip 1406 (or rearward portion). One end of the temple base 1402 can connect to the forward portion 1404 and the other end of the temple base can connect to the temple tip (or rearward portion) 1406. In one embodiment, the temple base 1402 and the temple tip 1406 of an eyeglass frame can be replaced (individually or in combination) with other temple bases and temple tips. For example, the temple base 1402 and/or the temple tip 1406 could be removed and replaced with another

temple base and/or temple tip having a different functional capability or a different ornamental appearance.

[00188] FIG. 13B illustrates a portion of an eyeglass frame 1420 according to one embodiment of the invention. The portion of the eyeglass frame 1420 is similar to a portion of the eyeglass frames 1200 illustrated in FIG. 12A. One difference is that the temple 1206 now explicitly illustrates a temple base 1422 and a temple tip 1424. The temple base 1422 and the temple tip 1424 can be removed and replaced (individually or in combination) with respect to the eyeglass frame, such as the extended endpiece 1204.

[00189] FIG. 13C illustrates a portion of an eyeglass frame 1340 according to another embodiment of the invention. The portion of the eyeglass frame 1440 is similar to a portion of the eyeglass frame 1200 illustrated in FIG. 12A. However, in FIG. 13C, the portion of the eyeglass frame 1440 includes a temple insert 1442. The temple insert 1442 can include one or more electrical components 1444 internal to, integral with, or at least partially embedded in the temple insert 1442. As illustrated in FIG. 13C, the temple insert 1442 can be provided between the extended endpiece 1204 and the temple 1206 or the rearward portion of the temple. Although not shown in FIG. 13C, the connection between the temple insert 1442 and the extended endpiece 1204 or the temple 1206 can be through use of a joint (or hinge) or by way of connectors as discussed above. In this embodiment, the temple insert 1442 can provide electrical components that can interact with the electrical components 1208 within the extended endpiece 1204 or elsewhere within the eyeglass frame. Hence, a user can optionally include the temple insert 1442 between the temple 1206 and the extended endpiece 1204 to provide additional functionality to the eyeglasses. In one embodiment, when the additional functionalities are not desired, the temple insert 1442 can be removed from the temple configuration, or the one or more electrical components 1444 can be removed from the temple insert 1442.

[00190] Another feature of the wireless eyeglasses that may be provided is one or more electrical connections on the frame of the wireless eyeglasses so as

to facilitate electrical connection with a battery charger. For example, when the power source for the wireless eyeglasses is a rechargeable battery, the ability to charge the battery without removing the battery from the frame (e.g., arm) of the wireless eyeglasses is advantageous. Hence, in one embodiment, the frame of the eyeglasses includes at least one connector or conductive element (e.g., terminal, pin, pad, trace, etc.) so that the electrical coupling between the rechargeable battery and the charger can be achieved. In this regard, the electrical connector or conductive element is provided on the frame of the eyeglasses and electrically connected to the battery. The placement of the electrical connector or conductive element on the frame serves to allow the wireless eyeglasses to be simply placed within a charger and consequently have the electrical connector or conductive element be in electrical contact with a counterpart or corresponding electrical connector or conductive element of the charger.

[00191] In one embodiment, the charger can be considered a docking station, upon which the wireless eyeglasses are docked so that the battery within the wireless eyeglasses is able to be charged. Hence, the frame of the wireless eyeglasses can likewise include an electrical connector or conductive element that facilitates electrical connection to the docking station when docked.

[00192] Power (e.g., external power source) can be coupled to the glasses through a connector. In one embodiment, the power source is embedded inside or inserted into the glasses. Different types of power sources are applicable. For example, the power source can be a battery, a fuel cell, a solar cell, or a re-chargeable battery. The rechargeable battery can be charged through a connector at the glasses.

[00193] In an earlier application, namely, U.S. Provisional Patent Application No. 60/509,631, filed October 9, 2003, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which has been incorporated herein by reference, there can be a base connected to the glasses through a cord. The cord can be just a piece of flexible conductor encapsulated by a flexible insulator. Typically, a cord includes a number of electrical wires or conductors. There can be one or more electrical components in the base, and there can also be one or more

electrical components in the cord. The different types of connectors previously described can be located in the base. In one embodiment, a power source is an electrical component in the base tethered to a pair of glasses. In another embodiment, the glasses are tethered to a base that has a connector. The connector is connected to and draws power from an external electronic device. In this embodiment, electrical components in the glasses draw power from the external electronic devices.

[00194] In yet another embodiment, the power sources are in a base or portable device connected to the glasses through a wire connection, and the power sources can be rechargeable.

[00195] An arm for a frame of a pair of eyeglasses according to one embodiment can further include additional eyeglass electrical components, such as a light source. The light source can, for example, be a Light Emitting Diode (LED). The light source can provide ornamental lighting to the frame or can serve as an indicator light.

[00196] As explained, in a number of embodiments, the glasses include a switch, which typically is at least partially embedded in the glasses.

[00197] Sensor processing can receive sensor information from a sensor. The sensor information is typically associated with the user of the eyeglasses. There can be different types of sensors. The sensors can be considered either eyeglass electrical components or tethered electrical components. For example, the sensor can be a temperature sensor configured to sense the temperature of the user. The sensor can be a humidity sensor configured to sense how much the user has been perspiring. The sensor can sense whether at least one of the user's eyes is open or not. The sensor can sense if the user is crying. The sensor can sense the direction the user is looking. In a general sense, the sensor information can, for example, pertain to physical and/or emotional conditions of the user.

[00198] In another embodiment, another type of sensor is a condition sensor. The condition sensor can sense the conditions of the user of the glasses. Examples of physical sensors include sensing one or more of distance traveled,

location, speed, calories consumed, temperature and vital signs associated with the user of the glasses. The distance traveled could represent the horizontal distance traveled or the vertical distance (i.e. elevation) traveled. The speed can be the rate of movement along the horizontal distance traveled and/or the vertical distance. In yet another embodiment, the condition sensor can sense the emotional conditions of the user of the glasses.

[00199] One advantage of cell phones is that you can make calls anywhere you can get a signal. However, one disadvantage is that you might be making a call in a noisy environment. In one embodiment, the glasses also include electrical components for noise cancellation. Such noise cancellation functionalities can be activated during a phone conversation.

[00200] In one approach, noise cancellation is achieved through a first and a second directional microphones. The first one points at the user's mouth, and the second one points away. For example, the first one can be at one of the hinges, whose directionality favors sound arriving from the user. There can also be a tube from the first microphone to or towards the mouth of the user, to guide the sound from the mouth to the microphone. The second microphone can be in the vicinity of the other hinge, whose directionality favors sound arriving in front of or outside of the user. Signals received from the second microphone are subtracted from signals received from the first microphone before the audio signals are further processed for transmission as the message from the user.

[00201] In yet another embodiment of power management, the amplification of the glasses on at least a range of frequencies depends on the ambient power level, or the noise level of the environment of the glasses. One approach to measure the noise level is to measure the average SPL at gaps of the audio signals. For example, a person asks the user the following question, "Have you left your heart in San Francisco?" Typically, there are gaps between every two words or between sentences or phrases. The glasses measure, for example, the root mean square ("rms") value of the power in each of the gaps, and can calculate another average among all of the rms values to determine the noise level. In one

embodiment, the glasses increase the amplification so as to ensure that the average power of the output audio signals by its speaker(s) is higher than the noise level by a certain degree. For example, the average SPL of the output audio signals from the glasses is 20 dB above the noise level.

[00202] In another embodiment, if the average power level of the environment or the ambient noise level is higher than a preset threshold value, signal amplification is reduced. This average power level can include all the audio signals received by, such as the microphone(s) of the glasses. The rationale is that if the environment is very noisy, it would be difficult for the user to hear the audio signals from the other person anyway. As a result, the glasses should not keep on amplifying the audio signals independent of the environment. To illustrate, if the average power level of the environment is more than 75 dB, hearing enhancement amplification is reduced, such as to 0 dB.

[00203] A number of embodiments have been described involving a speaker in an eyemask or a night cap. In one embodiment, the audio output from the speaker can serve to cancel the environmental sounds in the vicinity of the user. For example, if the user is on an airplane, the surrounding environmental sound has a relatively high level of white noise. This white noise can be detected by a pickup device and cancelled by noise cancellation circuitry provided within the eyemask or night cap. Namely, the audio output from the speaker serves to cancel the white noise of the user's environment. In another embodiment, the electrical component embedded or partially embedded is not a speaker, but can be a sensor, which can sense a physiological function of the user.

[00204] Electrical components within the temple arrangement or temple adapter alone or together with eyeglass electrical components can implement a radiation monitoring system. The radiation being monitored can, for example, pertain to one or more of UV, infrared and gamma radiation. In one embodiment, sunlight is considered as a type of radiation. In any case, additional details on radiation monitoring are further described in the related applications that have been incorporated herein by reference.

[00205] Eyewear can include one or more auxiliary sensors. One another type of auxiliary sensor is a physical sensor. The physical sensor can sense physical conditions of the user of the glasses. Examples of physical sensors include sensing one or more of location, temperature, alertness, and vital signs (e.g., heart rate, blood pressure, etc.) associated with the user of the glasses. Still other physical sensors can sense emotions of the user. For example, the physical sensor could sense whether the user is calm, excited, happy, sad, angry, etc. In one embodiment, the physical sensor can also more generally sense user activity level. As an example, the user activity level can be used to provide a lifestyle indication. For example, a lifestyle indication might show that the user was active today or, alternatively, lazy today. Such a lifestyle indication can be displayed as a text or graphic symbol to let the user or others aware of the activity level.

[00206] The activity monitoring system can also include one or more switches with the eyewear. The switches can, for example, facilitate user input or control with respect to the activity monitoring system. For example, the switches can provide one or more of on/off, reset, on, on (and reset), and calibration. The activity monitoring system can also provide a user with an indication of whether the system is currently on or off, such as by a graphical image on a display device or by a LED. The one or more switches can also be used to change operational settings, such as threshold levels, output type, user preferences, user physical characteristics (e.g., stride, weight), operational mode, or activation/deactivation of auxiliary sensors, if any.

[00207] The activity monitoring system can have a “being-worn” switch. In one embodiment, the “being-worn” switch enables the activity monitoring system to automatically determine when to monitor activity and when not to monitor activity. In particular, the activity can be monitored when an eyeglass frame having the activity monitoring system is “being-worn” and not when the eyeglass frame is not “being-worn.” The “being-worn” switch can be positioned in the temple portion with the other components of the activity monitoring system. In one embodiment, the activity monitoring system is provided, as a module as noted above, and which further includes a switch. The switch can, for example, be a “being worn” switch.

By having the switch integral with the module, the manufacture and assembly of the end-product having the activity monitoring system can be simplified. As examples, the "being-worn" switch can be an optical, magnetic or mechanical switching device.

[00208] The "being-worn" switch can make use of the situation that the temples are in an open position when the eyeglass frame is being worn, and in a closed position when not being worn. In one embodiment, the "being-worn" switch can be positioned at a temple proximate to a region that couples the temple to its corresponding lens holder. For example, the activity monitoring system (e.g., module) can be provided within the temple region near the end of the temple so that the "being worn" switch is adjacent the lens portion of the eyeglass frame.

[00209] The "being worn" switch can also be used by a user to signal the activity monitoring system to provide its output at an output device, such as a display device. For example, when the "being worn" switch is initially closed (i.e., being worn), the activity monitoring system can output its text or graphical output to the display device. Typically, the displayed output would be displayed only for a limited period of time (e.g., 10 seconds). Such an approach is typically more power efficient, yet permits the user to obtain the output information when desired. Alternatively, another switch (e.g., dedicated output switch) could be used to cause the output to be displayed for a limited period of time or while the switch is depressed.

[00210] In one embodiment, the eyewear (such as one including the activity monitoring system) can further include one or more auxiliary sensors. FIG. 14 is a chart 1500 that depicts examples of auxiliary sensors that can be utilized with the eyewear.

[00211] The chart 1500 indicates that one type of auxiliary sensor is a "being worn" sensor. The "being worn" sensor would indicate whether the glasses are being worn by its user. The "being worn" sensing mechanism can be performed using, for example, a thermal sensor, a motion detector, a stress sensor or a switch.

[00212] In one embodiment, a motion detector is used as a "being worn" sensor. A threshold can be set, such that if the amount of motion detected exceeds the threshold, the eyewear is assumed to be worn. The motion detector can, for example, be achieved by a mechanical means or an accelerometer.

[00213] In another embodiment, the "being worn" sensor includes one or more thermal sensors. In the case where two sensors are used, one sensor can be at approximately the middle of a temple, such as in a region that would receive heat from the head of the user wearing the glasses, and the other sensor can be positioned at the end of the same temple close to the hinge. If the temperature differential between the two sensors is beyond a certain preset value, the eyewear would be assumed to be worn.

[00214] In yet another embodiment, the "being worn" sensor includes a stress sensor at the hinge of the temple. The assumption is that when the eyewear is worn, the hinge is typically slightly stretched because typically the width of the head of the user can be slightly wider than the width between the temples when the two temples are in the extended positions. If the value of the stress sensor is beyond a certain preset value, the glasses would be assumed to be worn.

[00215] In still yet another embodiment, the "being worn" sensor can be implemented as a switch. For example, the switch can utilize optical, magnetic or mechanical means. In one embodiment, the switch can be positioned at the temple of the eyewear, such as a forward end of the temple proximate to a corresponding lens holder. Different embodiments of such sensors is also described in U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," which has been incorporated herein by reference, see, e.g., section entitled "EYEGLASSES WITH USER INPUT CAPABILITY."

[00216] Another type of auxiliary sensor is an environmental sensor. The environmental sensor can sense environmental conditions, such as one or more of temperature (e.g., ambient temperature), pressure, humidity and toxins (e.g., chemicals, radiation, etc.).

[00217] Still another type of auxiliary sensor is a physical sensor. The physical sensor can sense physical conditions of the user of the glasses. Examples of physical sensors include sensing one or more of location, temperature, alertness, and vital signs (e.g., heart rate, blood pressure, etc.) associated with the user of the glasses. Still other physical sensors can sense emotions of the user. For example, the physical sensor could sense whether the user is calm, excited, happy, sad, angry, etc. In one embodiment, the physical sensor can also more generally sense user activity level. As an example, the user activity level can be used to provide a lifestyle indication. For example, a lifestyle indication might show that the user was active today or, alternatively, lazy today. Such a lifestyle indication can be displayed as a text or graphic symbol to let the user or others aware of the activity level.

[00218] In one embodiment, one particular type of physical sensor is a heart-beat sensor. The heart-beat sensor measures the heart beat of the wearer of the eyewear. One implementation for the heart-beat sensor utilizes an infrared emitter and an infrared detector as components. The infrared emitter can be an infrared LED and the infrared detector can be an infrared photodiode (or a non-infrared photodiode with a separate infrared filter). The components can be located at a temple of the eyewear, with both the emitter and the detector facing the user when the eyewear is worn. In operation, the infrared emitter shines infrared radiation towards the user, and the detector captures the infrared signals reflected back by the skin of the user. The magnitude of the reflected signals depends on the amount of blood flowing below the skin, which, in turn, depends on (i.e., fluctuates with) the heart beat. The rate of emission by the emitter and reception by the detector can be modulated (e.g., amplitude modulate) in a frequency range much higher than the heart beat, such as three Kilohertz. And the signals from the detector can be low-pass filtered before they are measured to identify the heart beat of the user. For example, the low-pass filter can have a cutoff frequency at about 1 Hertz (Hz).

[00219] It should be understood that the sensors might rely on more than one measured criteria. The one or more measured criteria might be used to determine

the sensor output. The determination of the sensor output can involve estimation or prediction.

[00220] The auxiliary sensors can be provided in a redundant or fault-tolerant manner. For example, sensors can be provided in pairs. When one sensor of a pair malfunctions, the other one can replace it. In another embodiment, any of the auxiliary sensor information can be processed in a differential manner to examine changes to the auxiliary sensor information. The auxiliary sensors can by powered by a battery, solar energy, or kinetic energy. For reduced power consumption, the auxiliary sensors can remain in a low-power state unless data is being acquired by the auxiliary sensors. In yet another embodiment, two or more of the auxiliary sensors can communicate with one another (wired or wirelessly) to exchange data or control information.

[00221] In general, the auxiliary sensors can be fully or partially embedded in the eyewear or a base tethered to the eyewear. Alternatively, one or more of the auxiliary sensors can be separate from the eyewear, or any base tethered thereto, and wirelessly communicate with the eyewear or base.

[00222] FIG. 15 shows some of the electrical components for a player 1600 in a glasses according to an embodiment of the invention. The player includes a speaker 1602, a data bus 1604 to facilitate data transfer among, for example, a processor 1606, a storage device 1608, and a coder/decoder (CODEC) 1610. The processor 1606, which can be a microprocessor or controller, controls the operation of the player 1600. The storage device 1608 stores the information, which can be different types of appropriately-formatted media data. In one example, the information is digitally encoded audio signals. The storage device 1608 can include a number of separate storage elements. For example, the device can be a flash memory device, or a minidisk device, and a cache, which can improve the access time and reduce power consumption of the storage device 1608. The storage device 1608 typically also includes a Read-Only Memory (ROM), which stores programs, utilities or processes to be executed in a non-volatile manner. The player 1600 can also include a RAM, such as for the cache.

[00223] Once a piece of information is selected to be played, the processor 1606 would supply the piece of information to the CODEC 1610, which decompresses the media data and produces analog output signals for the speaker 1602. In one embodiment, the bus 1604 is also coupled to an input/output device 1612, which would allow information to be downloaded from an instrument to the glasses.

[00224] There are different approaches to identify a piece of information to be played. In one embodiment, different pieces of information in the storage device 1608 can be categorized, and the categorization can be hierarchical, with multiple levels in the hierarchy. To illustrate, assume that there are three levels. The top level can be the name of the football team; the second level can be the names of the players on the team, and the third level can be scoring statistics or other attributes of the players. The entries, such as the name of the players, can be abbreviated. There can be a control knob or switch to allow the user to scroll down entries in a level. By pushing the knob, the user selects an entry, which can lead the user to the next level. There can be an entry for moving up a level also. In one embodiment, once an entry is selected, the identity of that entry will be announced. For example, a selected entry is about the statistics of Joe Smith. Once that entry is selected, the speaker will state, "Joe Smith statistics." If that is the one the user wants, the user can signal his preference by, for example, pushing a switch.

[00225] In another embodiment, the information can be searched. The search can be based on one or more key words. As an example, the information is related to songs. A user can search by the name of the song, the name of the artists or music genre. Entry for the search term can be through voice recognition applications in the glasses. Based on the term verbalized by the user, a song will be selected. The glasses can ask the user if that is the song the user has selected. If the response is positive, the song will be played. If not, the glasses will ask the user to verbalize the term again. In another embodiment, entering the search terms is through the key pad of a portable device, wired or wirelessly, coupled to

the glasses. Additional descriptions regarding having a portable device linked to a pair of glasses are further discussed below.

[00226] With the speaker relatively close to at least one ear of the user, the volume of the speaker does not have to be very high. In one embodiment, the volume of the speaker is limited, such as the maximum sound level is not more than 60 dB. If the glasses are powered by a battery, limiting the volume of the speaker would extend the lifetime of the battery. Such a limit can also reduce the chance of the speaker generating audio signals that might disturb people in the vicinity of the user. This, in turn, helps to provide information to the user in a relatively private manner.

[00227] In one embodiment, the glasses are powered by a battery. To extend its lifetime, the glasses include a timer. For example, if the glasses have a radio, after the radio is turned on for a preset amount of time, the timer will turn the radio off automatically. In another embodiment, the glasses include a speaker and the timer would turn the speaker off after the speaker has been turned on for a preset amount of time. The preset time can be determined by the timer.

[00228] In another embodiment, the glasses are powered by other types of sources, such as a solar cell or a fuel cell. Such other type of sources can be at one of temples of the glasses.

[00229] As explained, in a number of embodiments, the glasses include a switch, which typically is at least partially embedded in the glasses. For example, the switch can be used to turn the speaker on, or to tune the frequency of a radio. If the glasses have two speakers, such as one on each of the temples, there can be two switches, one on each temple to control the corresponding speaker. The two speakers can be for generating stereo audio signals for the user. There can also be one control switch for both speakers.

[00230] The switch in the glasses can have different attributes. It can be activated by different type of forces, including mechanical, radiation, magnetic, electrical, and temperature. The switch can also be activated remotely by a remote device. The switch can be based on one or more detectors. The switch can have

different degrees or ranges of control, such as binary, multiple discrete steps or incremental control. The switch can be placed at different position on the glasses, such as on the side or top surface of a temple or at a joint. The control can take perception into consideration, such as based on texture, height and lateral position of multiple switches.

[00231] FIG. 16 illustrates a number of forces 1650 activating the switch according to different embodiments of the invention. They can be based on, for example, mechanical 1652, radiation 1654, magnetic 1656, electrical 1658, and temperature 1660.

[00232] FIG. 17 illustrates a number of mechanical forces 1652 activating the switch according to different embodiments of the invention. The mechanical switch or sensor can be a conductive-elastomer switch 1702, a membrane switch 1704, a dome switch 1706, a relatively simple wire switch 1708, and a roller switch 1710, such as a switch including a wheel. Another type of mechanical force can be based on stress 1711, such as a switch based on piezoelectric force or a piezoelectric device.

[00233] In yet another embodiment, the mechanical switch is made so that the electrical circuitry in the glasses can be activated but not deactivated by the user. In other words, once activated, the switch is designed not to be deactivated by the user, and the circuit will remain on till the power source inside the glasses is depleted. One approach to implement such a switch is based on a piece of insulating material 1716 between a terminal of, for example, a battery and its contact with the circuit embedded in the glasses. When the battery is installed, at least one of its terminals is separated from its circuit contact. There can be a thin, flexible, insulating material, 1716, such as a ribbon, positioned between the terminal and the contact. Though the circuit is embedded in the glasses, the insulating material 1716 extends outwardly from inside the glasses through a hole, such as a small hole, in the side wall of, for example, a temple of the glasses. In one embodiment, the hole or slot is located above or below the terminal and the contact, or the hole is not directly inline with the terminal and the contact. By pulling

the insulating material out from the glasses, the terminal will establish electrical connection with the contact, activating the circuit and turning the speaker on.

[00234] In another embodiment of a switch based on mechanical force 1654, the mechanical force is the force that is used to insert 1718 a battery into the glasses. Once the battery is inserted, the speaker in the glasses will be activated. The speaker will remain on until the battery is removed, or until the power in the battery is drained.

[00235] The switch can also be activated by radiation 1654, or energies in a type of radiation, according to a number of embodiments of the invention. The radiation 1654 can be in the optical, or infrared or ultraviolet range. For example, the switch includes a photodiode or photo sensor in the glasses, and there is an opening above the photodiode. In one embodiment, the diode is activated by light getting to the diode through the opening. In another embodiment, the circuit is activated if the opening is covered to prevent light from getting to the diode.

[00236] The switch can be activated by magnetic forces 1656. For example, there can be a magnetic sensor or a Hall effect detector inside a temple proximate to a joint of a pair of glasses. FIG. 18 shows a section of a pair of glasses 1750 with such a detector 1754. The detector 1754 is electrically connected to a printed circuit board 1755. When the temple 1752 is in its extended position, as when the glasses 1750 are ready to be worn, the detector 1754 will be directly adjacent to a magnet 1756 inside a lens holder 1758 at the corresponding joint 1760. The magnet 1756 would activate the Hall effect detector 1754. In another embodiment, a magnetic switch is activated based on changing the inductance of a coil. For example, the switch includes a steel rod that can be positioned in or out of a coil. The switch's range of control is based on the position of the rod with respect to the coil.

[00237] The switch can be activated depending on electrical forces 1658. In one embodiment, the electrical force depends on capacitive effect. By changing the capacitance, the switch is turned on and off. For example, the capacitance is changed by placing one's finger over a metallic pad. In another example, by

changing the amount of overlap between two metallic sheets that are not in contact, the capacitance between the two metallic sheets will change. This then changes the range of control of the switch.

[00238] In another embodiment, the electrical force 1658 is based on resistive effect. For example, the switch is made up of a slide or a rotary potentiometer. By changing the amount of coupling, the amount of resistance is changed to reflect the range of control of the switch.

[00239] In one embodiment, the switch's activation can depend on temperature 1660. For example, the switch includes a temperature sensor. When the temperature reaches a certain point, the switch is activated.

[00240] In yet another embodiment, the switch is controlled by a remote controller. For example, the glasses include an infrared detector. The remote controller can generate infrared radiation. By aiming the controller at the detector, the infrared radiation can activate the infrared detector and the switch is activated. Or, if the user moves into the vicinity of a corresponding infrared transmitter, circuits in the glasses would be activated.

[00241] The switch can include one or more previously-described sensor or detector of different types of forces. For example, the switch can use two photo sensors. One sensor is exposed to light on the outside surface of the temple and the other is exposed to light on the inside surface of the temple, such as close to the ear. Based on their differential output, the switch is activated. As another example, there are two temperature sensors in the glasses. One is located close to a joint and the other is at the temple close to the ear. Again, the switching action depends on their differential outputs. In yet another embodiment, the glasses include more than one type of switch. There can be one type of switch, such as a mechanical switch, acting as an on/off switch, and another, such as a switch using electrical forces, as an incremental switch to change frequency.

[00242] As described, in a number of embodiments, the switch can provide different degrees or ranges of control. In one embodiment, there are two degrees of control, such as in an on/off switch. In another embodiment, there can be

multiple discrete degrees, steps or positions. For example, the switch is a roller with discrete notches to indicate different discrete positions. Or, there can be two mechanical switches, placed side-by-side. Pushing one switch will increment one step, and pushing the other will decrement one step.

[00243] In yet another embodiment, the change from one degree to the next is gradual and not noticeably discrete. This can be achieved with two (2) sensors arranged in quadrature. FIGs. 19A-19C show examples of different embodiments of such a switch based on two photodiodes or photo detectors.

[00244] FIG. 19A shows an embodiment 1800 with a wheel 1802 (roller) having clear strips, 1804, 1806 and 1808, alternating with black strips, 1810, 1812 and 1814, and two photodiodes, 1816 and 1818. Most of the wheel 1802 and the two diodes, after incorporated into the temple 1820, are covered by a piece of material 1822. The two diodes, 1816 and 1818, are exposed to ambient light through a clear window 1824. A part of the wheel 1802 is extended out of the temple 1820, allowing the wheel 1802 to be turned about its axis 1826. The wheel 1802 can have teeth for friction turning. As the wheel 1802 rotates about the axis 1826, based on the differential outputs from the diodes, the direction of movement of the wheel 1802—clockwise or counterclockwise—is determined. For example, if the wheel 1802 is rotated clockwise, the top diode 1816 senses light before the bottom 1818 senses light. On the other hand, if the wheel 1802 is rotated counterclockwise, the bottom diode 1818 senses light before the top 1816. Based on the signals from the two diodes, one would be able to tell if the wheel is being turned clockwise or counterclockwise. Clockwise can denote increase and counterclockwise can denote decrease. This embodiment can be used, for example, to change frequency. By turning the wheel 1802 clockwise, the frequency of the radio goes up. And, by turning the wheel 1802 counter-clockwise, the frequency goes down. Such a wheel 1802 is also applicable for other purposes, such as controlling the volume of a speaker.

[00245] FIG. 19B shows an embodiment 1850 with a wheel 1852 having black 1854 and reflecting 186356 strips, two photodiodes, 1858 and 1860, and a

LED 1862. Again, most of the wheel, the two diodes and the LED are covered by a sheet of material 1864. If a reflecting strip 1856, instead of a black strip 1854, goes over a diode, more light from the LED will be reflected back and received by the diode. If a black strip 1854 goes over a diode, output from the diode will be significantly reduced. Again, based on the signals from the diodes, the direction of rotation can be determined, which, in turn, can be used to indicate incrementing or decrementing outputs.

[00246] FIG. 19C shows an embodiment 1900 again using two photodiodes, 1902 and 1904, but without a wheel. The two diodes, 1902 and 1904, are exposed to ambient light unless they are covered. In this embodiment, whether the finger 1906 or another object is moving from the first diode 1902 to the second diode 1904, or from the second diode 1904 to the first diode 1902 can be determined based on the signals from the diodes. For example, the finger 1906 sliding in a forward direction would trigger a signal from the first diode 1902 before the second diode 1904. On the other hand, sliding the finger in a backward direction would trigger a signal from the second diode before the first diode. Thus, the outputs from the two diodes can show the direction of movement of the finger. One can then, for example, assign forward movement (from the first 1902 to the second 1904) as increment, and backward movement (from the second 1904 to the first 1902) as decrement.

[00247] A switch can be placed at different location on a pair of glasses. In one embodiment, the switch is positioned on one of the side surfaces of one of the temples, such as the side that is not facing the face of the user when the glasses are worn. In another embodiment, the switch is positioned on a top surface of one of the temples. In yet another embodiment, the switch is positioned at one of the joints or hinges of the glasses. For example, there is a mechanical switch at a joint. If the corresponding temple is extended, as in the position when the glasses are worn, the switch will be pressed, which can indicate that the switch has been activated.

[00248] In one embodiment, the user can be using a switch when the glasses are worn. Depending on the position and the type of switch, the user may not be able to see the switch when he is manipulating it. In one embodiment, the design of the switch takes into consideration perception. To illustrate, there are two mechanical switches on the glasses. The top surfaces of the two switches have different texture. One switch has a smooth surface and the other has a rough surface. Pushing the rough surface implies incrementing one step and pushing the smooth surface implies decrementing one step. This type of perception design is based on tactile effect. In another example, the heights of the two switches are different. The taller switch is for one effect and the shorter is for another. In yet another embodiment, the lateral position of the two switches has significance. For example, the two mechanical switches are on the top surface or edge of a temple. By pushing the switch closer to the lens holder, the volume of the speaker in the glasses goes up; and by pushing the switch further away from the lens holder, the volume of the speaker goes down. In another example, the two switches are under the two ends of a piece of materials, such as a rocker-lever, which can be plastic. Rocking the plastic piece forward is an increment motion, and rocking the plastic piece backwards is a decrement motion.

[00249] A number of embodiments have been described where information is available only for a relatively short duration of time. In one embodiment, the information is available for a longer duration of time. For example, after the short duration of time, the battery in the glasses is drained. In order to continue on running the electronics inside the glasses to get the information, the user can replace the battery in the glasses with a new battery. In this embodiment, the glasses are designed so that the battery is replaceable by the user. Or, in another embodiment, the battery is rechargeable through a connector at the glasses.

[00250] A number of embodiments have been described regarding the glasses with a speaker for providing information to the user. In one embodiment, the glasses also include one or more light emitting diodes. The LEDs can be for entertaining purposes. For example, the information provided to the user is music. If the audio signals received are beyond a certain threshold, one or more of the

LEDs will be activated. The activation of the one or more LEDs can then be synchronized to the sound of the speaker. In another example, a number of LEDs could be arranged as an array on the outside surface of one of the temples. The array could display graphics, pictures, or scrolling text. The array could also be located at other locations on the glasses, such as across the front surface or the top surface of the bridge or the lens-holders of the glasses.

[00251] In still yet another embodiment, the "being worn" sensor can be implemented as a switch. For example, the switch can utilize optical, magnetic or mechanical means. In one embodiment, the switch can be positioned at the temple of the eyewear, such as a forward end of the temple proximate to a corresponding lens holder. Different embodiments of such sensors is also described in U.S. Provisional Patent Application No. 60/583,169, filed June 26, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," which has been incorporated herein by reference, see, e.g., section entitled "EYEGLASSES WITH USER INPUT CAPABILITY."

[00252] In one embodiment, a pair of glasses has access to voice recognition software. The software can be embedded in (a) the glasses, (b) a base tethered to the glasses, (c) a portable device wired or wirelessly coupled to the glasses or to the base, or (d) a computing system wired or wirelessly coupled to the glasses. Or, the software or firmware can be in more than one of the above devices.

[00253] The operation of the electrical components can be on-demand. For example, the on/off switch can be voice activated. The glasses are trained to recognize specific recitation, such as specific sentences or phrases, and/or the user's voice. To illustrate, when the user says sentences like any of the following, the hearing enhancement capabilities would be automatically turned from the sleep mode to the active mode: What did you say? Louder. You said what?

[00254] There are different approaches to make a user selection, such as selection of a song. In one embodiment, the media assets/songs can be categorized in the asset player. The categorization can be based on the names of artists, albums and/or songs. The categorization can be hierarchical, with multiple

levels in the hierarchy. To illustrate, assume that there are three levels. The top level can be the name of a singer; the second level can be the time periods when the assets were produced, and the third level can be the names of the songs. The entries, such as the name of the singer, can be abbreviated. There can be a small display and a control knob to allow a user to scroll down entries in a level. By pushing the knob, the user selects an entry, which can lead the user to a lower level. There can be an entry for moving up a level also. In another embodiment, the display is a touch-screen display, allowing entries to be entered directly on the display. In yet another embodiment, entries can be selected based on voice recognition.

[00255] In another embodiment, information can be searched. The search can be based on one or more key words. As an example, the information is related to songs. A user can search by the name of the song, the name of the artists or music genre. Entry for the search term can be through voice recognition applications in the glasses. Based on the term verbalized by the user, a song will be selected. The glasses can ask the user if that is the song the user has selected. If the response is positive, the song will be played. If not, the glasses will ask the user to verbalize the term again. In another embodiment, entering the search terms is through the key pad of a portable device, wired or wirelessly, coupled to the glasses.

[00256] The various aspects, embodiments, implementations and features of the invention noted above can be combined in various ways or used separately. Those skilled in the art will understand from the description that the invention can be equally applied to or used in other various different settings with respect to various combinations, aspects, embodiments, implementations or features provided in the description herein.

[00257] Certain aspects of the invention can be implemented in software, hardware or a combination of hardware and software. Certain aspects of the invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that

can store data which can thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, CD-ROMs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over network-coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

[00258] The advantages of the invention are numerous. Different embodiments or implementations may yield one or more of the following advantages. One advantage of the invention is that electrical components can be provided integral with or attached to a temple arrangement, a temple adapter or a removable temple part for use with a pair of eyeglasses. Another advantage of the invention is that after-market changes to electrical capabilities of eyeglasses can be relatively easily achieved. Another advantage of the invention is that communication, computation, information capturing or sensing, and/or operational capabilities can be provided for eyeglasses without substantial interference to style or design choices of the glasses. Still another advantage of the invention is that wireless communications, radiation monitoring, fitness monitoring and/or health monitoring can be supported by the electrical components. Yet another advantage of the invention is the ability to provide hands-free wireless communications capability.

[00259] As noted above, this application incorporates by reference, each of the following: (i) U.S. Patent Application 10/822,218 (now U.S. Patent No. 10/822,218), filed April 12, 2004, and entitled "EYEGLASSES FOR WIRELESS COMMUNICATIONS;" (ii) U.S. Patent Application No. 10/964,011 (now U.S. Patent No. 7,192,136), filed October 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES;" (iii) U.S. Patent No. 7,116,976; (iv) U.S. Patent No. 7,500,746; (v) U.S. Patent Application No. 11/078,857, filed March 11, 2005, and entitled "RADIATION MONITORING SYSTEM;" (vi) U.S. Patent Application No. 11/183,283, filed July 15, 2005, and entitled "EVENT EYEGLASSES;" (vii) U.S. Patent No. 7,760,898; (viii) U.S. Patent

No. 7,500,747; (ix) U.S. Patent No. 7,380,936; (x) U.S. Patent No. 7,255,437; and (xi) U.S. Patent No. 7,806,525.

[00260] Numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will become obvious to those skilled in the art that the invention may be practiced without these specific details. The description and representation herein are the common meanings used by those experienced or skilled in the art to most effectively convey the substance of their work to others skilled in the art. In other instances, well-known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the present invention.

[00261] In the foregoing description, reference to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

[00262] Many features and advantages of the present invention are apparent from the written description. Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation as illustrated and described. Hence, all suitable modifications and equivalents may be resorted to as falling within the scope of the invention.

What is claimed is:

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CLAIMS

1. A system, comprising:

a head-worn personal electronic apparatus, including at least:

a head-worn structure configured to be worn by a user;

a speaker at least partially contained within the head-worn structure, the speaker being configured to be worn proximate to an ear of the user when the head-worn structure is being worn by the user;

a motion detector at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus;

a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;

a second microphone at least partially contained within the head-worn structure;

a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being at least partially contained within the head-worn structure, wherein the received user input operating to at least alter operation of the head-worn electronic personal audio apparatus;

a rechargeable battery contained within the head-worn structure;

electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the rechargeable battery;

wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the rechargeable battery; and

at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; and

a charging apparatus having at least a charging connector,

wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.

2. A head-worn personal electronic apparatus, comprising:

a head-worn structure configured to be worn by a user;

a speaker at least partially contained within the head-worn structure, the speaker being configured to be worn proximate to an ear of the user when the head-worn structure is being worn by the user;

a motion detector at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus;

a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user;

a second microphone at least partially contained within the head-worn structure;

a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being at least partially contained within the head-worn structure, wherein the received user input

operating to at least alter operation of the head-worn electronic personal audio apparatus;

a rechargeable battery contained within the head-worn structure;

electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the rechargeable battery; and

wireless communication circuitry at least partially contained within the head-worn structure.

3. A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic comprises:

at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery.

4. A head-worn personal electronic apparatus as shown or described herein.

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

ABSTRACT OF THE DISCLOSURE

Techniques for providing eyewear or other head-worn personal electronic apparatus with electrical components are disclosed. The electrical components can provide electrical technology to eyewear or other head-worn personal electronic apparatus without having to substantially compromise aesthetic design principles. The electrical components can be partially or completely internal to eyewear or other head-worn personal electronic apparatus. The electrical components can operate independently or together with other electrical components provided elsewhere. Apparatus for presenting after-market electrical components are also disclosed.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
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Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	64570777	FILING DATE	-
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 10

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
generatedADS64570777.pdf	11	Application Data Sheet	245 KB
IPVCP003X1C4X1C2_AppTrans.pdf	2	Transmittal of New Application	290 KB
IPVCP003X1C4X1C2-App-DOCX_AsFiled-APP.TEXT.docx	79	Application body structured text document	71 KB
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IPVCP003X1C4X1C2_Statement373c.pdf	3	Assignee showing of ownership per 37 CFR 3.73	119 KB
IPVCP003X1C4X1C2_IDSTrans.pdf	2	Letter specifying the conditions for filing under 37 CFR 1.97	20 KB
IPVCP003X1C4X1C2_1449.pdf	17	Information Disclosure Statement (IDS) Form (SB08)	151 KB

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Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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IPVCP003X1C4X1C2_IDSTrans.pdf	119FAF0B451D2804461F0B67EC5C1A2776969D35D006B45E7AC84F407C1AF43BD7B81C12F43D3653FB84D6BFF2D324502

	BB49A967404A7CA4E4E71C938C04076
IPVCP003X1C4X1C2_1449.pdf	F9BA844D745F0E58411B428D0505E9A2C4EA230D3FE274E230D1A91D654A4FB359660BBA7F26BED0D3E553EDD8AB4B2F00AA4B2760C79B07CB70D02553F9D102
IPVCP003X1C4X1C2-App-DOCX_AsFiled.pdf	148010132612F9610D2A791C72BA1F1A455E739687884E3F98A7BB63443E4080054C265CF535318832CB5E6330A83F8498E5E43FA49B7329FB18499D8C84D0F9

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.

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: IngenioSpec, LLC

Application No./Patent No.: Not Yet Assigned Filed/Issue Date: Herewith

Titled: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

IngenioSpec, LLC, 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: Howell et al. To: Ipventure, Inc.

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

   Reel 024907, Frame 0821, or for which a copy thereof is attached.

2. From: IpVenture, Inc. To: Peter P. Tong and C. Douglass Thomas

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

   Reel 038965, Frame 0750, or for which a copy thereof is attached.

This collectionof information is required by 37CFR 3.73(b). The informationis required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application.Confidentiality isgoverned by 35U.S.C. 122 and37 CFR 1.11and 1.14.This collection is estimated to take 12 minutes to complete, including gathering,preparing, and submitting the completed applicationform 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 besent 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 COMPLETEDFORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA22313-1450** .

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

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: Peter P. Tong and C. Douglass Thomas To: Smart iGlasses, LLC

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4. From: Smart iGlasses, LLC To: IngenioSpec, LLC

The document was recorded in the United States Patent and Trademark Office at
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5. 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.

6. 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.

☐ 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.

/C. Douglass Thomas/	March 6, 2024
Signature	Date
C. Douglass Thomas	32947
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requiresthat you begiven certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirementsof the Act, please be advised that: (1)the general authority for the collectionof this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary;and (3) the principalpurpose for whichthe informationis used by the U.S. Patent and Trademark Office is to process and/or examine your submission related toa patent application or patent. If you do not furnishthe requested information, the U.S. Patent and Trademark Officemay not be able to process and/or examine yoursubmission, which may result in termination of proceedings orabandonment of the application or expiration of the patent.

Theinformation 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.
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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need forthe 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. Arecord 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. Arecord 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 No.:	Not Yet Assigned
	Applicant	HOWELL et al.
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	2.	2001/0028309 A1	Oct-01	Torch			
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Examiner	Date Considered

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	172.	2019/0278110 A1	Sep-19	Howell et al.			
	173.	2019/0285913 A1	Sep-19	Howell et al.			
	174.	2019/0310132 A1	Oct-19	Howell et al.			
	175.	2019/0318589 A1	Oct-19	Howell et al.			
	176.	2019/0369402 A1	Dec-19	Woodman et al.			
	177.	2019/0378493 A1	Dec-19	KIM et al.			
	178.	2019/0387351 A1	Dec-19	Lyren et al.			

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	179.	2020/0012127 A1	Jan-20	Howell et al.			
	180.	2020/0218094 A1	Jul-20	Howell et al.			
	181.	2020/0364992 A1	Nov-20	Howell et al.			
	182.	2021/0000347 A1	Jan-21	Stump			
	183.	2021/0026146 A1	Jan-21	Harder et al.			
	184.	2021/0271116 A1	Sep-21	Chao et al.			
	185.	2021/0364827 A9	Nov-21	Howell et al.			
	186.	2021/0364828 A1	Nov-21	Howell et al.			
	187.	2021/0379425 A1	Dec-21	Tran			
	188.	2021/0399691 A1	Dec-21	SAMINATHAN et al.			
	189.	2022/0008763 A1	Jan-22	SALEH et al.			
	190.	2022/0011603 A1	Jan-22	Howell et al.			
	191.	2022/0034542 A1	Feb-22	Peters et al.			
	192.	2022/0054092 A1	Feb-22	Howell et al.			
	193.	2022/0178743 A1	Jun-22	Howell et al.			
	194.	2022/0260859 A1	Aug-22	Howell et al.			
	195.	2022/0335792 A1	Oct-22	Howell et al.			
	196.	2022/0357599 A1	Nov-22	Howell et al.			
	197.	2022/0415338 A1	Dec-22	Howell et al.			
	198.	2023/0017635 A1	Jan-23	Howell et al.			
	199.	2023/0033660 A1	Feb-23	Howell et al.			
	200.	2023/0057654 A1	Feb-23	Howell et al.			
	201.	2023/0236444 A1	Jul-23	Howell et al.			
	202.	2023/0273464 A1	Aug-23	Howell et al.			
	203.	2023/0359266 A1	Nov-23	Howell et al.			
	204.	2024/0036361 A1	Feb-24	Howell et al.			
	205.	320,558	Jun-1885	Hull			
	206.	669,949	Mar-1901	Underwood			
	207.	1,255,265	Feb-1918	Zachara			
	208.	1,917,745	Jul-33	Weiss			

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	209.	2,249,572	Jul-41	Lieber			
	210.	2,638,532	May-53	Brady			
	211.	2,725,462	Nov-55	Vorgang			
	212.	2,794,085	May-57	De Angelis			
	213.	2,818,511	Dec-57	Ullery et al.			
	214.	2,830,132	Apr-58	Borg			
	215.	2,874,230	Feb-59	Carlson			
	216.	2,904,670	Sep-59	Calmes			
	217.	3,060,308	Oct-62	Fortuna			
	218.	3,104,290	Sep-63	Rosemond et al.			
	219.	3,119,903	Jan-64	Rosemond et al.			
	220.	3,597,054	Aug-71	Winter			
	221.	3,710,115	Jan-73	Jubb			
	222.	3,858,001	Dec-74	Bonne			
	223.	3,883,701	May-75	Delorenzo			
	224.	4,165,487	Aug-79	Corderman			
	225.	4,254,451	Mar-81	Cochran, Jr.			
	226.	4,283,127	Aug-81	Rosenwinkel et al.			
	227.	4,322,585	Mar-82	Liautaud			
	228.	4,348,664	Sep-82	Boschetti et al.			
	229.	4,389,217	Jun-83	Baughman et al.			
	230.	4,526,473	Jul-85	Zahn, III			
	231.	4,535,244	Aug-85	Burnham			
	232.	4,608,492	Aug-86	Burnham			
	233.	4,683,587	Jul-87	Silverman			
	234.	4,751,691	Jun-88	Perera			
	235.	4,757,714	Jul-88	Purdy et al.			
	236.	4,773,095	Sep-88	Zwicker et al.			
	237.	4,806,011	Feb-89	Bettinger			
	238.	4,822,160	April-89	Tsai			

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	239.	4,822,161	Apr-89	Jimmy			
	240.	4,851,686	Jul-89	Pearson			
	241.	4,856,086	Aug-89	McCullough			
	242.	4,859,047	Aug-89	Badewitz			
	243.	4,882,769	Nov-89	Gallimore			
	244.	4,904,078	Feb-90	Gorike			
	245.	4,942,629	Jul-90	Stadlmann			
	246.	4,962,469	Oct-90	Ono et al.			
	247.	4,967,268	Oct-90	Lipton et al.			
	248.	4,985,632	Jan-91	Bianco et al.			
	249.	5,008,548	Apr-91	Gat			
	250.	5,015,086	May-91	Okaue et al.			
	251.	5,020,150	May-91	Shannon			
	252.	5,026,151	Jun-91	Waltuck et al.			
	253.	5,036,311	Jul-91	Moran et al.			
	254.	5,050,150	Sep-91	Ikeda			
	255.	5,064,410	Nov-91	Frenkel et al.			
	256.	5,093,576	Mar-92	Edmond et al.			
	257.	5,106,179	Apr-92	Kamaya et al.			
	258.	5,144,344	Sep-92	Takahashi et al.			
	259.	5,148,023	Sep-92	Hayashi et al.			
	260.	5,151,600	Sep-92	Black			
	261.	5,161,250	Nov-92	Ianna et al			
	262.	5,172,256	Dec-92	Sethofer et al.			
	263.	5,264,877	Nov-93	Hussey			
	264.	5,306,917	Apr-94	Black et al.			
	265.	5,353,378	Oct-94	Hoffman et al.			
	266.	5,359,370	Oct-94	Mugnier			
	267.	5,359,444	Oct-94	Piosenka et al.			
	268.	5,367,345	Nov-94	da Silva			

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	269.	5,379,464	Jan-95	Schleger et al.			
	270.	5,382,986	Jan-95	Black et al.			
	271.	5,394,005	Feb-95	Brown et al.			
	272.	5,452,026	Sep-95	Marcy, III			
	273.	5,452,480	Sep-95	Ryden			
	274.	5,455,637	Oct-95	Kallman et al.			
	275.	5,455,640	Oct-95	Gertsikov			
	276.	5,457,751	Oct-95	Such			
	277.	5,463,428	Oct-95	Lipton et al.			
	278.	5,475,798	Dec-95	Handlos			
	279.	5,500,532	Mar-96	Kozicki			
	280.	5,510,961	Apr-96	Peng			
	281.	5,513,384	Apr-96	Brennan et al.			
	282.	5,519,781	May-96	Kurkurudza			
	283.	5,533,130	Jul-96	Staton			
	284.	5,541,641	Jul-96	Shimada			
	285.	5,581,090	Dec-96	Goudjil			
	286.	5,585,871	Dec.-96	Linden			
	287.	5,589,398	Dec-96	Krause et al.			
	288.	5,590,417	Dec-96	Rydbeck			
	289.	5,606,743	Feb-97	Vogt et al.			
	290.	5,608,808	Mar-97	da Silva			
	291.	5,634,201	May-97	Mooring			
	292.	5,671,035	Sep-97	Barnes			
	293.	5,686,727	Nov-97	Reenstra et al.			
	294.	5,694,475	Dec-97	Boyden			
	295.	5,715,323	Feb-98	Walker			
	296.	5,737,436	Apr-98	Boyden et al.			
	297.	5,777,715	Jul-98	Kruegle et al.			
	298.	5,790,311	Aug-98	Togino			

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	299.	5,818,381	Oct-98	Williams			
	300.	5,819,183	Oct-98	Voroba et al.			
	301.	5,835,185	Nov-98	Kallman et al.			
	302.	5,900,720	May-99	Kallman et al.			
	303.	5,903,395	May-99	Rallison et al.			
	304.	5,923,398	Jul-99	Goldman			
	305.	5,941,837	Aug-99	Amano et al.			
	306.	5,946,071	Aug-99	Feldman			
	307.	5,949,516	Sep-99	McCurdy			
	308.	5,966,746	Oct-99	Reedy et al.			
	309.	5,980,037	Nov-99	Conway			
	310.	5,988,812	Nov-99	Wingate			
	311.	5,991,085	Nov-99	Rallison et al.			
	312.	5,992,996	Nov-99	Sawyer			
	313.	5,995,592	Nov-99	Shirai et al.			
	314.	6,091,546	Jul-00	Spitzer			
	315.	6,010,216	Jan-00	Jesiek			
	316.	6,013,919	Jan-00	Schneider et al.			
	317.	6,028,627	Feb-00	Helmsderfer			
	318.	6,046,455	Apr-00	Ribi et al.			
	319.	6,060,321	May-00	Hovorka			
	320.	6,061,580	May-00	Altschul et al.			
	321.	6,091,546	Jul-00	Spitzer			
	322.	6,091,832	Jul-00	Shurman et al.			
	323.	6,115,177	Sep-00	Vossler			
	324.	6,132,681	Oct-00	Faran et al.			
	325.	6,145,983	Nov-00	Schiffer			
	326.	6,154,552	Nov-00	Koroljow et al.			
	327.	6,176,576 B1	Jan-01	Green et al.			
	328.	6,225,897 B1	May-01	Doyle et al.			

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	329.	6,231,181 B1	May-01	Swab			
	330.	6,236,969 B1	May-01	Ruppert et al.			
	331.	6,243,578 B1	Jun-01	Koike			
	332.	6,259,367 B1	Jul-01	Klein			
	333.	6,270,466 B1	Aug-01	Weinstein et al.			
	334.	6,292,213 B1	Sep-01	Jones			
	335.	6,292,685 B1	Sep-01	Pompei			
	336.	6,301,050 B1	Oct-01	DeLeon			
	337.	6,301,367 B1	Oct-01	Boyden et al.			
	338.	6,307,526 B1	Oct-01	Mann			
	339.	6,311,155 B1	Oct-01	Vaudrey et al.			
	340.	6,343,858 B1	Feb-02	Zelman			
	341.	6,346,929 B1	Feb-02	Fukushima et al.			
	342.	6,349,001 B1	Feb-02	Spitzer			
	343.	6,349,422 B1	Feb-02	Schleger et al.			
	344.	6,409,335 B1	Jun-02	Lipawsky			
	345.	6,409,338 B1	Jun-02	Jewell			
	346.	6,426,719 B1	Jul-02	Nagareda et al.			
	347.	6,431,705 B1	Aug-02	Linden			
	348.	6,474,816 B2	Nov-02	Butler et al.			
	349.	6,478,736 B1	Nov-02	Mault			
	350.	6,506,142 B2	Jan-03	Itoh et al.			
	351.	6,511,175 B2	Jan-03	Hay et al.			
	352.	6,513,532 B2	Feb-03	Mault et al.			
	353.	6,517,203 B1	Feb-03	Blum et al.			
	354.	6,539,336 B1	Mar-03	Vock et al.			
	355.	6,542,081 B2	Apr-03	Torch			
	356.	6,546,101 B1	Apr-03	Murray et al.			
	357.	6,554,763 B1	Apr-03	Amano et al.			
	358.	6,582,075 B1	Jun-03	Swab et al.			

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	359.	6,619,799 B1	Sep-03	Blum et al.			
	360.	6,629,076 B1	Sep-03	Haken			
	361.	6,678,381 B1	Jan-04	Manabe			
	362.	6,717,737 B1	Apr-04	Haglund			
	363.	6,729,726 B2	May-04	Miller et al.			
	364.	6,736,759 B1	May-04	Stubbs et al.			
	365.	6,764,194 B1	Jul-04	Cooper			
	366.	6,769,767 B2	Aug-04	Swab et al.			
	367.	6,771,423 B2	Aug-04	Geist			
	368.	6,788,309 B1	Sep-04	Swan et al.			
	369.	6,792,401 B1	Sep-04	Nigro et al.			
	370.	6,816,314 B2	Nov-04	Shimizu et al.			
	371.	6,824,265 B1	Nov-04	Harper			
	372.	6,857,741 B2	Feb-05	Blum et al.			
	373.	6,871,951 B2	Mar-05	Blum et al.			
	374.	6,879,930 B2	Apr-05	Sinclair et al.			
	375.	6,912,386 B1	Jun-05	Himberg et al.			
	376.	6,929,365 B2	Aug-05	Swab et al.			
	377.	6,932,090 B1	Aug-05	Reschke et al.			
	378.	6,947,219 B1	Sep-05	Ou			
	379.	7,004,582 B2	Feb-06	Jannard et al.			
	380.	7,013,009 B2	Mar-06	Warren			
	381.	7,023,594 B2	Apr-06	Blum et al.			
	382.	7,030,902 B2	Apr-06	Jacobs			
	383.	7,031,667 B2	Apr-06	Horiguchi			
	384.	7,033,025 B2	Apr-06	Winterbotham			
	385.	7,059,717 B2	Jun-06	Bloch			
	386.	7,073,905 B2	Jul-06	Da Pra'			
	387.	7,079,876 B2	Jul-06	Levy			
	388.	7,123,215 B2	Oct-06	Nakada			

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	389.	7,192,136 B2	Mar-07	Howell et al.			
	390.	7,255,437 B2	Aug-07	Howell et al.			
	391.	7,265,358 B2	Sep-07	Fontaine			
	392.	7,274,292 B2	Sep-07	Velhal et al.			
	393.	7,289,767 B2	Oct-07	Lai			
	394.	7,312,699 B2	Dec-07	Chornenky			
	395.	7,331,666 B2	Feb-08	Swab et al.			
	396.	7,376,238 B1	May-08	Rivas et al.			
	397.	7,380,936 B2	Jun-08	Howell et al.			
	398.	7,401,918 B2	Jul-08	Howell et al.			
	399.	7,405,801 B2	Jul-08	Jacobs			
	400.	7,429,965 B2	Sep-08	Weiner			
	401.	7,430,299 B2	Sep-08	Armstrong et al.			
	402.	7,438,409 B2	Oct-08	Jordan			
	403.	7,438,410 B1	Oct-08	Howell et al.			
	404.	7,445,332 B2	Nov-08	Jannard et al.			
	405.	7,481,531 B2	Jan-09	Howell et al.			
	406.	7,500,746 B2	Mar-09	Howell et al.			
	407.	7,500,747 B2	Mar-09	Howell et al.			
	408.	7,512,414 B2	Mar-09	Jannard et al.			
	409.	7,517,083 B2	Apr-09	Blum et al.			
	410.	7,527,374 B2	May-09	Chou			
	411.	7,543,934 B2	Jun-09	Howell et al.			
	412.	7,581,833 B2	Sep-09	Howell et al.			
	413.	7,621,634 B2	Nov-09	Howell et al.			
	414.	7,648,236 B1	Jan-10	Dobson			
	415.	7,677,723 B2	Mar-10	Howell et al.			
	416.	7,760,898 B2	Jul-10	Howell et al.			
	417.	7,771,046 B2	Aug-10	Howell et al.			
	418.	7,787,647 B2	Aug-10	Hagen et al.			

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	419.	7,792,552 B2	Sep-10	Thomas et al.			
	420.	7,801,570 B2	Sep-10	Cheung et al.			
	421.	7,806,525 B2	Oct-10	Howell et al.			
	422.	7,922,321 B2	Apr-11	Howell et al.			
	423.	7,976,159 B2	Jul-11	Jacobs et al.			
	424.	8,009,849 B2	Aug-11	Enzmann			
	425.	8,109,629 B2	Feb-12	Howell et al.			
	426.	8,142,015 B2	Mar-12	Paolino			
	427.	8,174,569 B2	May-12	Tanijiri et al.			
	428.	8,175,886 B2	May-12	Odinak			
	429.	8,251,875 B2	Aug-12	Ellis et al.			
	430.	8,337,013 B2	Dec-12	Howell et al.			
	431.	8,430,507 B2	Apr-13	Howell et al.			
	432.	8,434,863 B2	May-13	Howell et al.			
	433.	8,465,151 B2	Jun-13	Howell et al.			
	434.	8,485,661 B2	Jul-13	Yoo et al.			
	435.	8,500,271 B2	Aug-13	Howell et al.			
	436.	8,571,241 B2	Oct-13	Larsen			
	437.	8,582,789 B2	Nov-13	Cheung et al.			
	438.	8,620,208 B2	Dec-13	Slotznick			
	439.	8,626,246 B2	Jan-14	Shostak			
	440.	8,770,742 B2	Jul-14	Howell et al.			
	441.	8,849,185 B2	Sep-14	Cheung et al.			
	442.	8,905,542 B2	Dec-14	Howell et al.			
	443.	9,033,493 B2	May-15	Howell et al.			
	444.	9,183,351 B2	Nov-15	Shusterman			
	445.	9,244,292 B2	Jan-16	Swab et al.			
	446.	9,369,814 B2	Jun-16	Victorian et al.			
	447.	9,400,390 B2	Jul-16	Osterhout et al.			
	448.	9,405,135 B2	Aug-16	Sweis et al.			

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	449.	9,488,520 B2	Nov-16	Howell et al.			
	450.	9,547,184 B2	Jan-17	Howell et al.			
	451.	9,690,121 B2	Jun-17	Howell et al.			
	452.	9,922,236 B2	Mar-18	Moore et al.			
	453.	10,042,186 B2	Aug-18	Chao et al.			
	454.	10,060,790 B2	Aug-18	Howell et al.			
	455.	10,061,144 B2	Aug-18	Howell et al.			
	456.	10,310,296 B2	Jun-19	Howell et al.			
	457.	10,345,625 B2	Jul-19	Howell et al.			
	458.	10,359,311 B2	Jul-19	Howell et al.			
	459.	10,515,623 B1	Dec-19	Grizzel			
	460.	10,539,459 B2	Jan-20	Howell et al.			
	461.	10,624,790 B2	Apr-20	Chao et al.			
	462.	10,571,715 B2	Feb-20	Rizzo, III et al.			
	463.	10,777,048 B2	Sep-20	Howell et al.			
	464.	10,802,582 B1	Oct-20	Clements			
	465.	10,964,190 B2	Mar-21	Peyrard			
	466.	11,042,045 B2	Jun-21	Chao et al.			
	467.	11,069,358 B1	Jul-21	Harper			
	468.	11,086,147 B2	Aug-21	Howell et al.			
	469.	11,204,512 B2	Dec-21	Howell et al.			
	470.	11,243,416 B2	Feb-22	Howell et al.			
	471.	11,326,941 B2	May-22	Howell et al.			
	472.	11,480,802 B1	Oct-22	Tombelli			
	473.	11,513,371 B2	Nov-22	Howell et al.			
	474.	11,536,988 B2	Dec-22	Howell et al.			
	475.	11,630,331 B2	Apr-23	Howell et al.			
	476.	11,644,361 B2	May-23	Howell et al.			
	477.	11,644,693 B2	May-23	Howell et al.			
	478.	11,721,183 B2	Aug-23	Howell et al.			

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty. Docket No.	IPVCP003X1C4X1C2
	Application No.:	Not Yet Assigned
	Applicant	HOWELL et al.
	Filing Date	Filed Herewith
	Group	Not Yet Assigned
		Page 17 of 17

	479.	11,733,549 B2	Aug-23	Howell et al.				
	480.	11,762,224 B2	Sep-23	Howell et al.				
	481.	11,803,069 B2	Oct-23	Howell et al.				
	482.	11,829,518 B2	Nov-23	Howell et al.				
	483.	DES. 369,167	Apr-96	Hanson et al.				

Foreign Documents

							Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	A	
	B	
	C	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 12,313,913 B1
APPLICATION NO. : 18/597874
DATED : May 27, 2025
INVENTOR(S) : Howell et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 62, Line 8 (Claim 113) "seco139nd" should be --second--

Signed and Sealed this
Eighth Day of July, 2025

Coke Morgan Stewart
Acting Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

34071 7590 07/08/2025

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

EXAMINER	
LEI, JIE	

ART UNIT	PAPER NUMBER
2872	

MAIL DATE	DELIVERY MODE
07/08/2025	PAPER

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

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

UNITED STATES 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.
18/597,874	08-Jul-2025	12313913

IPVENTURE, INC.
4010 Moorpark Avenue
San Jose, CA 95117

ELECTRONIC CERTIFICATE OF CORRECTION NOTIFICATION

Your electronic certificate of correction is now available, and can be accessed via Patent Center at https://patentcenter.uspto.gov.

The electronic certificate of correction is the official certificate of correction under 35 U.S.C. 254 or 255. For more information, please visit https://www.uspto.gov/electronicgrants.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**06/12/2025 02:09:47 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	12313913
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	70865298	AUTHORIZED BY	Peter Tong
CUSTOMER #	34071	FILING DATE	03/06/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Thomas A. Howell

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 503874	**E20256BE10328019**	**Angela Nijim**

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
503874	**37 CFR 1.20 (Post Issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1811	CERTIFICATE OF CORRECTION	172.00	1	172.00
			TOTAL AMOUNT:	**$172.00**

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HOWELL et al.	Attorney Docket No.: IPVCP003X1C4X1C2
Patent No.: 12,313,913	Issued: May 27, 2025
Appln. No.: 18/597,874	
Title: SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS	

REQUEST FOR CERTIFICATE OF CORRECTION OF APPLICANT'S MISTAKE (35 U.S.C §255, 37 C.F.R. §1.323)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Attn: Certificate of Correction

Dear Sir:

Attached is Form PTO-1050 (Certificate of Correction) at least one copy of which is suitable for printing.

A mistake of a clerical or typographical nature, or minor in character appears in the above-referenced patent; however, the mistake occurred in good faith. The correction introduces no new matter nor requires reexamination.

The error(s) together with the exact page and line number where the error(s) appear in the application file are as follows:

CLAIMS:

1. In line 16 of claim 113 (column 62, line 8) change "seco139nd" to --second--.

[Applicant error] This error appears in line 23 on page 36 of Amendment C, as submitted on March 3, 2025, in what was previously claim 140.

Electronic payment of the Certificate of Correction Fee is submitted herewith, in accordance with 37 CFR § 1.20(a). If it is determined that any additional fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
Registration No. 32,947

IpVenture, Inc.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

PTO/SB/44 (09-07)
Approved for use through 08/31/2010. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 12,313,913

APPLICATION NO.: 18/597,874

ISSUE DATE : May 27, 2025

INVENTOR(S) : HOWELL et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the claims

Column 62, line 8 (claim 113, line 16) "seco139nd" should be --second--

MAILING ADDRESS OF SENDER (Please do not use customer number below):

IngenioSpec, LLC
4010 Moorpark Ave., Ste 211
San Jose, CA 95117

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. 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 1.0 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: Attention Certificate of Corrections Branch, 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.

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.

UNITED STATES
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**06/12/2025 02:09:47 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	12313913
CONFIRMATION #	7223	FILED BY	Angela Nijim
PATENT CENTER #	70865298	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IPVCP003X1C4X1C2_Req_and_CertCorr_6-25.pdf	4	Request for Certificate of Correction	167 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
IPVCP003X1C4X1C2_Req_and_CertCorr_6-25.pdf	93EDA075CE541D134091F46829F258D8FD60192BD7076CE609D9C336877170F3755B26FDD17384B60129A1D53380D9CB0129A1478E7DA5064058B60963950940

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.

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

34071 7590 05/28/2025

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

EXAMINER	
LEI, JIE	

ART UNIT	PAPER NUMBER
2872	

MAIL DATE	DELIVERY MODE
05/28/2025	PAPER

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

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

APPLICATION NO.	ISSUE DATE	PATENT NO.
18/597,874	27-May-2025	12313913

IPVENTURE, INC.
4010 Moorpark Avenue
San Jose, CA 95117

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	05/27/2025	12313913	IPVCP003X1C4X1C2	7223

34071 7590 05/14/2025

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

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 Center (https://patentcenter.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 PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Thomas A. Howell, San Jose, CA;
David Chao, Saratoga, CA;
C. Douglass Thomas, Saratoga, CA;
Peter P. Tong, Mountain View, CA;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

IngenioSpec, LLC, San Jose, 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.

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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
18/597,874	03/06/2024	2872	14360	IPVCP003X1C4X1C2	4	3

CONFIRMATION NO. 7223

CORRECTED FILING RECEIPT

34071
IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

OC000000087320575

Date Mailed: 04/15/2025

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)

Thomas A. Howell, San Jose, CA;
David Chao, Saratoga, CA;
C. Douglass Thomas, Saratoga, CA;
Peter P. Tong, Mountain View, CA;

Applicant(s)

IngenioSpec, LLC, San Jose, CA;

Power of Attorney: The patent practitioners associated with Customer Number 34071

Domestic Applications for which benefit is claimed

This application is a CON of 18/375,893 10/02/2023 PAT 12,044,901
which is a CON of 16/182,969 11/07/2018 PAT 12,078,870
which is a CON of 16/127,957 09/11/2018 PAT 11,086,147
which is a CON of 14/715,501 05/18/2015 PAT 10,330,956
which is a CON of 13/367,346 02/06/2012 PAT 9,033,493
which is a CON of 12/462,286 07/31/2009 PAT 8,109,629
which is a CON of 11/580,222 10/11/2006 PAT 7,581,833
which claims benefit of 60/725,999 10/11/2005
and claims benefit of 60/725,896 10/11/2005
and claims benefit of 60/787,850 04/01/2006
and claims benefit of 60/846,150 09/20/2006
and said 16/182,969 11/07/2018 is a CON of 16/049,120 07/30/2018 PAT 11,243,416
which is a CON of 15/375,423 12/12/2016 PAT 10,061,144

which is a CON of 14/557,409 12/01/2014 PAT 9,547,184
which is a CON of 13/955,336 07/31/2013 PAT 8,905,542
which is a CON of 13/085,402 04/12/2011 PAT 8,500,271
and said 16/182,969 11/07/2018 is a CON of 15/409,723 01/19/2017 ABN
which is a CON of 13/831,512 03/14/2013 PAT 9,690,121
which is a CON of 12/806,312 08/10/2010 PAT 8,465,151
which is a CIP of 12/462,286 07/31/2009 PAT 8,109,629
and is a CIP of 12/317,043 12/18/2008 PAT 7,771,046
which is a CON of 12/214,435 06/19/2008 PAT 7,481,531
which is a CON of 11/891,411 08/09/2007 PAT 7,401,918

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: 03/18/2024

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/597,874**

Projected Publication Date: 06/27/2024

Non-Publication Request: No

Early Publication Request: No
Title

SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Preliminary Class

351

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 AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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

SelectUSA

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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ISSUE FEE TRANSMITTAL FORM

APPLICATION #	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET #
18597874	**03/06/2024**	**Thomas Howell**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Nonprovisional Application under 35 USC 111(a)	**DATE DUE**	07/03/2025
CONFIRMATION #	7223	**ISSUE FEE DUE**	$ 1290
EXAMINER	JIE LEI	**PUBLICATION DUE**	$ 0
GROUP ART UNIT	2872	**TOTAL FEES DUE**	$1290
CLASS - SUBCLASS	351/158000	**PREV. PAID FEE**	$ 0
ENTITY STATUS	Regular Undiscounted		

1. CHANGE OF CORRESPONDENCE ADDRESS AND/OR INDICATION OF FEE ADDRESS (37 CFR 1.33 & 1.363)

Correspondence Address

CURRENT ADDRESS

Maintenance Fee Address

CURRENT ADDRESS

☐ Change of correspondence address requested,system generated AIA/122-PC form attached

☐ Fee address indication requested, system generatedSB/47-PC form attached

2. ENTITY STATUS

Change in Entity Status

NEW STATUS

3. THE FOLLOWING FEES ARE SUBMITTED

☑ Issue Fee

☑ Publication Fee

4. FEE AUTHORIZATION

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ The Director is herby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number:

☑ If in addition to the payment of the issue fee amount submitted with this form, there are any discrepencies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number: 503874

5. FIRM AND/OR ATTORNEY NAMES TO BE PRINTED

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

6. ASSIGNEE NAME(S) AND RESIDENCE DATA TO BE PRINTED

NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been

Apple Inc. EX1002 Page 1269

filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a susbstitute for filing an assignment.

IngenioSpec, LLC	San Jose, CA UNITED STATES	Corporation

Signature

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 has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via Patent Center on the date indicated below.

Signature	Name	Registration #	Date
/Peter Tong/	Peter Tong	35757	04/04/2025

UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**04/04/2025 04:47:24 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Peter Tong
PATENT CENTER #	69875614	AUTHORIZED BY	-
CUSTOMER #	34071	FILING DATE	03/06/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Thomas A. Howell

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 6752	**E202544G49396379**	**Peter Tong**

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
503874	**37 CFR 1.21 (Miscellaneous fees and charges)**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1290.00	1	1290.00
			TOTAL AMOUNT:	**$1,290.00**

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

P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**04/04/2025 04:47:24 PM Z ET**	**IPVCP003X1C4X1C2**

Title of Invention

SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7223	FILED BY	Peter Tong
PATENT CENTER #	69875614	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
web85b.pdf	3	Issue Fee Payment (PTO-85B)	58 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
web85b.pdf	CFD7D763A35B3E617C2B6238193C19E848D1F81E33CAEF1487A2561F7A0ADE4FED2ABFC4B2E095849F09906405153701B490E765D308D034FC4478990F0515A1

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

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New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

34071 7590 04/03/2025

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

EXAMINER	
LEI, JIE	
ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 04/03/2025

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

TITLE OF INVENTION: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1290	$0.00	$0.00	$1290	07/03/2025

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.

PTOL-85 (Rev. 11/23)

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

34071 7590 04/03/2025
IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

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 the USPTO patent electronic filing system 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.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

TITLE OF INVENTION: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1290	$0.00	$0.00	$1290	07/03/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEI, JIE	2872	351-158000

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)

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

❑ Electronic Payment via the USPTO patent electronic filing system ❑ 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

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

❑ Applicant asserting small entity status. See 37 CFR 1.27

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

❑ Applicant changing to regular undiscounted fee status.

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/597,874	03/06/2024	Thomas A. Howell	IPVCP003X1C4X1C2	7223

34071 7590 04/03/2025

IPVENTURE, INC.
4010 Moorpark Avenue
Suite 211
San Jose, CA 95117

EXAMINER	
LEI, JIE	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 04/03/2025

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. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).
https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
2) a federal, state, local, or international agency, in response to its request;
3) a contractor of the USPTO having need for the information in order to perform a contract;
4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
8) 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));
9) the Office of Personnel Management (OPM) for personnel research purposes; and
10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 18/597,874	Applicant(s) Howell et al.	
	Examiner JIE LEI	Art Unit 2872	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 filing of 3/24/2025.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3. ☑ The allowed claim(s) is/are 1-3,5-94 and 121-152 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

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

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

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

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

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 3/24/2025.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/JIE LEI/
Primary Examiner, Art Unit 2872

REASONS FOR ALLOWANCE

1. The present application is being examined under the pre-AIA first to invent provisions. This office action is in response to the filing of 3/24/2025.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 3/24/2025 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

Allowable Subject Matter

3. Claims 1-3, 5-94 and 121-152 are allowed.

4. The following is an examiner's statement of reasons for allowance: the prior art taken singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

In regard to independent claims 1, 2, 72, 121, 136 and 144, the closest prior art are US 6349001 of Spitzer, US 20050201585 of Jannard et al, US 20050052537 of Mizusawa and US 5835185 of Kallman et al.

Regarding Claims 1, 2, 72, 121, 136 and 144, Spitzer teaches a system, comprising: a head-worn personal electronic apparatus, including at least: a head-worn

structure configured to be worn by a user; a speaker at least partially contained with the head-worn structure, the speaker being configured to be worn proximate to an ear of the user when the head-worn structure is being worn by the user; a position detector at least partially contained within the head-worn structure; a first microphone at least partially contained within the head-worn structure, the first microphone being positioned to pick up at least audio input from at least the user; a second microphone at least partially contained within the head-worn structure; a battery contained within the head-worn structure; electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the battery; wireless communication circuitry at least partially contained within the head-worn structure, the wireless communication circuitry being electrically connected to at least the battery; and at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being electrically connected to at least the battery.

Jannard teaches a head-worn personal electronic apparatus, wherein a motion detector at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus; a button device configured to receive a user input based on a force induced on the button device, the button device being at least partially contained within the head-worn structure, wherein the received user input operating to at least alter operation of the head-worn electronic personal audio apparatus; a rechargeable battery contained within the head-worn structure.

Mizusawa teaches a mounted imaging apparatus, wherein the button device is a piezoelectric device, and the piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device.

Kallman teaches an eyewear system, wherein, a charging apparatus having at least a charging connector, at least one conductive element at least partially included within the head-worn structure, the at least one conductive element being at least partially exposed to enable interconnection therewith, the at least one conductive element being electrically connected to at least the rechargeable battery; wherein on placement of the head-worn personal electronic apparatus in the charging apparatus, electrical connection results at least from the at least one conductive element connecting with the charging connector, and thereby the rechargeable battery of the head-worn personal electronic apparatus is able to be recharged while the head-worn personal electronic apparatus is placed in the charging apparatus.

But none of them teaches that wherein the piezoelectric device being contained within the head-worn structure; wherein a radiation detector contained within the head-worn structure and configured to capture radiation data, and wherein the head-worn personal electronic apparatus is configured to determine whether the head-worn personal electronic apparatus is being worn by the user based on the radiation data captured by the radiation detector; and wherein a force sensing device configured to receive a user input based on a force induced on the force sensing device, the force sensing device being contained within the head-worn structure.

Regarding Claims 1 and 136, the prior art taken either singly or in combination fails to anticipate or fairly suggest a system or a head-worn personal electronic apparatus further comprising:

wherein the piezoelectric device being contained within the head-worn structure,

as claimed; recited together in combination with the totality of particular features/limitations recited therein.

Claims 7-27 are also allowed due to their dependence on claim 1.

Claims 137 and 143 are also allowed due to their dependence on claim 136.

Regarding Claims 2 and 121, the prior art taken either singly or in combination fails to anticipate or fairly suggest a system or a head-worn personal electronic apparatus further comprising:

wherein a force sensing device configured to receive a user input based on a force induced on the force sensing device, the force sensing device being contained within the head-worn structure,

as claimed; recited together in combination with the totality of particular features/limitations recited therein.

Claims 2-3, 5-6 and 28-71 are also allowed due to their dependence on claim 2.

Claims 122-135 are also allowed due to their dependence on claim 121.

Regarding Claim 72 and 144, the prior art taken either singly or in combination fails to anticipate or fairly suggest a system or a head-worn personal electronic apparatus further comprising:

wherein a radiation detector contained within the head-worn structure and configured to capture radiation data, and wherein the head-worn personal electronic apparatus is configured to determine whether the head-worn personal electronic apparatus is being worn by the user based on the radiation data captured by the radiation detector,

as claimed; recited together in combination with the totality of particular features/limitations recited therein.

Claims 73-94 are also allowed due to their dependence on claim 72.

Claims 145-152 are also allowed due to their dependence on claim 144.

5. 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

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Jie Lei whose telephone number is (571) 272 7231. The examiner can normally be reached on Mon.-Thurs. 8:00 am to 5:30 pm.

If attempts to reach the examiner by the telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on (571) 272 3689.The Fax number for the organization where this application is assigned is (571) 273 8300.

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

/JIE LEI/
Primary Examiner, Art Unit 2872

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/597,874	Howell et al.
	Examiner	Art Unit
	JIE LEI	2872

CPC - Searched*		
Symbol	**Date**	**Examiner**
G02C 1/00, 11/10, 11/06, 5/00, 5/001, 5/02, 5/14, 5/22, 5/143, 5/146, 2200/08	05/15/2024	JL
G02B 27/01, 27/017, 27/0176; HO2J 7/0045	05/15/2024	JL
update search	09/04/2024	JL
update search	12/16/2024	JL
update search	03/03/2025	JL

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
351	158, 41, 111, 121, 123, 124	05/15/2024	JL
359	13, 629-633	05/15/2024	JL
381	381, 327, 328, 370, 380	05/15/2024	JL
	update search	09/04/2024	JL
	update search	12/16/2024	JL
	update search	03/03/2025	JL

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

/JIE LEI/ Primary Examiner, Art Unit 2872	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/597,874	Howell et al.
	Examiner	Art Unit
	JIE LEI	2872

Search Notes		
Search Notes	**Date**	**Examiner**
G02C 1/00, 11/10, 11/06, 5/00, 5/001, 5/02, 5/14, 5/22, 5/143, 5/146, 2200/08	05/15/2024	JL
G02B 27/01, 27/017, 27/0176; HO2J 7/0045	05/15/2024	JL
351/158, 41, 111, 121, 123, 124	05/15/2024	JL
359/13, 629-633	05/15/2024	JL
381/381, 327, 328, 370, 380	05/15/2024	JL
Inventor name search	05/15/2024	JL
NPL and foreign search (google scholar, google patent, globaldossier and Dialog search)	05/15/2024	JL
PE2E text search	05/15/2024	JL
Similarity search	05/15/2024	JL
update search	09/04/2024	jl
update search	12/16/2024	
update search	03/03/2025	JL

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	USPGPUB, USPAT	05/15/2024	JL
	update search	09/04/2024	JL
	update search	12/16/2024	JL
	update search	03/03/2025	JL

/JIE LEI/ Primary Examiner, Art Unit 2872	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/597,874	Howell et al.
	Examiner	**Art Unit**
	JIE LEI	2872

CPC						
Symbol					**Type**	**Version**
G02C	/	11	/	10	F	2013-01-01
G02C	/	5	/	143	I	2013-01-01
G02C	/	5	/	146	I	2013-01-01
H02J	/	7	/	0045	I	2013-01-01
G02C	/	11	/	06	I	2013-01-01
G02C	/	2200	/	08	A	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	125	
/JIE LEI/ Primary Examiner, Art Unit 2872	26 March 2025	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20250326-1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/597,874	Howell et al.
	Examiner	**Art Unit**
	JIE LEI	2872

INTERNATIONAL CLASSIFICATION					
CLAIMED					
G02C	/	11	/	00	
G02C	/	5	/	14	
G02C	/	11	/	06	
H02J	/	7	/	00	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
351	158

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

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 125	
/JIE LEI/ Primary Examiner, Art Unit 2872 (Primary Examiner)	26 March 2025 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office — Part of Paper No.: 20250326-1

Apple Inc. EX1002 Page 1289

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/597,874	Howell et al.
	Examiner	Art Unit
	JIE LEI	2872

☐ 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
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NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	125	
/JIE LEI/ Primary Examiner, Art Unit 2872	26 March 2025	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20250326-1

Bibliographic Data

Application No: 18/597,874

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /JIE LEI/ Examiner's Signature | Initials

Title: SYSTEM FOR CHARGING EMBEDDED BATTERY IN WIRELESS HEAD-WORN PERSONAL ELECTRONIC APPARATUS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/06/2024	351	2872	IPVCP003X1C4X1C2
RULE			

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CONTINUING DATA

This application is a CON of 18375893 10/02/2023 PAT 12044901

18375893 is a CON of 16182969 11/07/2018 PAT 12078870

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FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

03/18/2024

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FILING FEE RECEIVED

$1,820

Web Search History

date, time	web site	search string
3/2/2025 4:05:02 PM	Google Scholar	speaker audio device audio support wearable wireless
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3/2/2025 4:05:33 PM	Google Patents	**Search Term 1** spectacles **Search Term 2** hearing aid **Search Term 3** bow **Search Term 4** bone **Search Term 5** head **Before** Priority Date: priority:19441218
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3/2/2025 5:37:20 PM	Google Scholar	ear eyeglass audio speakers frame
3/2/2025 5:37:20 PM	Google Patents	Search Term 1 ear Search Term 2 eyeglass Search Term 3 audio Search Term 4 speakers Search Term 5 frame Before Priority Date: priority:20020726
3/2/2025 5:37:27 PM	Google Scholar	eyewear temple frame radio frequency frequency transceiver

date, time	web site	search string
3/2/2025 5:37:27 PM	Google Patents	Search Term 1 eyewear Search Term 2 temple Search Term 3 frame Search Term 4 radio frequency Search Term 5 frequency transceiver Before Priority Date: priority:20010430
3/2/2025 5:37:34 PM	Google Scholar	earphone wearer eyeglass support lens
3/2/2025 5:37:34 PM	Google Patents	Search Term 1 earphone Search Term 2 wearer Search Term 3 eyeglass Search Term 4 support Search Term 5 lens Before Priority Date: priority:20000602
3/2/2025 5:37:41 PM	Google Scholar	earphone player voice player voice present
3/2/2025 5:37:41 PM	Google Patents	Search Term 1 earphone Search Term 2 player Search Term 3 voice player Search Term 4 voice Search Term 5 present Before Priority Date: priority:20041021
3/2/2025 5:37:49 PM	Google Scholar	content protection audio configuring bluetooth communication

date, time	web site	search string
3/2/2025 5:37:49 PM	Google Patents	Search Term 1 content protection Search Term 2 audio Search Term 3 configuring Search Term 4 bluetooth Search Term 5 communication Before Priority Date: priority:20050308
3/2/2025 5:52:51 PM	Google Scholar	band portion headphone device headphone wearer connecting members
3/2/2025 5:52:51 PM	Google Patents	Search Term 1 band portion Search Term 2 headphone device Search Term 3 headphone Search Term 4 wearer Search Term 5 connecting members Before Priority Date: priority:20050704
3/2/2025 5:53:00 PM	Google Scholar	music glasses sounding device circuit board chamber
3/2/2025 5:53:00 PM	Google Patents	Search Term 1 music Search Term 2 glasses Search Term 3 sounding device Search Term 4 circuit board Search Term 5 chamber Before Priority Date: priority:20060310
3/2/2025 5:53:16 PM	Google Scholar	eyeglasses wire dep electronic temple

date, time	web site	search string
3/2/2025 5:53:16 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 wire Search Term 3 dep Search Term 4 electronic Search Term 5 temple Before Priority Date: priority:20051213
3/2/2025 5:53:26 PM	Google Scholar	user context wearable display processor information
3/2/2025 5:53:26 PM	Google Patents	Search Term 1 user Search Term 2 context Search Term 3 wearable display Search Term 4 processor Search Term 5 information Before Priority Date: priority:20060831
3/2/2025 5:53:34 PM	Google Scholar	touch headset user interface sensitive surface control output
3/2/2025 5:53:34 PM	Google Patents	Search Term 1 touch Search Term 2 headset Search Term 3 user interface Search Term 4 sensitive surface Search Term 5 control output Before Priority Date: priority:20061130

date, time	web site	search string
3/2/2025 5:53:42 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 wire Search Term 3 dep Search Term 4 electronic Search Term 5 temple Before Priority Date: priority:20061213
3/2/2025 5:53:50 PM	Google Scholar	housing portion communications device wireless communications right ear housing
3/2/2025 5:53:50 PM	Google Patents	Search Term 1 housing portion Search Term 2 communications device Search Term 3 wireless communications Search Term 4 right ear Search Term 5 housing Before Priority Date: priority:20061214
3/2/2025 5:54:02 PM	Google Scholar	headphone cradle transmitter audio signal
3/2/2025 5:54:02 PM	Google Patents	Search Term 1 headphone Search Term 2 cradle Search Term 3 transmitter Search Term 4 audio Search Term 5 signal Before Priority Date: priority:20070130
3/2/2025 5:54:13 PM	Google Scholar	arrangement headphones housing ear piece seal

date, time	web site	search string
3/2/2025 5:54:13 PM	Google Patents	Search Term 1 arrangement Search Term 2 headphones Search Term 3 housing Search Term 4 ear piece Search Term 5 seal Before Priority Date: priority:20070504
3/2/2025 5:54:23 PM	Google Scholar	host computing computing device external host display bluetooth
3/2/2025 5:54:23 PM	Google Patents	Search Term 1 host computing Search Term 2 computing device Search Term 3 external host Search Term 4 display Search Term 5 bluetooth Before Priority Date: priority:20070514

Web Search History

date, time	web site	search string
12/13/2024 4:32:27 PM	Google	Head mounted display glasses
12/13/2024 4:32:31 PM	Google	types of head-mounted display
12/13/2024 4:32:35 PM	Google	head-mounted display examples
12/13/2024 4:32:42 PM	Google	head mount display
12/13/2024 4:33:26 PM	Google	Best head mounted display reviews
12/13/2024 4:33:51 PM	Google	head mount display reviews
12/13/2024 4:34:14 PM	Google	Types of head mounted display in virtual reality
12/13/2024 4:34:31 PM	Google	Head mounted device
12/13/2024 4:37:02 PM	Google Scholar	head worn user electronic apparatus personal electronic
12/13/2024 4:37:02 PM	Google Patents	Search Term 1 head Search Term 2 worn Search Term 3 user Search Term 4 electronic apparatus Search Term 5 personal electronic Before Priority Date: priority:20051011
12/13/2024 4:38:08 PM	Google Scholar	wristwatch magnetic annular frame tag antenna

date, time	web site	search string
12/13/2024 4:38:08 PM	Google Patents	Search Term 1 wristwatch Search Term 2 magnetic Search Term 3 annular frame Search Term 4 tag Search Term 5 antenna Before Priority Date: priority:20010515
12/13/2024 4:38:16 PM	Google Scholar	electro active lens active layer layer
12/13/2024 4:38:16 PM	Google Patents	Search Term 1 electro Search Term 2 active Search Term 3 lens Search Term 4 active layer Search Term 5 layer Before Priority Date: priority:19990702
12/13/2024 4:38:25 PM	Google Scholar	eyeglasses coupled frame speaker microphone
12/13/2024 4:38:25 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 coupled Search Term 3 frame Search Term 4 speaker Search Term 5 microphone Before Priority Date: priority:20010621
12/13/2024 4:38:31 PM	Google Scholar	display eyeglasses display system optical element facing

date, time	web site	search string
12/13/2024 4:38:31 PM	Google Patents	Search Term 1 display Search Term 2 eyeglasses Search Term 3 display system Search Term 4 optical element Search Term 5 facing Before Priority Date: priority:20010626
12/13/2024 4:38:46 PM	Google Scholar	user exercise amount information recorder
12/13/2024 4:38:46 PM	Google Patents	Search Term 1 user Search Term 2 exercise Search Term 3 amount Search Term 4 information Search Term 5 recorder Before Priority Date: priority:20000511
12/13/2024 4:38:52 PM	Google Scholar	light heart rate receiving element emitting element change
12/13/2024 4:38:52 PM	Google Patents	Search Term 1 light Search Term 2 heart rate Search Term 3 receiving element Search Term 4 emitting element Search Term 5 change Before Priority Date: priority:20010719
12/13/2024 4:38:58 PM	Google Scholar	telephone concealed microphone earpiece user

date, time	web site	search string
12/13/2024 4:38:58 PM	Google Patents	Search Term 1 telephone Search Term 2 concealed Search Term 3 microphone Search Term 4 earpiece Search Term 5 user Before Priority Date: priority:20010727
12/13/2024 4:39:09 PM	Google Scholar	subject activity operable consumption body activity
12/13/2024 4:39:09 PM	Google Patents	Search Term 1 subject Search Term 2 activity Search Term 3 operable Search Term 4 consumption Search Term 5 body activity Before Priority Date: priority:20000119
12/13/2024 4:51:32 PM	Google Scholar	electro active lens change spectacle
12/13/2024 4:51:32 PM	Google Patents	Search Term 1 electro Search Term 2 active Search Term 3 lens Search Term 4 change Search Term 5 spectacle Before Priority Date: priority:19990702
12/13/2024 4:51:39 PM	Google Scholar	integral attached optic eye close proximity

date, time	web site	search string
12/13/2024 4:51:39 PM	Google Patents	Search Term 1 integral Search Term 2 attached Search Term 3 optic Search Term 4 eye Search Term 5 close proximity Before Priority Date: priority:20010813
12/13/2024 4:51:46 PM	Google Scholar	wireless telephone hand microphone speaker
12/13/2024 4:51:46 PM	Google Patents	Search Term 1 wireless Search Term 2 telephone Search Term 3 hand Search Term 4 microphone Search Term 5 speaker Before Priority Date: priority:20010813
12/13/2024 4:51:53 PM	Google Scholar	hearing aid mobile station call wireless bluetooth
12/13/2024 4:51:53 PM	Google Patents	Search Term 1 hearing aid Search Term 2 mobile station Search Term 3 call Search Term 4 wireless Search Term 5 bluetooth Before Priority Date: priority:20010906
12/13/2024 4:52:05 PM	Google Scholar	data sensing unit power airtime speed

date, time	web site	search string
12/13/2024 4:52:05 PM	Google Patents	Search Term 1 data Search Term 2 sensing unit Search Term 3 power Search Term 4 airtime Search Term 5 speed Before Priority Date: priority:19961212
12/13/2024 4:52:20 PM	Google Scholar	scba sensor processor transmitter face mask
12/13/2024 4:52:20 PM	Google Patents	Search Term 1 scba Search Term 2 sensor Search Term 3 processor Search Term 4 transmitter Search Term 5 face mask Before Priority Date: priority:19980814
12/13/2024 4:52:27 PM	Google Scholar	user hearing control circuitry profile mobile phone
12/13/2024 4:52:27 PM	Google Patents	Search Term 1 user Search Term 2 hearing Search Term 3 control circuitry Search Term 4 profile Search Term 5 mobile phone Before Priority Date: priority:20010920
12/13/2024 4:52:33 PM	Google Scholar	digital data response curve digital filters tolerance range

date, time	web site	search string
12/13/2024 4:52:33 PM	Google Patents	Search Term 1 digital data Search Term 2 response curve Search Term 3 digital Search Term 4 filters Search Term 5 tolerance range Before Priority Date: priority:20010928
12/13/2024 5:08:25 PM	Google Scholar	audio speaker mode radio cellular
12/13/2024 5:08:25 PM	Google Patents	Search Term 1 audio Search Term 2 speaker Search Term 3 mode Search Term 4 radio Search Term 5 cellular Before Priority Date: priority:20000602
12/13/2024 5:08:31 PM	Google Scholar	speaker eyewear wearer microphone earstem
12/13/2024 5:08:31 PM	Google Patents	Search Term 1 speaker Search Term 2 eyewear Search Term 3 wearer Search Term 4 microphone Search Term 5 earstem Before Priority Date: priority:20011006
12/13/2024 5:08:39 PM	Google Scholar	wearer eyewear speaker microphone unit

date, time	web site	search string
12/13/2024 5:08:39 PM	Google Patents	Search Term 1 wearer Search Term 2 eyewear Search Term 3 speaker Search Term 4 microphone Search Term 5 unit Before Priority Date: priority:20011006
12/13/2024 5:08:46 PM	Google Scholar	waveform value user indicator pulse wave
12/13/2024 5:08:46 PM	Google Patents	Search Term 1 waveform Search Term 2 value Search Term 3 user Search Term 4 indicator Search Term 5 pulse wave Before Priority Date: priority:19960709
12/13/2024 5:08:56 PM	Google Scholar	stimulus interaction step amount test response
12/13/2024 5:08:56 PM	Google Patents	Search Term 1 stimulus Search Term 2 interaction Search Term 3 step amount Search Term 4 test Search Term 5 response Before Priority Date: priority:20011012
12/13/2024 5:09:03 PM	Google Scholar	recording unit recording recorder visual data acquisition

date, time	web site	search string
12/13/2024 5:09:03 PM	Google Patents	Search Term 1 recording unit Search Term 2 recording Search Term 3 recorder Search Term 4 visual Search Term 5 data acquisition Before Priority Date: priority:19990105
12/13/2024 5:09:09 PM	Google Scholar	layer transducer film layer electrode vibrator
12/13/2024 5:09:09 PM	Google Patents	Search Term 1 layer Search Term 2 transducer Search Term 3 film layer Search Term 4 electrode Search Term 5 vibrator Before Priority Date: priority:20011009
12/13/2024 5:09:16 PM	Google Scholar	receiver lens frame eyeglasses temple piece electrical
12/13/2024 5:09:16 PM	Google Patents	Search Term 1 receiver Search Term 2 lens frame Search Term 3 eyeglasses Search Term 4 temple piece Search Term 5 electrical Before Priority Date: priority:20011018
12/13/2024 5:13:34 PM	Google Scholar	eyeglasses eyeglasses according microphone connector connection