US008337013B2

(12) **United States Patent**
Howell et al.

(10) **Patent No.: US 8,337,013 B2**
(45) **Date of Patent: Dec. 25, 2012**

(54) **EYEGLASSES WITH RFID TAGS OR WITH A STRAP**

(75) Inventors: **Thomas A. Howell**, Palo Alto, CA (US); **David Chao**, Saratoga, CA (US); **Peter P. Tong**, Mountain View, CA (US); **C. Douglass Thomas**, Campbell, CA (US)

(73) Assignee: **IpVenture, Inc.**, Los Altos, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/152,480**

(22) Filed: **May 13, 2008**

(65) **Prior Publication Data**

US 2008/0218684 A1 Sep. 11, 2008

Related U.S. Application Data

(62) Division of application No. 11/183,263, filed on Jul. 15, 2005, now Pat. No. 7,380,936.

(60) Provisional application No. 60/592,045, filed on Jul. 28, 2004, provisional application No. 60/605,191, filed on Aug. 28, 2004, provisional application No. 60/618,107, filed on Oct. 12, 2004, provisional application No. 60/620,238, filed on Oct. 18, 2004, provisional application No. 60/647,836, filed on Jan. 31, 2005, provisional application No. 60/647,826, filed on Jan. 31, 2005.

(51) **Int. Cl.**
G02C 1/00 (2006.01)

(52) **U.S. Cl.** **351/158**; 351/41; 340/572.1

(58) **Field of Classification Search** 351/158, 351/41, 111; 340/572.1, 539.23, 539.21, 340/539.12

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

320,558	A	6/1885	Hull
669,949	A	3/1901	Underwood
1,255,265	A	2/1918	Zachara
1,917,745	A	7/1933	Weiss
2,249,572	A	7/1941	Lieber
2,638,532	A	5/1953	Brady
2,794,085	A	5/1957	De Angelis
2,818,511	A	12/1957	Ullery et al.
2,830,132	A	4/1958	Borg
2,874,230	A	2/1959	Carlson

(Continued)

FOREIGN PATENT DOCUMENTS

CN	88203065	11/1988

(Continued)

OTHER PUBLICATIONS

Office Action re Chinese application No. 2005100671435, (with translation).

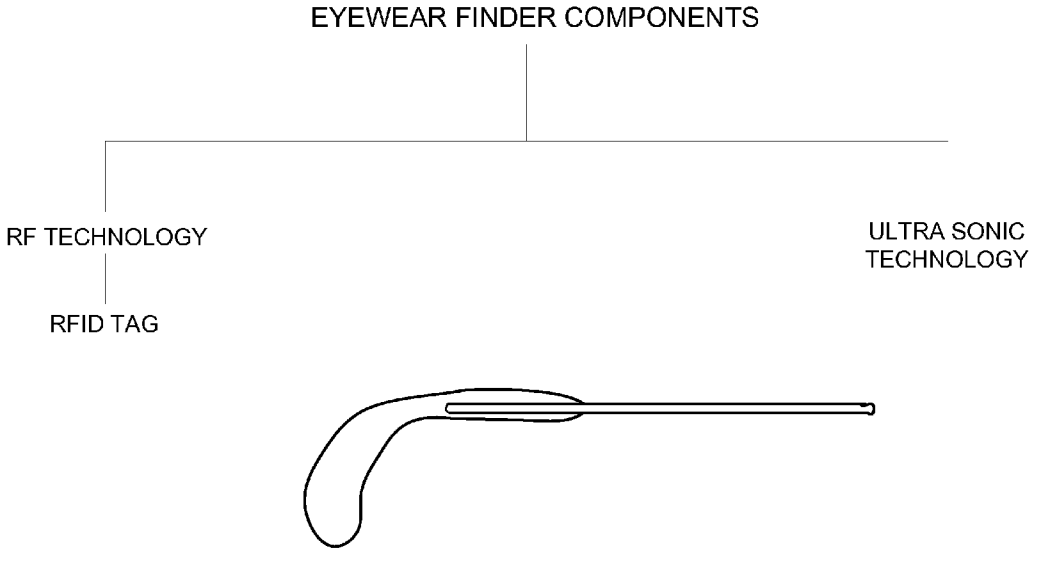
(Continued)

Primary Examiner — Hung Dang

(57) **ABSTRACT**

A pair of glasses includes a clock that is at least partially embedded in the glasses. The clock can be in one of the temples of the glasses. In one implementation, the clock can be positioned at a region close to a hinge of the corresponding temple, with the clock facing inward towards the user. The clock can also be in a temple arrangement. Instead of or in addition to a clock, other types of electrical components can be at least partially embedded into a pair of glasses or a temple arrangement of a pair of glasses. For example, the other electrical components can pertain to a RFID tag, a temperature sensor or an eyewear finder.

43 Claims, 6 Drawing Sheets



U.S. PATENT DOCUMENTS

2,904,670	A		9/1959	Calmes
3,060,308	A		10/1962	Fortuna
3,597,054	A		8/1971	Winter
3,710,115	A		1/1973	Jubb
4,165,487	A		8/1979	Corderman
4,254,451	A		3/1981	Cochran, Jr.
4,283,127	A		8/1981	Rosenwinkel et al.
4,322,585	A		3/1982	Liautaud
4,348,664	A		9/1982	Boschetti et al.
4,389,217	A		6/1983	Baughman et al.
4,526,473	A		7/1985	Zahn, III
4,535,244	A		8/1985	Burnham
4,608,492	A		8/1986	Burnham
4,683,587	A		7/1987	Silverman
4,751,691	A		6/1988	Perera
4,757,714	A		7/1988	Purdy et al.
4,773,095	A		9/1988	Zwicker et al.
4,806,011	A		2/1989	Bettinger
4,822,160	A		4/1989	Tsai
4,822,161	A		4/1989	Jimmy
4,851,686	A		7/1989	Pearson
4,942,629	A		7/1990	Stadlmann
4,962,469	A		10/1990	Ono et al.
4,985,632	A		1/1991	Bianco et al.
5,008,548	A		4/1991	Gat
5,015,086	A	*	5/1991	Okaue et al. 351/44
5,020,150	A		5/1991	Shannon
5,036,311	A		7/1991	Moran et al.
5,050,150	A		9/1991	Ikeda
5,093,576	A		3/1992	Edmond et al.
5,148,023	A		9/1992	Hayashi et al.
5,151,600	A		9/1992	Black
5,161,250	A		11/1992	Ianna et al.
5,172,256	A		12/1992	Sethofer et al.
5,306,917	A		4/1994	Black et al.
5,353,378	A		10/1994	Hoffman et al.
5,359,370	A		10/1994	Mugnier
5,359,444	A		10/1994	Piosenka et al.
5,367,345	A		11/1994	da Silva
5,379,464	A		1/1995	Schleger et al.
5,382,986	A		1/1995	Black et al.
5,394,005	A		2/1995	Brown et al.
5,452,480	A		9/1995	Ryden
5,455,640	A		10/1995	Gertsikov
5,457,751	A		10/1995	Such
5,500,532	A		3/1996	Kozicki
D369,167	S		4/1996	Hanson et al.
5,510,961	A		4/1996	Peng
5,513,384	A		4/1996	Brennan et al.
5,533,130	A		7/1996	Staton
5,581,090	A		12/1996	Goudjil
5,585,871	A		12/1996	Linden
5,589,398	A		12/1996	Krause et al.
5,590,417	A		12/1996	Rydbeck
5,608,808	A		3/1997	da Silva
5,634,201	A		5/1997	Mooring
5,686,727	A		11/1997	Reenstra et al.
5,694,475	A		12/1997	Boyden
5,715,323	A		2/1998	Walker
5,737,436	A		4/1998	Boyden
5,835,185	A		11/1998	Kallman et al.
5,900,720	A		5/1999	Kallman et al.
5,941,837	A		8/1999	Amano et al.
5,946,071	A		8/1999	Feldman
5,949,516	A		9/1999	McCurdy
5,966,746	A		10/1999	Reedy et al.
5,980,037	A		11/1999	Conway
5,988,812	A		11/1999	Wingate
5,992,996	A		11/1999	Sawyer
5,995,592	A		11/1999	Shirai et al.
6,010,216	A		1/2000	Jesiek
6,013,919	A		1/2000	Schneider et al.
6,028,627	A		2/2000	Helmsderfer
6,046,455	A		4/2000	Ribi et al.
6,060,321	A		5/2000	Hovorka
6,061,580	A		5/2000	Altschul et al.
6,091,546	A		7/2000	Spitzer
6,091,832	A		7/2000	Shurman et al.
6,115,177	A		9/2000	Vossler
6,132,681	A		10/2000	Faran et al.
6,154,552	A		11/2000	Koroljow et al.
6,176,576	B1		1/2001	Green et al.
6,225,897	B1		5/2001	Doyle et al.
6,231,181	B1		5/2001	Swab
6,236,969	B1		5/2001	Ruppert et al.
6,243,578	B1		6/2001	Koike
6,259,367	B1	*	7/2001	Klein 340/572.1
6,270,466	B1		8/2001	Weinstein et al.
6,292,213	B1		9/2001	Jones
6,292,685	B1		9/2001	Pompei
6,301,367	B1		10/2001	Boyden et al.
6,307,526	B1		10/2001	Mann
6,343,858	B1		2/2002	Zelman
6,349,001	B1		2/2002	Spitzer
6,349,422	B1		2/2002	Schleger et al.
6,409,338	B1		6/2002	Jewell
6,426,719	B1		7/2002	Nagareda et al.
6,431,705	B1		8/2002	Linden
6,478,736	B1		11/2002	Mault
6,506,142	B2		1/2003	Itoh et al.
6,513,532	B2		2/2003	Mault et al.
6,517,203	B1		2/2003	Blum et al.
6,539,336	B1		3/2003	Vock et al.
6,542,081	B2		4/2003	Torch
6,546,101	B1		4/2003	Murray et al.
6,554,763	B1		4/2003	Amano et al.
6,619,799	B1		9/2003	Blum et al.
6,629,076	B1		9/2003	Haken
6,729,726	B2		5/2004	Miller et al.
6,736,759	B1		5/2004	Stubbs et al.
6,764,194	B1		7/2004	Cooper
6,792,401	B1		9/2004	Nigro et al.
6,824,265	B1	*	11/2004	Harper 351/158
6,871,951	B2		3/2005	Blum et al.
6,912,386	B1		6/2005	Himberg et al.
6,929,365	B2		8/2005	Swab et al.
6,947,219	B1		9/2005	Ou
7,013,009	B2		3/2006	Warren
7,031,667	B2		4/2006	Horiguchi
7,059,717	B2		6/2006	Bloch
7,073,905	B2		7/2006	Da Pra'
7,192,136	B2		3/2007	Howell et al.
7,255,437	B2		8/2007	Howell et al.
7,265,358	B2		9/2007	Fontaine
7,274,292	B2	*	9/2007	Velhal et al. 340/539.32
7,312,699	B2		12/2007	Chornenky
7,331,666	B2		2/2008	Swab et al.
7,376,238	B1		5/2008	Rivas et al.
7,380,936	B2		6/2008	Howell et al.
7,401,918	B2		7/2008	Howell et al.
7,429,965	B2		9/2008	Weiner
7,438,409	B2		10/2008	Jordan
7,438,410	B1		10/2008	Howell et al.
7,481,531	B2		1/2009	Howell et al.
7,500,746	B1		3/2009	Howell et al.
7,500,747	B2		3/2009	Howell et al.
7,527,374	B2		5/2009	Chou
7,543,934	B2		6/2009	Howell et al.
7,581,833	B2		9/2009	Howell et al.
7,621,634	B2		11/2009	Howell et al.
7,677,723	B2		3/2010	Howell et al.
7,760,898	B2		7/2010	Howell et al.
7,771,046	B2		8/2010	Howell et al.
7,792,552	B2		9/2010	Thomas et al.
7,806,525	B2		10/2010	Howell et al.
7,922,321	B2		4/2011	Howell et al.
8,109,629	B2		2/2012	Howell et al.
2001/0005230	A1		6/2001	Ishikawa
2002/0017997	A1		2/2002	Felkowitz
2002/0081982	A1		6/2002	Schwartz et al.
2002/0084990	A1		7/2002	Peterson, III
2002/0089639	A1		7/2002	Starner et al.
2002/0090103	A1		7/2002	Calisto, Jr.
2002/0098877	A1		7/2002	Glezerman
2002/0109600	A1		8/2002	Mault et al.
2002/0140899	A1		10/2002	Blum et al.
2002/0197961	A1		12/2002	Warren

2003/0018274	A1	1/2003	Takahashi et al.	
2003/0022690	A1	1/2003	Beyda et al.	
2003/0032449	A1	2/2003	Giobbi	
2003/0062046	A1	4/2003	Wiesmann et al.	
2003/0065257	A1	4/2003	Mault et al.	
2003/0067585	A1	4/2003	Miller et al.	
2003/0068057	A1	4/2003	Miller et al.	
2003/0083591	A1	5/2003	Edwards et al.	
2003/0226978	A1	12/2003	Ribi et al.	
2004/0000733	A1	1/2004	Swab et al.	
2004/0063378	A1	4/2004	Nelson	
2004/0096078	A1	5/2004	Lin	
2004/0100384	A1*	5/2004	Chen et al.	340/572.1
2004/0128737	A1	7/2004	Gesten	
2004/0150986	A1	8/2004	Chang	
2004/0156012	A1	8/2004	Jannard et al.	
2004/0157649	A1	8/2004	Jannard et al.	
2004/0160571	A1	8/2004	Jannard	
2004/0160572	A1	8/2004	Jannard	
2004/0160573	A1	8/2004	Jannard et al.	
2005/0067580	A1	3/2005	Fontaine	
2005/0213026	A1	9/2005	Da Pra'	
2005/0230596	A1	10/2005	Howell et al.	
2005/0248717	A1	11/2005	Howell et al.	
2005/0248719	A1	11/2005	Howell et al.	
2005/0264752	A1	12/2005	Howell et al.	
2006/0003803	A1	1/2006	Thomas et al.	
2006/0023158	A1	2/2006	Howell et al.	
2006/0107822	A1	5/2006	Bowen	
2006/0132382	A1	6/2006	Jannard	
2007/0030442	A1	2/2007	Howell et al.	
2007/0046887	A1	3/2007	Howell et al.	
2007/0098192	A1	5/2007	Sipkema	
2007/0109491	A1	5/2007	Howell et al.	
2007/0186330	A1	8/2007	Howell et al.	
2007/0208531	A1	9/2007	Darley et al.	
2007/0270663	A1	11/2007	Ng et al.	
2007/0271065	A1	11/2007	Gupta et al.	
2007/0271116	A1	11/2007	Wysocki et al.	
2007/0271387	A1	11/2007	Lydon et al.	
2008/0068559	A1	3/2008	Howell et al.	
2008/0144854	A1	6/2008	Abreu	
2008/0262392	A1	10/2008	Ananny et al.	
2009/0147215	A1	6/2009	Howell et al.	
2009/0296044	A1	12/2009	Howell et al.	
2010/0296045	A1	11/2010	Agnoli et al.	
2010/0309426	A1	12/2010	Howell et al.	
2011/0102734	A1	5/2011	Howell et al.	
2011/0187990	A1	8/2011	Howell et al.	
2012/0133885	A1	5/2012	Howell et al.	

FOREIGN PATENT DOCUMENTS

CN	89214222.7		3/1990
CN	90208199.3		11/1990
EP	1134491	A2	9/2001
FR	2530039	A1	1/1984
GB	1467982		3/1977
JP	58-113912		7/1983
JP	58-113914		7/1983
JP	02-181722		7/1990
JP	09-017204		1/1997
JP	10-161072		6/1998
JP	2000-039595		2/2000
JP	2002341059	A	11/2002
TW	484711		6/2001
WO	WO 97/12205	A1	4/1997
WO	WO 99/50706		10/1999
WO	WO 02/06881	A2	1/2002
WO	WO 03/069394	A1	8/2003
WO	WO 03/100368	A1	12/2003
WO	WO 2004/012477	A2	2/2004
WO	WO 2004/025554	A1	3/2004

OTHER PUBLICATIONS

"±1.5g Dual Axis Micromachined Accelerometer", Freescale Semiconductor, Inc., Motorola Semiconductor Technical Data, MMA6260Q, 2004, pp. 1-7.

"APA Announces Shipment of the SunUV™ Personal UV Monitor", Press Release, Nov. 7, 2003, pp. 1-3.

"Camera Specs Take Candid Snaps", BBC News, Sep. 18, 2003, pp. 1-3.

"Cardo Wireless Attaching Clips and Wearing Headset", Cardo Systems, Inc., http://www.cardowireless.com/clips.php, downloaded Nov. 27, 2004, pp. 1-3.

"Environmental Health Criteria 14: Ultraviolet Radiation", International Programme on Chemical Safety, World Health Organization Geneva, 1979 http://www.ichem.org., pp. 1-102.

"Eyetop", Product-Features, eyetop eyewear, eyetop belt worn, http://www.eyetop.net/products/eyetop/features.asp., downloaded Nov. 6, 2003, pp. 1-2.

"Exclusive Media Event Marks Debut of Oakley Thump: World's First Digital Audio Eyewear", Oakley Investor Relations, Press Release, Nov. 15, 2004, pp. 1-2.

"Heart Rate Monitors", http://www.healthgoods.com, downloaded Dec. 4, 2004.

"How is the UV Index Calculated", SunWise Program, U.S. Environmental Protection Agency, http://www.epa.gov/sunwise/uvcalc.html, downloaded Oct. 14, 2004, pp. 1-2.

"Industrial UV Measurements", APA Optics, Inc., http://www.apaoptics.com/uv/, downloaded Jul. 12, 2004, p. 1.

"Motorola and Oakley Introduce First Bluetooth Sunglasses-Cutting Edge RAZRWire Line Offers Consumers On-The-Go Connections", Motorola Mediacenter-Press Release, Feb. 14, 2005, pp. 1-2.

"Oakley Thump: Sunglasses Meet MP3 Player", with image, http://news.designtechnica.com/article4665.html, Jul. 13, 2004.

"Personal UV monitor," Optics.org, http://optics.org/articles/news/6/6/7/1 (downloaded Dec. 20, 2003), Jun. 9, 2000, pp. 1-2.

"SafeSun Personal Ultraviolet Light Meter", http://healthchecksystems.com/safesun.htm, downloaded Jul. 12, 2004, pp. 1-4.

"SafeSun Personal UV Meter", Introduction, Optix Tech Inc., http://www.safesun.com, downloaded Feb. 5, 2004, pp. 1-2.

SafeSun Personal UV Meter, features, Optix Tech Inc., http://www.safesun.com/features.html, downloaded May 1, 2004, pp. 1-2.

"Sharper Image—The FM Pedometer", e-Corporate Gifts.com, http://www.e-corporategifts.com/sr353.html, downloaded Jan. 22, 2005, pp. 1-2.

"Sun UV™ Personal UV Monitor", APA Optics, Inc., http://www.apaoptics.com/sunuv/uvfacts.html, downloaded Dec. 20, 2003, pp. 1-3.

"Ultraviolet Light and Sunglasses", Oberon's Frequently Asked Questions, http://www.oberoncompany.com/OBEnglish/FAQUV.html, downloaded Feb. 5, 2004, pp. 1-2.

"Ultraviolet Light Sensor", Barrett & Associates Engineering, http://www.barrettengineering.com/project_uvs.htm, downloaded Feb. 5, 2004, pp. 1-3.

"Ultraviolet Radiation (UVR)", Forum North, Ontario Ministry of Labour, http://www3.mb.sympatico.ca/~ericc/ULTRAVIOLET%20RADIATION.htm, downloaded Feb. 5, 2004, pp. 1-6.

"What Are Gripples?", Gripping Eyewear, Inc., http://www.grippingeyewear.com/whatare.html, downloaded Nov. 2, 2005.

"With Racing Heart", Skaloud et al., GPS World, Oct. 1, 2001, http://www.gpsworld,com/gpsworld/content/printContentPopup.jsp?id=1805, pp. 1-5.

Abrisa Product Information: Cold Mirrors, Abrisa, date unknown, p. 1.

Abrisa Product Information: Commercial Hot Mirror, Abrisa, date unknown, p. 1.

Alps Spectable, Air Conduction Glass, Bone Conduction Glass, htt;://www.alps-inter.com/spec.htm, downloaded Dec. 10, 2003, pp. 1-2.

Altimeter and Compass Watches, http://store.yahoo.com/snowshack/altimeter-watches.html, downloaded May 3, 2004, pp. 1-2.

Bone Conduction Headgear HG16 Series, "Voiceducer," http://www.temco-j.co.jp/html/English/HG16.html, downloaded Dec. 10, 2003, pp. 1-3.

Carnoy, David, "The Ultimate MP3 Player for Athletes? Could be.", CNET Reviews, May 14, 2004, pp. 1-4.

Clifford, Michelle A., "Acccelerometers Jump into the Consumer Goods Market", Sensors Online, http://www.sensorsmag.com, Aug. 2004.

Cool Last Minute Gift Ideas!, UltimateFatBurner Reviews and Articles, http://www.ultimatefatburner.com/gift-ideas.html, downloaded May 10, 2005, pp. 1-3.
Dixen, Brian, "ear-catching", Supertesten, Mobil, date unknown, pp. 37-41.
Global Solar UV Index, A Practical Guide, World Health Organization, 2002, pp. 1-28.
Grobart, Sam, "Digit-Sizing Your Computer Data", News Article, Sep. 2004, p. 1.
Life Monitor V1.1, Rhusoft Technologies Inc., http://www.rhusoft.com/lifemonitor/, Mar. 1, 2003, pp. 1-6.
Manes, Stephen, "Xtreme Cam", Forbes Magazine, Sep. 5, 2005, p. 96.
Mio, PhysiCal, http://www.gophysical.com/, downloaded Jan. 27, 2004, 5 pages.
NIWA, "UV Index Information", http://www.niwa.cri.nz/services/uvozone/uvi-info, downloaded Jul. 15, 2004, pp. 1-2.
Pärkkä, Juha, et al., "A Wireless Wellness Monitor for Personal Weight Management", VTT Information Technology, Tampere, Finland, date unknown, p. 1.
Pedometer, Model HJ-112, Omron Instruction Manual, Omron Healthcare, Inc., 2003, pp. 1-27.
PNY Announces Executive Attaché USB 2.0 Flash Drive and Pen Series, Press Release, PNY Technologies, Las Vegas, Jan. 8, 2004, pp. 1-2.
PNY Technologies, "Executive Attaché" http://www.pny.com/products/flash/execattache.asp downloaded Nov. 16, 2005.
Polar WM41 and 42 weight management monitor, http://www.simplysports/polar/weight_management/wm41-42.htm, downloaded Jan. 28, 2004, pp. 1-3.
Questions Answers, Pedometer.com, http:/www.pedometer.com, downloaded May 5, 2005.
RazrWire, Motorola, 2005, 1 page.
SafeSun Personal UV Meter, Scientific Data, Optix Tech Inc., http://www.safesun.com/scientific.html, downloaded May 1, 2004, pp. 1-3.
SafeSun Sensor, User's Manual, Optix Tech Inc., date unknown.
SafeSun, Personal UV Meter, "Technical Specifications", Optix Tech Inc., http://www.safesun.com/technical.html, downloaded Jul. 12, 2004, pp. 1-2.
SafeSun, Personal UV Meter, Experiments, Optix Tech Inc., http://www.safesun.com/experiments.html, downloaded Feb. 5, 2004, pp. 1-2.
Shades of Fun, Blinking Light Glasses, http://www.shadesoffun.com/Nov/Novpgs-14.html, downloaded Jul. 9, 2005, pp. 1-4.
SportLine Fitness Pedometer-Model 360, UltimateFatBurner Superstore, http://www.ultimatefatburner-store.com/ac_004.html, downloaded May 10, 2005, pp. 1-2.
Steele, Bonnie G. et al., "Bodies in motion: Monitoring daily activity and exercise with motion sensors in people with chronic pulmonary disease", VA Research & Development, Journal of Rehabilitation Research & Development, vol. 40, No. 5, Sep./Oct. 2003, Supplement 2, pp. 45-58.
Stevens, Kathy, Should I Use a Pedometer When I Walk?, Healtheon/WebMD, Apr. 14, 2000.
Sundgot, Jørgen "2nd-gen Motorola Bluetooth headset", InfoSync World, Mar. 1, 2003, http://www.infosync.no/news/2002/n/2841.html, pp. 1-2.
SunSensors, Segan Industries, Inc., http://www.segan-ind.com/sunsensor.htm, downloaded Feb. 5, 2004, pp. 1-3.
SunUV™, Personal UV Monitor, APA Optics, Inc., http://www.apaoptics.com/sunuv/models.html, downloaded Dec. 20, 2003.
SunUV™, Personal UV Monitor User's Guide, APA Optics, Inc., 2003 pp. 1-52.
Talking Pedometer, Sportline, Inc., date unknown.
Top Silicon PIN Photodiode, PD93-21C, Technical Data Sheet, Everlight Electronics Co., Ltd., 2004, pp. 1-9.
UV Light Meter, UVA and UVB measurement, UV-340, Instruction Manual, Lutron, date unknown, pp. 1-5.
UV-Smart, UVA/B Monitor, Model EC-960-PW, Instruction Manual, Tanita Corporation of America, Inc., downloaded Nov. 16, 2001.
Vitaminder Personal Carb Counter, http://www.auravita.com/products/AURA/ORBU11420.asp. Downloaded Nov. 15, 2005, pp. 1-2.
Restriction Requirement for U.S. Appl. No. 11/183,263, dated Jun. 25, 2007.
Office Action for U.S. Appl. No. 11/183,276, dated Oct. 2, 2007.
Notice of Allowance for U.S. Appl. No. 11/183,276, dated Jan. 29, 2008.
Comfees.com, Adjustable Sports Band Style No. 1243, http://shop.store.yahoo.com/comfees/adsprtbansty.html, downloaded Apr. 18, 2003, pp. 1-2.
Monitoring Athletes Performance—2002 Winter Olympic News from KSL, Jan. 23, 2002, http://2002.ksl.com/news-3885i, pp. 1-3.

* cited by examiner

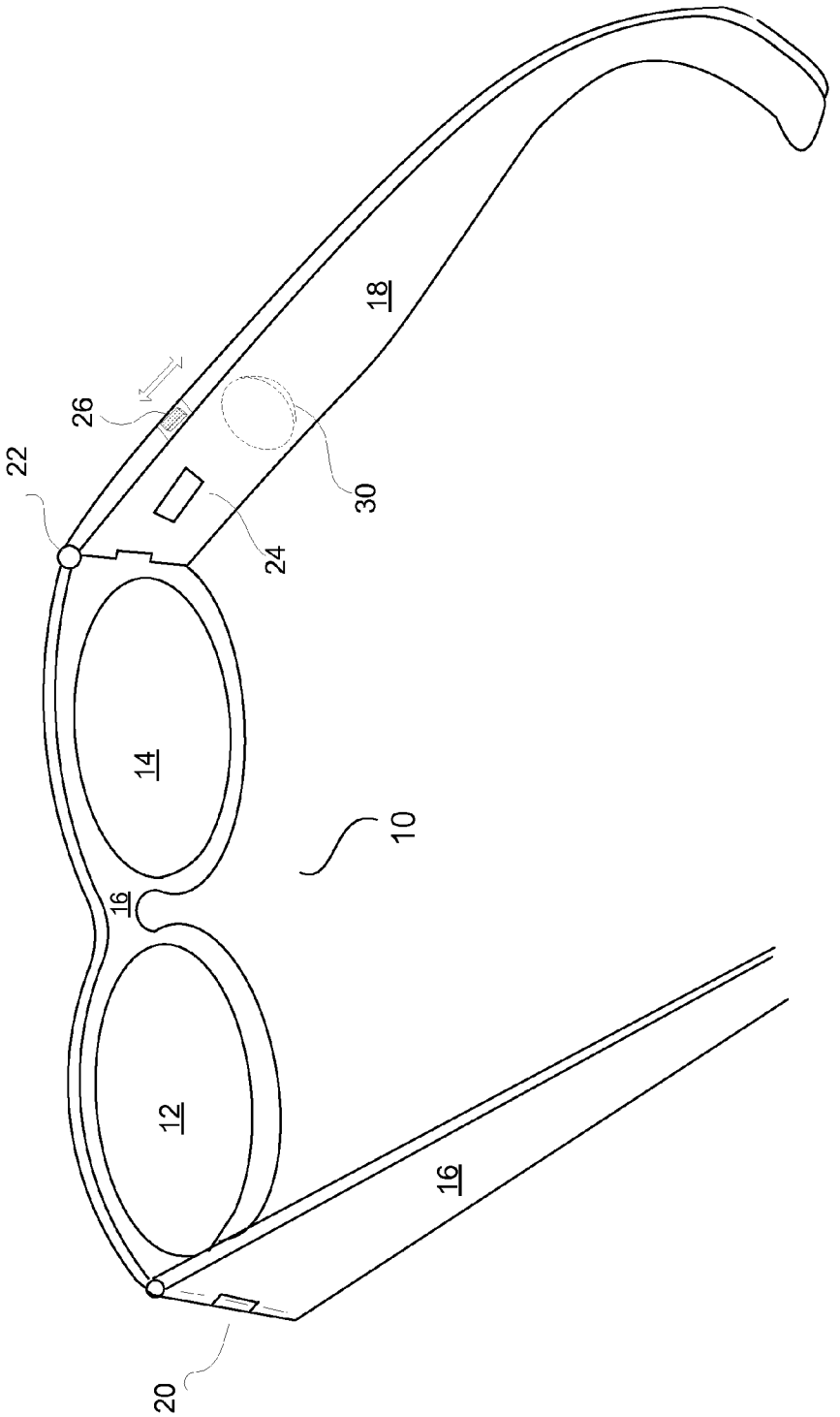


FIG. 1

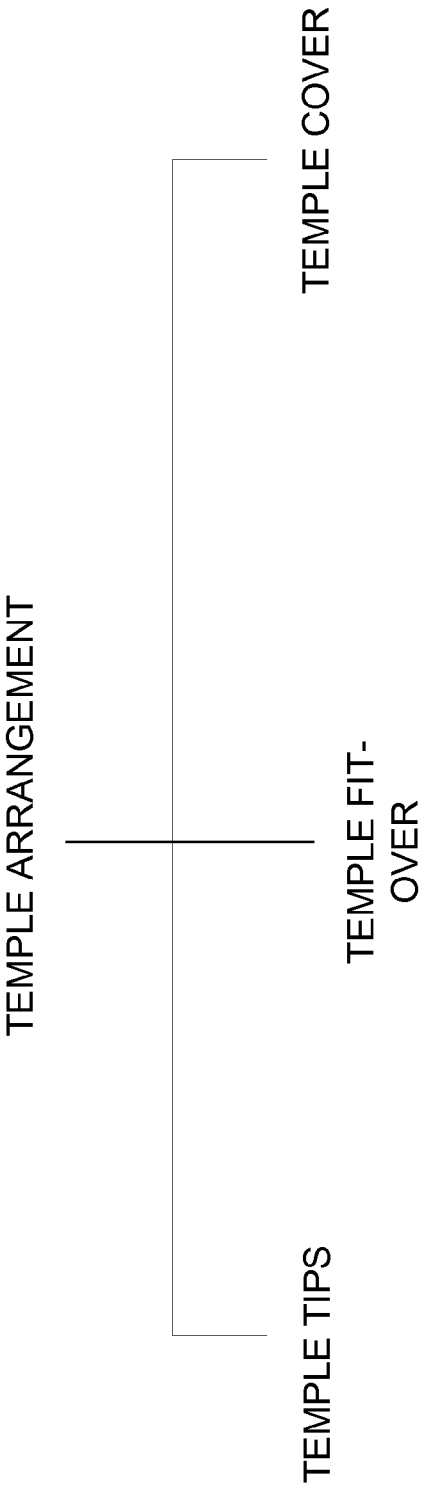

TEMPLE ARRANGEMENT
TEMPLE COVER
TEMPLE FIT-OVER
TEMPLE TIPS

FIG. 2

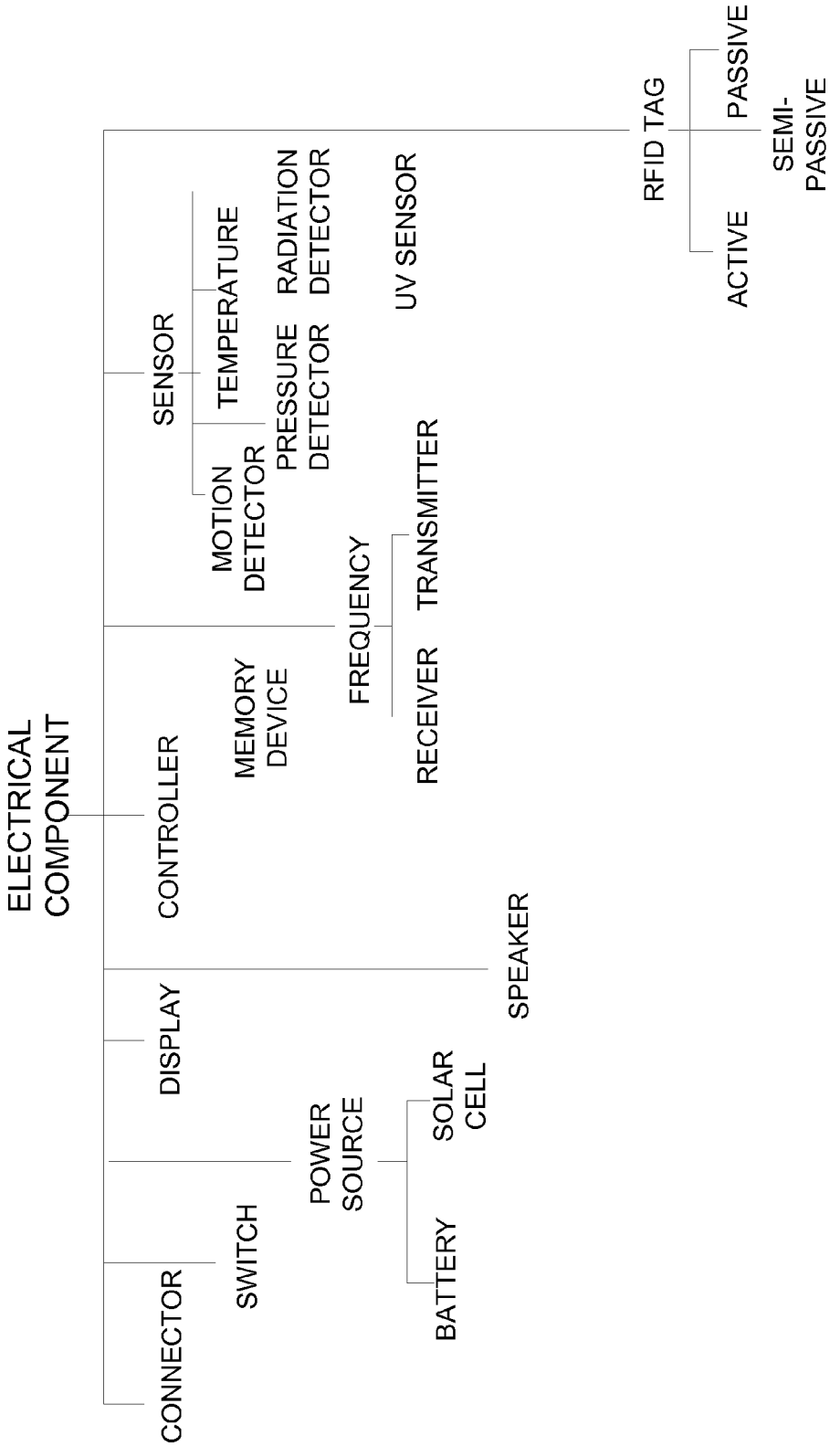

ELECTRICAL COMPONENT
CONTROLLER
SENSOR
MOTION DETECTOR
TEMPERATURE
PRESSURE DETECTOR
RADIATION DETECTOR
UV SENSOR
MEMORY DEVICE
FREQUENCY
RECEIVER
TRANSMITTER
RFID TAG
PASSIVE
SEMI-PASSIVE
ACTIVE
DISPLAY
SPEAKER
POWER SOURCE
SOLAR CELL
BATTERY
SWITCH
CONNECTOR

FIG. 3

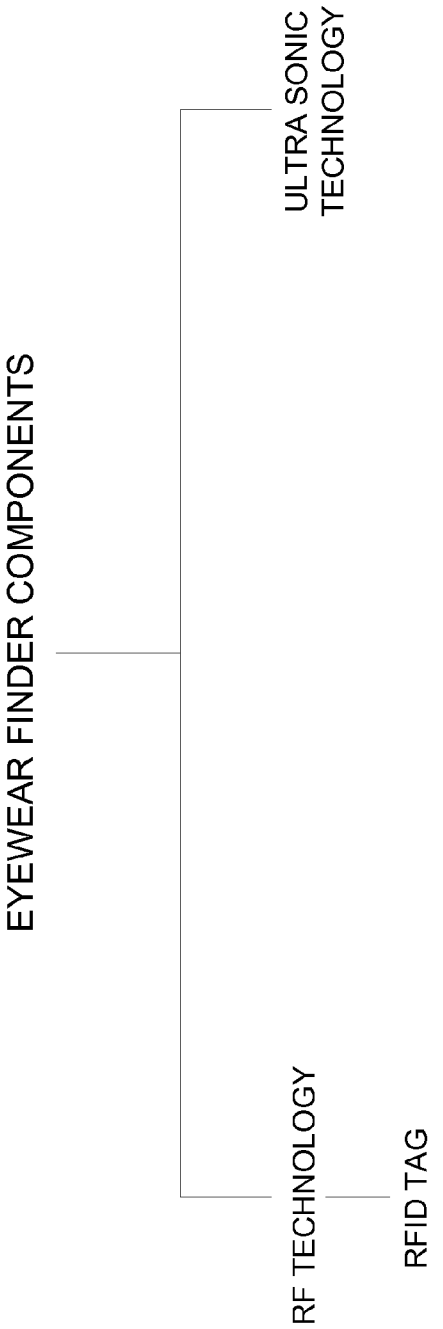

EYEWEAR FINDER COMPONENTS
ULTRA SONIC TECHNOLOGY
RF TECHNOLOGY
RFID TAG

FIG. 4

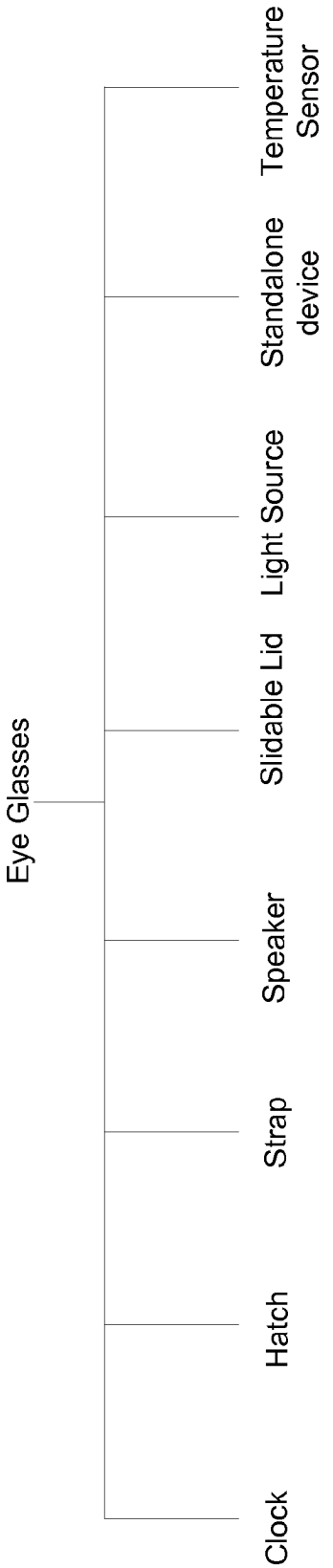

Eye Glasses
Clock
Hatch
Strap
Speaker
Slidable Lid
Light Source
Standalone device
Temperature Sensor

FIG. 5

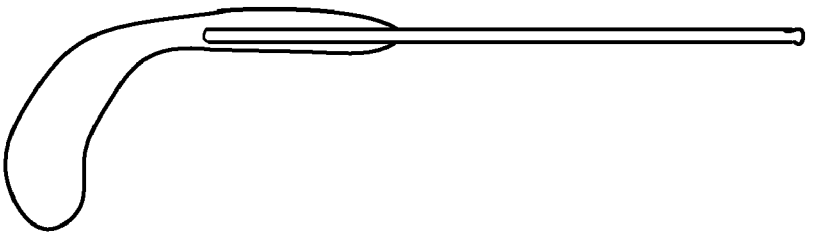


FIG. 6

EYEGLASSES WITH RFID TAGS OR WITH A STRAP

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional of U.S. patent application Ser. No. 11/183,263, now U.S. Pat. No. 7,380,936, filed Jul. 15, 2005, and entitled "EYEGLASSES WITH A CLOCK OR OTHER ELECTRICAL COMPONENT" which claims priority to each of: (i) U.S. Provisional Patent Application No. 60/592,045, filed Jul. 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 Aug. 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 Oct. 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 Oct. 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 Jan. 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 Jan. 31, 2005, and entitled "EYEWEAR WITH ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference.

This application is related to U.S. patent application Ser. No. 10/964,011, filed Oct. 12, 2004, now U.S. Pat. No. 7,192,136, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference, which in turn claims priority to each of: (i) U.S. Provisional Patent Application No. 60/509,631, filed Oct. 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 Dec. 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 Apr. 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 Jun. 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 Jul. 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 Aug. 28, 2004, entitled "ELECTRICAL COMPONENTS FOR USE WITH EYEWEAR, AND METHODS THEREFOR," and which is hereby incorporated herein by reference.

In addition, this application is related to each of: (i) U.S. patent application Ser. No. 10/822,218, now U.S. Pat. No. 7,792,552, filed Apr. 12, 2004, and entitled "EYEGLASSES FOR WIRELESS COMMUNICATIONS," which is hereby incorporated herein by reference; (ii) U.S. patent application Ser. No. 10/964,011, now U.S. Pat. No. 7,192,136, filed Oct. 12, 2004, and entitled "TETHERED ELECTRICAL COMPONENTS FOR EYEGLASSES," which is hereby incorporated herein by reference; (iii) U.S. patent application Ser. No. 11/006,343, now U.S. Pat. No. 7,116,976, filed Dec. 7, 2004, and entitled "ADAPTABLE COMMUNICATION TECHNIQUES FOR ELECTRONIC DEVICES," which is hereby incorporated herein by reference; (iv) U.S. patent application Ser. No. 11/078,855, now U.S. Pat. No. 7,500,746, filed Mar. 11, 2005, and entitled "EYEWEAR WITH RADIATION DETECTION SYSTEM," which is hereby incorporated herein by reference; (v) U.S. patent application Ser. No. 11/078,857, now abandoned, filed Mar. 11, 2005, and entitled "RADIATION MONITORING SYSTEM," which is hereby incorporated herein by reference; (vi) U.S. patent application Ser. No. 11/183,269, now U.S. Pat. No. 7,922,321, filed Jul. 15, 2005, and entitled "EYEWEAR SUPPORTING AFTER-MARKET ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference; (vii) U.S. patent application Ser. No. 11/183,283, now abandoned, filed Jul. 15, 2005, and entitled "EVENT EYEGLASSES," which is hereby incorporated herein by reference; (viii) U.S. patent application Ser. No. 11/183,262, now U.S. Pat. No. 7,760,898, filed Jul. 15, 2005, and entitled "EYEGLASSES WITH HEARING ENHANCED AND OTHER AUDIO SIGNAL-GENERATING CAPABILITIES," which is hereby incorporated herein by reference; (ix) U.S. patent application Ser. No. 11/183,256, now U.S. Pat. No. 7,500,747, filed Jul. 15, 2005, and entitled "EYEGLASSES WITH ELECTRICAL COMPONENTS," which is hereby incorporated herein by reference; and (x) U.S. patent application Ser. No. 11/183,276, now U.S. Pat. No. 7,255,437, filed Jul. 15, 2005, and entitled "EYEGLASSES WITH ACTIVITY MONITORING," which is hereby incorporated herein by reference.

FIELD OF THE INVENTION

The present invention relates generally to glasses and, more particularly, to a pair of eyeglasses with a clock or other electrical component.

BACKGROUND OF THE INVENTION

For some people, glasses are indispensable. They have to wear them almost every second of their waking hours. Even for those who do not wear prescription glasses, if they like to be in the sun, sunglasses are essential. In other words, many of us constantly carry at least one pair of glasses with us.

Many of us also have to regularly wear or carry a watch or other electrical devices. Some people are already burdened by carrying too many separate devices and it can be expensive and inconvenient when a device is lost or forgotten.

Another interesting aspect in the glasses industry is that once you have bought a pair of glasses, they cannot be altered. Some of these glasses can be quite expensive, particularly those with a famous brand name. After-market enhancements or modifications to a pair of glasses are not readily available.

It should also be apparent from the foregoing that there is a continuing need to reduce the number of separate components or gadgets one tends to carry, and there is also a need to facilitate after-market enhancements or modifications for a pair of glasses.

SUMMARY OF THE INVENTION

In one embodiment, the present invention relates to having a clock at least partially embedded in a pair of glasses. With

the clock at least partially embedded in the glasses, the wearer does not need to carry a separate watch in order to know what time it is. For example, the clock can be in one of the temples of the glasses at a region close to the hinge of that temple, with the clock facing the wearer. With the clock in that position, the wearer may be able to see the time or the time may be visible to the wearer, without the need to take the glasses off. In an alternative example, the clock, which can be a digital clock, can be in a temple arrangement of a pair of glasses. A temple arrangement can be a temple tip, a temple cover or a temple fit-over.

In another embodiment, instead of a clock, the present invention relates to an electrical component at least partially embedded into a pair of glasses or a temple arrangement of a pair of glasses. Due to the miniaturization of electrical components, even a physically small electrical component can provide significant and useful functionalities. In one example, an electrical component in a pair of glasses is a temperature sensor. In another example, an electrical component in a pair of glasses is an RFID tag. In still another example, an electrical component in a pair of glasses is an eyewear finder.

Other aspects and advantages of the present invention will become apparent from the following detailed description, which, when taken in conjunction with the accompanying drawings, illustrates by way of example the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows one embodiment of the invention with a clock in one of the temples of the glasses.

FIG. **2** shows a number of different embodiments of temple arrangements according to the present invention.

FIG. **3** shows examples of different electrical components partially or fully embedded in a pair of glasses according to the present invention.

FIG. **4** shows eyewear finder components according to different embodiments of the present invention.

FIG. **5** shows a number of features regarding a pair of eyeglasses according to different embodiments of the invention.

FIG. **6** shows a temple tip according to one embodiment of the invention.

Same numerals in FIGS. **1-6** are assigned to similar elements in all the figures. Embodiments of the invention are discussed below with reference to FIGS. **1-6**. 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.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** shows a pair of glasses according to one embodiment of the present invention. The pair of glasses **10** has a first lens holder **12** and a second lens holder **14**. Both lens holders **12**, **14** are for receiving lenses. The first lens holder **12** has a first side and a second side. The second lens holder **14** also has a first side and a second side. The pair of glasses has a bridge element **16**. The bridge element **16** is coupled to the first side of the first lens holder **12** and the second side of the second lens holder **14**. In one embodiment, the lens holders and the bridge element **16** are not separate pieces, but are an integral piece.

The pair of glasses **10** also includes a first temple **16** and a second temple **18**. The first temple **16** is pivotally secured to the second side of the first lens holder **12** through a joint or hinge **20**. The second temple **18** is pivotally secured to the first side of the second lens holder **14** through another joint or hinge **22**.

The glasses **10** shown in FIG. **1** also include a clock **24**, which is at least partially embedded in the glasses **10**. In one embodiment, the clock **24** can be in the temple **18** of the glasses **10** at a region close to its corresponding joint **22**. The clock **24** is facing a user when the user is wearing the glasses. With the clock in that position, in some implementations, the wearer is able to see the time without the need to take the glasses off.

The clock **24** can be a digital clock (or a digital alarm clock) with a liquid crystal display (LCD) or other types of electronic display. In another example, the clock is an analog clock, or other type of clock.

The glasses **10** can also include a switch **26** that can be used to adjust the time of the clock **24**. The switch **26** can be a push button, or a knob that one can adjust or rotate, similar to the knob in an analog watch. Different types of switches are applicable. In one embodiment, the clock **24** is a digital clock and the switch **26** is an electrical switch. Different types of switches have previously been described in the related patent applications mentioned above and incorporated by reference.

A battery **30** can also be provided in the glasses **10** to power the clock **24**. In one embodiment, the glasses **10** include a hatch that can be opened to replace the battery **30**. The hatch can be facing the wearer when the glasses **10** are worn. In another embodiment, the glasses **10** do not include a hatch for facilitating changing of the battery. In this embodiment, the glasses are designed so that once the power in the battery is depleted, the battery cannot be replaced without breaking the glasses. In still another embodiment, the battery can be rechargeable by way of coupling to a charger or by way of a solar cell coupled to or partially embedded in the glasses.

In the embodiment, where the clock is a digital clock, the clock can be programmable.

In one embodiment, the clock is an alarm clock, and there is also a speaker at least partially embedded in the glasses **10**. As an example, the speaker can be a beeper. In another embodiment, the alarm clock can be programmable to audibly alert a user at a specific time using an audible output from the speaker. In the various related patent applications mentioned above and incorporated by reference, many ways to at least partially embed a speaker into a temple are described.

In another embodiment, the clock is a digital clock with a display. The glasses can further include a switch that turns the display on and off. Sometimes, the wearer may not want to be reminded of time. In this embodiment, the clock itself can be turned off. In another embodiment, the clock is a digital clock with a LCD and an electrical switch. The electrical switch can turn off the LCD, while the clock is still running or is still continuously operating.

In one embodiment, there is a slidable lid (or cover) over the face of the clock. One can slide the lid to cover the face of the clock.

In one embodiment, the clock displays only the time of day. In another embodiment, the clock displays not only time, but also the date and the day of week. The size of the display can be smaller if only the time of day is displayed. The time, date and day can be displayed simultaneously. Alternatively, the display can cycle through displaying time, date, and day, thereby providing a sequential display of such information.

In yet another embodiment, a housing for the clock includes a light source next to the clock to help the wearer see the time. For example, a light emitting diode can be provided next to the clock, and the light emitting diode can be turned

on/off. In yet another embodiment, there is a cavity in the glasses and the clock is a self-contained clock with its own battery, i.e., a clock module. The clock module is placed in the cavity. A cavity is then closed and sealed to keep the clock module inside the glasses. The clock can be a digital clock and the digital clock may only display the time of day. In one embodiment, the clock can also set its time, date and/or day by a wireless signal. For example, the clock can include a wireless receiver to acquire the wireless signal. The wireless signal can be acquired from a network, such as a WiFi or Cellular network. The wireless signal can also be acquired from a broadcast. For example, the NIST radio station WWVB broadcasts signals that can be used to synchronize consumer electronic products, like clocks.

In the embodiment shown in FIG. **1**, the clock faces inside, towards the wearer when the glasses are being worn. Alternatively, the clock could be facing out and the user can temporarily remove the glasses to read the time.

A clock can be based on separate light sources. In one embodiment, the clock display is at least partially embedded in the lens holders of a pair of glasses. There can be twelve (12) light sources located all around each lens holder. The light sources could be LEDs or LCDs. The light sources around the left lens holder can show the hour, and the light sources around the right lens holder can show the minutes, which can be rounded to the nearest five minutes. As another example, the light sources can be around one of the lens holders, with different colors or other visual clues used to distinguish hours and minutes. There can be a switch provided with the pair of glasses to temporarily activate the display. For example, the switch can be located at the bridge or temple of the glasses. In one embodiment, the lens holders can be made of translucent materials.

In one embodiment, a clock can be in a temple arrangement of the glasses.

Referring back to FIG. **1**, each temple has two ends, the first end and the second end. The first end is the end that is pivotally secured to its corresponding hinge. In one embodiment, the second end of one or both temples has a temple arrangement.

For some glasses, particularly when a pair of glasses has not been extensively worn, a temple arrangement, such as a temple tip, can be relatively easily removed and re-inserted into the glasses. As result, temple arrangements of different color and/or shape and/or having different electrical components can be applied to the same frame of a pair of glasses. Retailers or distributors can then provide after-market modification or enhancement to a pair of glasses, at the preference of their consumers. This, for example, can be done by replacing existing temple tips with replacement temple tips. Or, a consumer can identify the preferred temple arrangements to be sold with the glasses. Different embodiments on after-market enhancement and/or modification of glasses have previously been described in the related patent applications mentioned above and incorporated by reference.

FIG. **2** shows a number of different embodiments of temple arrangements according to the present invention. For example, a temple arrangement can be a temple tip, which is usually associated with a rearward position of the temple.

In another embodiment, a temple arrangement is a temple cover, or a temple fit-over. A temple cover slides over and at least partially covers a portion of the second end of a temple. If the second end of the temple has a temple tip, at least a portion of the temple tip can be covered by the temple cover. A temple fit-over fits over at least a portion of the second end of a temple. If the second end of the temple has a temple tip, at least a portion of the temple tip is fitted over by the temple fit-over. 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 a fabric or other materials, such as a sock or sleeve; while a temple fit-over can be made of plastic.

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

A temple arrangement can be held onto a temple by frictional force. If the temple arrangement is a temple fit-over, it can be held onto a temple tip by frictional force. In another embodiment, a temple arrangement is permanently held onto its corresponding temple or temple tip. This can be done by adhesive or glue.

In different embodiments, the glasses **10** can be, for example, a pair of sunglasses, fit-over glasses, reading glasses, prescription glasses, or safety glasses. In other embodiments, the glasses **10** can be, for example, a pair of sports glasses, protective goggle, ski goggle or swimming goggle. In a further embodiment, one or more electrical components can be in a strap tied to the corresponding eyewear, such as a sports strap tied to the corresponding sports eyewear.

In a number of embodiments, the temples of the glasses can have a tapered profile. Each of the temples is wider or broader when it is close to its corresponding joint. In one embodiment, a wider or broader temple implies that the temple spans across a wider or broader area longitudinally down from the top of the head of the user.

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

In one embodiment, the glasses include lenses. The glasses, such as the lens holders with the corresponding lenses, can use a wrap around style to better conform to the profile of the face of the wearer.

In another embodiment, each lens holder also has a shield at least at one of its edges. The shield can reduce the amount of light or radiation entering, for example, between the lens holders and the wearer's head, and received by at least one of the eyes of the wearer. The shields can be shaped to conform to the profile of the face of the wearer. In an example for fit-over sunglasses, when worn over a pair of prescription glasses, such shields can go over or cover at least a portion of the pair of prescription glasses. The shields can be opaque. Optionally, there can be transparent or translucent windows on these shields.

Note that in one embodiment, a pair of glasses does not have to include lenses.

In one embodiment, one or more electrical components are at least partially or fully embedded in a temple arrangement. Such an embedded electrical component can be an electronic clock. FIG. **3** shows examples of different electrical components according to the present invention.

In one embodiment, an electrical component in a pair of glasses is an electrical connector. The connector can be provided on one of the temples of the pair of glasses. The connector can be a male connector located at a temple tip. In another embodiment, the connector can be a female connector at a temple tip. As that temple tip grabs onto the main body of its corresponding temple, the female connector can make electrical contact with a male connector. Different types of

connectors have previously been described in the related patent applications, which have been incorporated by reference.

In one embodiment, an electrical connector, which can be at a temple of a pair of glasses, is configured to connect to another electrical connector external to the pair of glasses, and to electrically couple to one or more electrical components in the glasses.

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

In one embodiment, an electrical component in a pair of glasses can include a circuit board. The circuit board can be a rigid or a flexible circuit board.

In one embodiment, an electrical component in a pair of glasses can be a power source. The power source can be a battery, a solar cell or other type of power source.

In one embodiment, an electrical component in a pair of glasses is a speaker. The speaker can be facing the wearer when the glasses are being worn. The speaker can directly transmit 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 speaker.

A bone-conducting speaker transfers vibrations from bones in one's head, such as cheekbone, to the inner ear through bone-conduction technology. One advantage of a bone-conducting speaker is that it does not need an ear bud sticking into one's ear, or additional wires to transmit sound. Such wires or ear bud can be inconvenient, such as when one is swimming. Different types of bone-conducting speakers have previously been described in the related patent applications, which have been incorporated by reference.

Alternatively, the speaker can indirectly transmit sound to a user, such as through the use of a tube to delivery audio signals proximate to a user's ear.

In one embodiment, an electrical component in a pair of glasses is a memory device and/or processing circuitry. The memory device is for data storage. The processing circuitry controls operation of data acquisition with respect to other electrical components and/or processing of data.

In one embodiment, an electrical component in a pair of glasses is a frequency receiver or a frequency transmitter. They can be in the radio frequency range.

In one embodiment, an electrical component in a pair of glasses can be a sensor. The sensor can be a temperature sensor. The temperature sensor can be used to sense the temperature of the wearer, which can be based on heat conduction. 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 the head of the user to ensure better connection. One can also stick the temple tip under one's tongue to measure body temperature.

In other different embodiments, an electrical component in a pair of glasses can be a motion detector, a speed sensor, a rate of ascent detector, a pressure detector, or a detector for radiation, such as an ultraviolet (UV) sensor.

In one embodiment, an electrical component in a pair of glasses is a radio frequency identification (RFID) tags. RFID tags typically include memory chips equipped with radio antennas. The memory chips usually do not include large amount of information. They may only have a few kilobytes, sufficient to encode, such as a serial number, where and when the product, such as the glasses, was manufactured, and other relevant information. A portion of such information can provide identifying information to the glasses.

These tags can come in a number of configurations. For example, an active tag uses a battery-powered transponder to constantly emit signals, carrying information programmed into the 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 the reader's radio wave signal to transmit the identifying information on the chip. 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.

In one embodiment, one or more electrical components in a temple arrangement interact with one or more electrical components in another part of the glasses or in a device tethered to the glasses. For example, there can be two temperature sensors, one in a temple tip and the other close to the hinge of the corresponding temple. The sensor close to the hinge is used to identify the temperature of the environment, while the sensor at the temple tip is used to measure the temperature of the wearer. In one embodiment, based on the differential output from the two sensors, the temperature of the wearer can be identified. Based on the differential output from the two sensors, the effect of the environment temperature is taken into consideration in identifying the temperature of the wearer of the glasses.

In another example, a temple of a pair of glasses holds one portion of an electrical circuit. That portion can include generic parts, such as a battery or a solar cell, a display, a memory device, a beeper and/or a controller (or processor), which can be programmable. The one or more electrical components can be on a printed circuit board. They can be generic components applicable to many different types of operations.

In one embodiment, another portion of the electrical circuit is in a temple arrangement. This portion can be application specific. For example, the battery to run a clock is in a temple, while the digital clock without its battery is in the corresponding temple arrangement.

In another example, a temperature sensor is in a temple arrangement, while a switch, a display, a processor, a memory device and a battery are in the temple. There can also be a thermal mass in the temple arrangement. With the thermal mass, the temperature of the sensor would not change too quickly. With the switch in the on position, the processor can cause the sensor to measure temperature. The processor keeps track of the temperature of the sensor as it changes. The information can be stored in the memory device.

In another embodiment, the temperature sensing glasses also have a beeper in the temple. When the sensor temperature does not fluctuate by more than a certain threshold within a preset amount of time, the beeper can produce a beeping sound. This indicates that the temperature is now stable.

One way to use a temperature sensor in a temple of a pair of glasses is as follows. First, one turns the switch on. Assume the person pushes the sensor so that it touches the head at the back of the ear of the user, and the temperature of the sensor starts to go up. A processor or controller keeps track of the temperature of the sensor. If the temperature does not vary by more than, for example, 0.1 degree in, for example, 5 seconds, the temperature is assumed to be in equilibrium. The processor keeps on calculating running averages. Once the fluctuation is below the preset 0.1 degrees, the beeper beeps. After the beeper beeps, the sensor stops measuring temperature, and the last temperature taken by the sensor will correspond

to the temperature of the wearer. The display then shows this last temperature. This process can be re-started by turning the switch off and on.

In other embodiments, a motion detector, a speed sensor for skiing, a rate of ascent detector for diving, a radiation detector (such as a UV sensor), or a pressure sensor can be in a temple arrangement. Each of these sensors or detectors can work in conjunction with other electrical components in the glasses. Different types of UV or radiation sensing embodiments have previously been described in the related patent applications, which have been incorporated by reference.

In one embodiment, the glasses include an active RFID tag. Different electrical components can be in different parts of the glasses. For example, the battery can be in the temple, and the transponder of the tag can be in the corresponding temple arrangement.

In one embodiment, the glasses include electrical components for locating the glasses. This is an embodiment of an eyewear finder. Sometimes we do not remember where we placed or misplaced the glasses. This embodiment helps us find the glasses.

FIG. **4** shows eyewear finder components according to different embodiments of the present invention. In one approach, the glasses include a semi-passive RFID tag, a battery and a speaker, such as a beeper. These components can be in the frames of the glasses. In another embodiment, some of its electrical components can be in the frame of the glasses, and some of its electrical components can be in a temple arrangement of the glasses. For example, its power source and beeper can be in one of its temples, and the tag in the corresponding temple arrangement. The tag is activated when it receives a specific signal from its reader or finder. The reader or finder can be a generator for specific RF signal. By pushing a button on the reader, the specific signal will be transmitted. When the tag gets the specific signal, the tag will activate the beeper, which will generate a beeping sound. As long as the user is within the hearing range of the beeping sound, the user will be able to find the pair of glasses.

In another approach for an eyewear finder, there is a RF receiver, an ultrasonic receiver or other types of receiver in the glasses, which can couple to a beeper. The receiver is designed to receive a specific signal. The finder can generate the corresponding signal, which can be RF or ultrasonic signals. When the receiver detects the transmitted signals, the receiver will generate a beeping sound, which can then help locate the position of the glasses. Typically, the finder is for short-range application, and can use technologies can be based on Zigbee, UWB, Bluetooth or WiFi standards.

Based on a number of embodiments described, retailers or distributors can provide after-market modification or enhancement to a pair of glasses. For example, this can be done by replacing existing temple tips with replacement temple tips of a pair of glasses.

A replacement temple arrangement can include different electrical components for different applications. Alternatively, the replacement temple arrangement can have similar electrical components, but is of different shape or color than the original one.

In another example, the distributors can have a whole range of temple arrangements in different colors and/or shapes and/or electrical components for a customer to select from. Once the customer has selected one, the distributor will insert that temple arrangements to the glasses and sell the glasses to the customer. The distributor can also permanently fix the temple arrangements to the glasses so that they cannot be removed from the glasses without distorting or breaking the glasses.

In yet another embodiment, the distributor can allow the customer the option of replacement temple arrangements after the customer has bought the pair of glasses (e.g., as long as the customer returns the glasses within a preset period of time). For example, the preset period of time is one week. The customer has the option to replace the temple arrangements bought with another set. If the prices are different, the customer will either get a refund or has to pay the extra amount.

Additional descriptions regarding temple arrangements have been disclosed in the related patent applications, which have been incorporated by reference.

In a number of embodiments, electrical components have been described to be fully or partially embedded in a temple of glasses, or in a temple arrangement. In other embodiments, the component(s) can be in other parts of the glasses, such as the lens holders, the nose pads, the bridges or the shields.

A number of embodiments have been described regarding glasses with a number of structural elements. In one embodiment, the glasses can utilize rimless frames. The glasses can include two lenses held together by a bridge. A temple can be attached to each lens through a joint that is connected to the corresponding lens by one or more screws. For example, there can be two screws at each lens to hold onto a temple piece, which includes a joint for a corresponding temple. One or more electrical components can be fully or partially embedded in the glasses, such as in a temple of the glasses.

In another embodiment, the electrical components, or at least some of the electrical components, in the glasses can be tethered to the glasses instead. A number of tethered embodiments have been described in related patent applications mentioned above and incorporated by reference.

In one embodiment, the electrical components can also pertain to an activity monitor, such as a pedometer. The activity monitor can be partially or completely embedded in a pair of eyeglasses. Typically, the activity monitor includes an activity sensor and electronic circuitry in the pair of eyeglasses that monitor the activity, process the monitored signals, and provide an output of an activity indication to the user or interested party. Additional details on activity monitors are described in related patent applications mentioned above and incorporated by reference

The various 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, embodiments, implementations or features provided in the description herein.

A number of embodiments in the invention can be implemented in software, hardware or a combination of hardware and software. A number of embodiments 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.

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.

Also, in this specification, 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.

Other embodiments of the invention will be apparent to those skilled in the art from a consideration of this specification or practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with the true scope and spirit of the invention being indicated by the following claims.

Other embodiments of the invention will be apparent to those skilled in the art from a consideration of this specification or practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with the true scope and spirit of the invention being indicated by the following claims.

The invention claimed is:

1. An eyewear comprising:
- a lens holder for receiving at least one lens, the lens holder having a first side and a second side;
- a first temple secured to the first side of the lens holder, the first temple having a temple tip;
- a second temple secured to the second side of the lens holder; and
- a RFID tag in the temple tip of the first temple,
- wherein the RFID tag includes a memory device that is configured to store information regarding the eyewear, and
- wherein the eyewear includes a switch that is at least partially in the first or second temple.

2. An eyewear as recited in claim **1**,
- wherein the temple tip can be removed from and re-inserted back onto the temple by a user of the eyewear.

3. An eyewear as recited in claim **1**,
- wherein the lens holder is metallic, and
- wherein the temples, other than the temple tip, are metallic, and wherein the temple tip is non-metallic.

4. An eyewear as recited in claim **1**,
- wherein the eyewear includes another electrical component that is in the eyewear, but is not in the temple tip, and
- wherein the RFID tag is configured to be electrically coupled to the another electrical component to perform an electrical function.

5. An eyewear as recited in claim **1**, wherein the information regarding the eyewear includes information regarding where the eyewear was manufactured.

6. An eyewear as recited in claim **1**, wherein the eyewear include a power source.

7. An eyewear as recited in claim **6**, wherein the RFID tag uses power from the power source to wirelessly transmit at least some of the information regarding the eyewear to a receiver.

8. An eyewear as recited in claim **6**, wherein the eyewear includes a speaker.

9. An eyewear as recited in claim **6**, wherein the power source is a solar cell.

10. An eyewear as recited in claim **1**,
- wherein the RFID tag is a passive tag,
- wherein the RFID tag includes an antenna that extracts power from a receiver's radio wave signal to provide power to the RFID tag to wireless transmit at least some of the information regarding the eyewear to the receiver.

11. An eyewear as recited in claim **1**,
- wherein the eyewear includes an electrical connector that is electrically coupled to the RFID tag, and
- wherein the electrical connector is configured to connect to another electrical connector external to the eyewear.

12. An eyewear as recited in claim **1**,
- wherein the eyewear includes an electrical connector that is at least partially in the first or the second temple, and
- wherein the electrical connector is configured to connect to another electrical connector external to the eyewear.

13. An eyewear as recited in claim **1**, wherein the eyewear includes an electrical connector that is at least partially in the first or the second temple, the connector being configured to be electrically coupled to the switch.

14. An eyewear as recited in claim **13**,
- wherein the eyewear includes another electrical component that is in the first or the second temple, and
- wherein the electrical component is configured to be electrically coupled to the connector and the switch.

15. An eyewear as recited in claim **14**, wherein the eyewear include a power source in the first or the second temple, and configured to be electrically coupled to the connector and the switch.

16. An eyewear as recited in claim **15**,
- wherein the power source is a battery,
- wherein the temple that the battery is in has a first end and a second end, with the first end being closer to the first end of the lens holder than the second end, and
- wherein the battery is located closer to the first end than the second end of the temple.

17. An eyewear as recited in claim **16**, wherein the eyewear includes a hatch that can be opened to replace the battery.

18. An eyewear as recited in claim **17**, wherein the hatch is configured to be facing the person wearing the eyewear if the eyewear is worn.

19. An eyewear as recited in claim **1** further comprising a strap configured to secure the eyewear to a user.

20. An eyewear as recited in claim **19** further comprising at least another electrical component at least partially embedded in the strap.

21. An eyewear as recited in claim **20**, wherein the eyewear is a sports eyewear.

22. A method to read information from a RFID tag, which is in a temple tip of a temple of an eyewear product that includes a pair of temples and a power source, with a switch at least partially in one of the temples, the method comprising:
- wirelessly receiving, at the eyewear product, a signal from a remote receiver asking for information from the RFID tag; and using power from the power source to transmit information from the RFID tag to be read by the remote receiver,
- wherein the information transmitted includes information regarding the eyewear product.

23. A method as recited in claim **22**,
- wherein the temple tip can be removed from and re-inserted back onto the temple by a user of the glasses.

24. A method as recited in claim 22, wherein the information regarding the eyewear includes information regarding where the eyewear was manufactured.

25. An eyewear comprising:

a lens holder for receiving at least one lens, the lens holder having a first side and a second side;

a first temple secured to the first side of the lens holder, the first temple having a temple tip;

a second temple secured to the second side of the lens holder; a RFID tag in the temple tip;

an electrical connector at least partially in the first or the second temple;

a switch at least partially in the first or the second temple, the switch being electrically coupled to the electrical connector; and

a power source in the first or the second temple, and configured to be electrically coupled to the connector and the switch,

wherein the RFID tag includes a memory device that is configured to store information regarding the eyewear, and

wherein the electrical connector is configured to connect to another electrical connector external to the eyewear.

26. An eyewear as recited in claim 25,

wherein the power source is a battery,

wherein the temple that the battery is in has a first end and a second end, with the first end being closer to the lens holder than the second end,

wherein the battery is located closer to the first end than the second end of the temple,

wherein the temple includes a hatch that can be opened to replace the battery, and

wherein the hatch is configured to face the person wearing the eyewear if the eyewear is worn.

27. An eyewear for a user comprising:

an eyewear frame; a strap coupled to the eyewear frame configured to secure the eyewear to the user;

at least one electrical component at least partially embedded in the strap;

a switch at least partially embedded in the eyewear; and

an area to receive a power source, which is configured to provide power to the at least one electrical component to perform an electrical function.

28. An eyewear as recited in claim 27, wherein the at least one electrical component is an RFID tag.

29. An eyewear as recited in claim 27, wherein the eyewear is a goggle.

30. An eyewear as recited in claim 29, wherein the eyewear is a ski goggle.

31. An eyewear as recited in claim 27, wherein the eyewear is a sports eyewear.

32. An eyewear as recited in claim 27 further comprising:

a wireless transceiver; and

an electrical connector configured to connect to another electrical connector external to the eyewear,

wherein the wireless transceiver, the electrical connector, the at least one electrical component, and the switch are configured to be electrically coupled to each other.

33. An eyewear as recited in claim 27, wherein the strap is configured to carry at least a portion of the power source.

34. An eyewear as recited in claim 33,

wherein the power source includes a battery, and wherein the eyewear further comprises:

a controller on a circuit board, which is at least partially in the strap; and

a visual indicator configured to provide an indication to the user.

35. An eyewear as recited in claim 34, wherein the eyewear further comprises a hatch that can be opened to place the battery in the eyewear.

36. An eyewear as recited in claim 34, wherein the at least one electrical component comprises a wireless transceiver.

37. An eyewear as recited in claim 36, wherein the eyewear further comprises an electrical connector configured to connect to another electrical connector external to the eyewear.

38. An eyewear as recited in claim 34, wherein the eyewear further comprises at least one electrical component configured to sense motion.

39. An eyewear as recited in claim 34, wherein the switch is at least partially embedded in the strap.

40. An eyewear as recited in claim 27, wherein the at least one electrical component is configured to sense motion.

41. An eyewear as recited in claim 37, wherein the switch is at least partially embedded in the strap.

42. An eyewear as recited in claim 34, wherein the visual indicator includes a light emitting device.

43. An eyewear as recited in claim 34, wherein the at least one electrical component comprises a speaker.

* * * * *