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(54) **EYEWEAR INCLUDING A REMOTE CONTROL CAMERA**

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(58) **Field of Classification Search**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

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2,170,287 A * 8/1939 Kinnebrew 439/39
2,437,642 A 3/1948 Henroleau
(Continued)

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FOREIGN PATENT DOCUMENTS

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(Continued)

(57) **ABSTRACT**

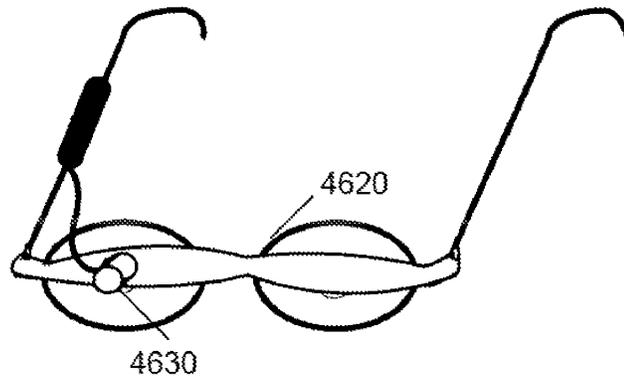
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H04N 5/232 (2006.01)
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Eyewear is provided including a frame, and a camera connected with the frame, in which the camera is configured to be controlled by a remote controller. The camera may be configured to capture video and/or a photo. The eyewear may include data storage, and the camera may be connected to the data storage. A wrist watch may be configured to act both as a time piece and a controller of the camera. The eyewear may also include a heads up display and/or a video file player. The eyewear may also include an electro-active lens.

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- (51) **Int. Cl.**
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(56) **References Cited**

U.S. PATENT DOCUMENTS

2,576,581	A	11/1951	Edwards	
3,161,718	A	12/1964	De Luca	
3,183,523	A	5/1965	Harrison	
3,245,315	A	4/1966	Marks et al.	
3,248,460	A	4/1966	Naujokas	
3,309,162	A	3/1967	Kosanke et al.	
3,614,215	A	10/1971	Mackta	
3,738,734	A	6/1973	Tait et al.	
3,791,719	A	2/1974	Kratzer et al.	
4,062,629	A	12/1977	Winthrop	
4,174,156	A	11/1979	Glorieux	
4,181,408	A	1/1980	Senders	
4,190,330	A	2/1980	Berremen	
4,190,621	A	2/1980	Greshes	
4,257,691	A	3/1981	Brooks	
4,264,154	A	4/1981	Petersen	
4,279,474	A	7/1981	Belgorod	
4,300,818	A	11/1981	Schachar	
4,320,939	A	3/1982	Mueller	
4,373,218	A	2/1983	Schachar	
4,395,736	A	7/1983	Fraleux	
4,418,990	A	12/1983	Gerber	
4,423,929	A	1/1984	Gomi	
4,457,585	A	7/1984	DuCorday	
4,461,550	A	7/1984	Legendre	
4,466,703	A	8/1984	Nishimoto	
4,466,706	A	8/1984	Lamothe, II	
4,529,268	A	7/1985	Brown	
4,564,267	A	1/1986	Nishimoto	
4,572,616	A	2/1986	Kowel et al.	
4,577,928	A	3/1986	Brown	
4,601,545	A	7/1986	Kern	
4,609,824	A	9/1986	Munier et al.	
4,712,870	A	12/1987	Robinson et al.	
4,753,514	A *	6/1988	Kubik 359/618	
4,756,605	A	7/1988	Okada et al.	
4,772,094	A	9/1988	Sheiman	
D298,250	S	10/1988	Kildall	
4,781,440	A	11/1988	Toda	
4,787,733	A	11/1988	Silva	
4,787,903	A	11/1988	Grendahl	
4,795,248	A	1/1989	Okada et al.	
4,813,777	A	3/1989	Rainville et al.	
4,816,031	A	3/1989	Plof	
4,818,095	A	4/1989	Takeuchi	
4,836,652	A	6/1989	Oishi et al.	
4,842,400	A	6/1989	Klein	
4,869,588	A	9/1989	Frieder et al.	
4,873,029	A	10/1989	Blum	

4,880,300	A	11/1989	Payner et al.	
4,890,903	A	1/1990	Treisman et al.	
4,904,063	A	2/1990	Okada et al.	
4,907,860	A	3/1990	Noble	
4,909,626	A	3/1990	Purvis et al.	
4,919,520	A	4/1990	Okada et al.	
4,921,728	A	5/1990	Takiguchi	
4,927,241	A	5/1990	Kuijk	
4,929,865	A	5/1990	Blum	
4,930,884	A	6/1990	Tichenor et al.	
4,944,584	A	7/1990	Maeda et al.	
4,945,242	A	7/1990	Berger et al.	
4,952,048	A	8/1990	Frieder et al.	
4,952,788	A	8/1990	Berger et al.	
4,955,712	A	9/1990	Barth et al.	
4,958,907	A	9/1990	Davis	
4,961,639	A	10/1990	Lazarus	
4,968,127	A	11/1990	Russell et al.	
4,981,342	A	1/1991	Fiala	
4,991,951	A	2/1991	Mizuno et al.	
5,015,086	A	5/1991	Okaue et al.	
5,030,882	A	7/1991	Solero	
5,050,981	A	9/1991	Roffman	
5,066,301	A	11/1991	Wiley	
5,067,795	A	11/1991	Senatore	
5,073,021	A	12/1991	Marron	
5,076,665	A	12/1991	Petersen	
5,089,023	A	2/1992	Swanson	
5,091,801	A	2/1992	Ebstein	
5,108,169	A	4/1992	Mandell	
5,114,628	A	5/1992	Hofer et al.	
5,130,856	A	7/1992	Tichenor et al.	
5,142,411	A	8/1992	Fiala	
5,147,585	A	9/1992	Blum	
5,150,234	A	9/1992	Takahashi et al.	
5,171,266	A	12/1992	Wiley et al.	
5,173,723	A	12/1992	Volk	
5,178,800	A	1/1993	Blum	
5,182,585	A	1/1993	Stoner	
5,184,156	A	2/1993	Black et al.	
5,200,859	A	4/1993	Payner et al.	
5,208,688	A	5/1993	Ferguson et al.	
5,219,497	A	6/1993	Blum	
5,229,797	A	7/1993	Futhey et al.	
5,229,885	A	7/1993	Quaglia	
5,231,430	A	7/1993	Kohayakawa	
5,239,412	A	8/1993	Naka et al.	
D342,063	S	12/1993	Howitt et al.	
5,305,028	A	4/1994	Okano	
5,306,926	A	4/1994	Yonemoto	
5,324,930	A	6/1994	Jech, Jr.	
D350,342	S	9/1994	Sack	
5,352,886	A	10/1994	Kane	
5,359,444	A	10/1994	Piosenka et al.	
5,375,006	A	12/1994	Haas	
5,382,986	A	1/1995	Black et al.	
5,386,308	A	1/1995	Michel et al.	
5,411,537	A	5/1995	Munshi et al.	
5,424,927	A	6/1995	Schaller et al.	
5,440,357	A	8/1995	Quaglia	
5,443,506	A	8/1995	Garabet	
5,451,766	A	9/1995	Van Berkel	
5,455,638	A	10/1995	Kallman et al.	
5,488,439	A	1/1996	Weltmann	
5,512,371	A	4/1996	Gupta et al.	
5,522,323	A	6/1996	Richard	
5,552,841	A	9/1996	Gallorini et al.	
5,608,567	A	3/1997	Grupp	
5,608,808	A	3/1997	Da Silva	
5,615,588	A	4/1997	Gottschald	
5,653,751	A	8/1997	Samiy et al.	
5,654,786	A	8/1997	Bylander	
5,668,620	A	9/1997	Kurtin et al.	
5,682,223	A	10/1997	Menezes et al.	
5,683,457	A	11/1997	Gupta et al.	
RE35,691	E	12/1997	Theirl et al.	
5,702,819	A	12/1997	Gupta et al.	
5,712,721	A	1/1998	Large	
5,728,155	A	3/1998	Anello et al.	

(56)

References Cited

U.S. PATENT DOCUMENTS

5,739,959 A	4/1998	Quaglia	6,774,871 B2	8/2004	Birdwell
5,757,458 A	5/1998	Miller et al.	6,778,246 B2	8/2004	Sun et al.
5,777,719 A	7/1998	Williams et al.	6,793,340 B1	9/2004	Morris et al.
5,815,233 A	9/1998	Morokawa et al.	6,833,938 B2	12/2004	Nishioka
5,815,239 A	9/1998	Chapman et al.	6,840,619 B2	1/2005	Dreher
5,859,685 A	1/1999	Gupta et al.	6,851,805 B2	2/2005	Blum et al.
5,861,934 A	1/1999	Blum et al.	6,857,741 B2	2/2005	Blum et al.
5,861,936 A	1/1999	Sorensen	6,859,333 B1	2/2005	Ren et al.
5,877,876 A	3/1999	Birdwell	6,871,951 B2	3/2005	Blum et al.
5,900,720 A	5/1999	Kallman et al.	6,883,916 B2	4/2005	Menezes
5,905,561 A	5/1999	Lee et al.	6,886,938 B1	5/2005	Menezes
5,949,521 A	9/1999	Williams et al.	6,893,124 B1	5/2005	Kurtin
5,953,098 A	9/1999	Lieberman et al.	6,894,751 B2	5/2005	Payne et al.
5,956,183 A	9/1999	Epstein et al.	6,902,271 B2	6/2005	Perrott et al.
5,963,300 A	10/1999	Horwitz	6,918,670 B2	7/2005	Blum et al.
5,971,540 A	10/1999	Ofner	6,948,818 B2	9/2005	Williams et al.
5,980,037 A	11/1999	Conway	6,951,391 B2	10/2005	Morris et al.
5,988,816 A	11/1999	Quadri	6,955,433 B1	10/2005	Wooley et al.
5,999,328 A	12/1999	Kurtin et al.	6,956,682 B2	10/2005	Wooley
6,040,947 A	3/2000	Kurtin et al.	6,976,982 B2	12/2005	Santini et al.
6,050,687 A	4/2000	Bille et al.	6,986,579 B2	1/2006	Blum et al.
6,069,742 A	5/2000	Silver	7,008,054 B1	3/2006	Kurtin et al.
6,086,203 A	7/2000	Blum et al.	7,009,757 B2	3/2006	Nishioka et al.
6,086,204 A	7/2000	Magnante	7,018,040 B2	3/2006	Blum et al.
6,091,832 A	7/2000	Shurman et al.	7,019,890 B2	3/2006	Meredith et al.
6,095,651 A	8/2000	Williams et al.	7,023,594 B2	4/2006	Blum et al.
6,099,117 A	8/2000	Gregory	7,034,619 B2	4/2006	Lynch
6,115,177 A	9/2000	Vossler	7,041,133 B1	5/2006	Azar
6,139,148 A	10/2000	Menezes	7,077,519 B2	7/2006	Blum et al.
6,145,987 A	11/2000	Baude et al.	7,085,065 B2	8/2006	Silver
6,165,123 A *	12/2000	Thompson	7,130,664 B1 *	10/2006	Williams
6,188,525 B1	2/2001	Silver	7,133,172 B2	11/2006	Nishioka
6,191,881 B1	2/2001	Tajima	7,137,702 B2	11/2006	Piers et al.
6,199,984 B1	3/2001	Menezes	7,159,981 B2	1/2007	Kato
6,199,986 B1	3/2001	Williams et al.	7,159,983 B2	1/2007	Menezes et al.
6,213,602 B1	4/2001	Smarto	7,188,948 B2	3/2007	Blum et al.
6,270,220 B1	8/2001	Keren	7,192,136 B2 *	3/2007	Howell et al.
6,271,915 B1	8/2001	Frey et al.	7,195,353 B2	3/2007	Blum et al.
6,282,449 B1	8/2001	Kamerling et al.	7,209,097 B2	4/2007	Suyama
6,299,311 B1	10/2001	Williams et al.	7,229,173 B2	6/2007	Menezes et al.
6,305,802 B1	10/2001	Roffman et al.	7,255,437 B2	8/2007	Howell et al.
6,325,508 B1	12/2001	Decreton et al.	7,264,354 B2	9/2007	Blum et al.
6,338,559 B1	1/2002	Williams et al.	7,290,876 B2	11/2007	Duston et al.
6,350,031 B1	2/2002	Lashkari et al.	7,380,936 B2	6/2008	Howell et al.
6,390,623 B1	5/2002	Kokonaski et al.	7,396,126 B2	7/2008	Blum et al.
6,396,622 B1	5/2002	Alden	7,401,918 B2	7/2008	Howell et al.
6,437,762 B1	8/2002	Birdwell	7,404,636 B2	7/2008	Blum et al.
6,437,925 B1	8/2002	Nishioka	7,438,410 B1	10/2008	Howell et al.
6,464,363 B1	10/2002	Nishioka et al.	7,461,936 B2	12/2008	Jannard
6,491,391 B1	12/2002	Blum et al.	7,475,984 B2	1/2009	Blum et al.
6,491,394 B1	12/2002	Blum et al.	7,481,531 B2	1/2009	Howell et al.
6,501,443 B1	12/2002	McMahon	7,500,746 B1	3/2009	Howell et al.
6,517,203 B1	2/2003	Blum et al.	7,500,747 B2	3/2009	Howell et al.
6,554,425 B1	4/2003	Roffman et al.	7,543,934 B2	6/2009	Howell et al.
6,609,794 B2	8/2003	Levine	7,581,833 B2	9/2009	Howell et al.
6,614,408 B1	9/2003	Mann	7,607,775 B2 *	10/2009	Hermanson et al.
6,616,275 B1	9/2003	Dick et al.	7,621,634 B2	11/2009	Howell et al.
6,616,279 B1	9/2003	Davis et al.	7,677,723 B2	3/2010	Howell et al.
6,618,208 B1	9/2003	Silver	7,760,898 B2	7/2010	Howell et al.
6,619,799 B1	9/2003	Blum et al.	7,771,046 B2	8/2010	Howell et al.
6,626,532 B1	9/2003	Nishioka et al.	7,792,552 B2	9/2010	Thomas et al.
6,631,001 B2	10/2003	Kuiseko	7,806,525 B2	10/2010	Howell et al.
6,638,304 B2	10/2003	Azar	7,831,055 B2 *	11/2010	Frerking et al.
6,643,552 B2	11/2003	Edell et al.	7,922,321 B2	4/2011	Howell et al.
6,652,096 B1	11/2003	Morris et al.	8,025,396 B1 *	9/2011	Power
6,667,471 B2	12/2003	Bos et al.	8,089,511 B2 *	1/2012	Yamamoto
6,682,195 B2	1/2004	Dreher	8,109,629 B2	2/2012	Howell et al.
6,705,729 B2	3/2004	Piers et al.	8,174,569 B2	5/2012	Tanijiri et al.
6,709,105 B2	3/2004	Menezes	8,337,013 B2	12/2012	Howell et al.
6,709,107 B2	3/2004	Jiang et al.	8,430,507 B2	4/2013	Howell et al.
6,709,108 B2	3/2004	Levine et al.	8,434,863 B2	5/2013	Howell et al.
6,733,130 B2	5/2004	Blum et al.	8,465,151 B2	6/2013	Howell et al.
6,738,199 B2	5/2004	Nishioka	8,500,271 B2	8/2013	Howell et al.
6,768,536 B2	7/2004	Okuwaki et al.	8,770,742 B2	7/2014	Howell et al.
6,769,767 B2 *	8/2004	Swab et al.	2001/0055094 A1	12/2001	Zhang
			2002/0140899 A1	10/2002	Blum et al.
			2002/0149739 A1	10/2002	Perrott et al.
			2002/0186346 A1	12/2002	Stantz et al.
			2003/0018383 A1	1/2003	Azar
					455/567
					351/158
					600/152
					351/158
					351/124
					348/115
					381/312
					351/124
					348/115

(56)

References Cited

U.S. PATENT DOCUMENTS

2003/0103413 A1* 6/2003 Jacobi et al. 368/10
 2003/0112523 A1 6/2003 Daniell
 2003/0151721 A1 8/2003 Lai et al.
 2003/0199978 A1 10/2003 Lindsey et al.
 2003/0208265 A1 11/2003 Ho et al.
 2003/0210377 A1 11/2003 Blum et al.
 2004/0000733 A1 1/2004 Swab et al.
 2004/0008319 A1 1/2004 Lai et al.
 2004/0108971 A1 6/2004 Waldern et al.
 2004/0117011 A1 6/2004 Aharoni et al.
 2004/0130677 A1 7/2004 Liang et al.
 2004/0179280 A1 9/2004 Nishioka
 2004/0186533 A1 9/2004 Greenberg et al.
 2004/0196435 A1 10/2004 Dick et al.
 2004/0223113 A1 11/2004 Blum et al.
 2004/0246440 A1 12/2004 Andino et al.
 2005/0073739 A1 4/2005 Meredith
 2005/0078274 A1* 4/2005 Howell et al. 351/158
 2005/0113912 A1 5/2005 Feenestra et al.
 2005/0124983 A1 6/2005 Frey et al.
 2005/0237485 A1 10/2005 Blum et al.
 2006/0044510 A1 3/2006 Williams et al.
 2006/0066808 A1 3/2006 Blum et al.
 2006/0095128 A1 5/2006 Blum et al.
 2006/0113054 A1 6/2006 Silvestrini
 2006/0122531 A1 6/2006 Goodall et al.
 2006/0164593 A1 7/2006 Peyghambarian
 2006/0177086 A1* 8/2006 Rye et al. 381/370
 2006/0183986 A1 8/2006 Rice et al.
 2008/0143954 A1* 6/2008 Abreu 351/158
 2013/0215374 A1 8/2013 Blum et al.

FOREIGN PATENT DOCUMENTS

CN 201222131 Y 4/2009
 CN 201464741 U 5/2010
 DE 4223395 1/1994
 EP 0154962 9/1985
 EP 0233104 8/1987
 EP 0237365 9/1987
 EP 0578833 1/1994
 EP 0649044 4/1995
 EP 0918248 5/1999
 EP 0 578 833 1/2004
 GB 2169417 7/1986
 GB 2170613 8/1986
 JP 55-076323 6/1980
 JP 61156227 7/1986
 JP 1-237610 9/1989
 JP 05-100201 4/1993
 JP 7-28002 1/1995
 JP 11352445 12/1999
 JP 2000-138858 * 5/2000 H04N 5/232
 JP 2007-323062 12/2007
 WO 92/01417 2/1992
 WO WO 93/21010 10/1993
 WO WO 97/06751 2/1997
 WO WO 98/27863 7/1998
 WO WO 99/27334 6/1999
 WO WO 01/06298 * 1/2001 351/158
 WO WO 03/007851 1/2003
 WO WO 03/050472 6/2003
 WO WO 03/068059 8/2003
 WO WO 2004/008189 1/2004
 WO WO 2004/015460 2/2004
 WO WO 2004/015481 2/2004
 WO WO 2004/034095 4/2004
 WO WO 2004/072687 8/2004

OTHER PUBLICATIONS

International Search Report corresponding to the PCT/US09/037544 application mailed May 20, 2009.
 International Search Report for application PCT/US 08/54721 mailed Aug. 20, 2008.

International Search Report of Application No. PCT/US05/39101 mailed on Jul. 7, 2006.
 International Search Report of Application No. PCT/US08/51649 mailed on Jul. 7, 2008.
 ISA/US, Search Report and Written Opinion for application PCT/US05/39101, Jul. 7, 2006.
 Supplementary European Search Report of Application No. EP 05824718 issued Nov. 19, 2007.
 U.S. Appl. No. 60/623,946, filed Nov. 2, 2004.
 U.S. Appl. No. 60/636,490, filed Dec. 17, 2004.
 U.S. Appl. No. 60/692,270, filed Jul. 21, 2005.
 U.S. Appl. No. 60/687,341, filed Jun. 6, 2005.
 U.S. Appl. No. 60/687,342, filed Jun. 6, 2005.
 U.S. Appl. No. 60/685,407, filed May 31, 2005.
 U.S. Appl. No. 60/679,241, filed May 10, 2005.
 U.S. Appl. No. 60/674,702, filed Apr. 26, 2005.
 U.S. Appl. No. 60/673,758, filed Apr. 22, 2005.
 U.S. Appl. No. 60/669,403, filed Apr. 8, 2005.
 U.S. Appl. No. 60/667,094, filed Apr. 1, 2005.
 U.S. Appl. No. 60/666,167, filed Mar. 30, 2005.
 U.S. Appl. No. 60/661,925, filed Mar. 16, 2005.
 U.S. Appl. No. 60/659,431, filed Mar. 9, 2005.
 U.S. Appl. No. 60/623,947, filed Nov. 2, 2004.
 Tarascon et al., "Issues and challenges facing rechargeable lithium batteries" *Nature* 2001 414:359-367 (Nov. 15, 2001).
 Kowel, Stephen T., et al. "Focusing by electrical modulation of refraction in a liquid crystal cell" *Applied Optics* 23:2 (Jan. 15, 1984).
 Thibos, Larry N., et al. "Vision through a liquid-crystal spatial light modulator" *Adaptive Optics Conference*; Durham, UK (1999).
 Donald T. Miller, Xin Hong, and Larry N. Thibos, "Requirements for segmented spatial light modulators for diffraction-limited imaging through aberrated eyes," G.D. Love, ed. *Proceedings of the 2nd International Workshop on Adaptive Optics for Industry and Medicine*, World Scientific, Singapore, 63-68 (Jul. 1999).
 Thibos, Larry N., et al. "Use of Liquid-Crystal Adaptive-Optics to Alter the Refractive State of the Eye; Optometry and Vision Science" 74:7; *American Academy of Optometry* (Jul. 1997).
 Thibos, Larry N., et al. "Electronic Spectacles for the 21 Century" *Indian Journal of Optometry*, 2:1 (Spring 1999).
 Bradley, Arthur "Profile: Larry N. Thibos, PhD., and Donald T. Miller, PhD." *Indiana Journal of Optometry*; 2:1 (Spring 1999).
 Naumov, A.F. "Control Optimization of Spherical Modal Liquid Crystal Lenses", *Optics Express* 4:9; Optical Society of America (Apr. 26, 1999).
 Naumov, A.F. "Liquid Crystal Adaptive Lenses with Modal Control" *Optics Letters*, 23:13 Optical Society of America (Jul. 1, 1998).
 Optics, Org, Dec. 19, 2006 "Liquid Lenses Eye Commercial Break-through" *Opto & Laser Europe* (Nov. 2003).
 Anderson, M. "Adaptive Optics: Liquid Crystals Lower the Cost of Adaptive Optics" *Laser Focus World* (Dec. 1999).
 Davis, Robert A. "Computer Vision Syndrome—The Eyestrain Epidemic" *Review of Optometry* (Sep. 15, 1997).
 Lazarus, Stuart M. "The Use of Yoked Base-Up and Base-In Prism for Reducing Eye Strain at the Computer" *Journal of the American Optometric Association* (Apr. 1996).
 Eyecare Business (Oct. 1997).
 Office Action, issued Dec. 24, 2013, in corresponding U.S. Appl. No. 13/779,232.
 Non-Final Office Action, issued Sep. 17, 2013, in corresponding U.S. Appl. No. 13/779,407.
 Office Action in corresponding U.S. Appl. No. 13/779,407, mailed Sep. 17, 2013, 10 pages.
 Office Action (*Ex-Parte Quayle* Action) in U.S. Appl. No. 13/779,232, mailed May 16, 2014, 5 pages.
 Notice of Allowance in U.S. Appl. No. 13/779,407, mailed Jun. 26, 2014, 8 pages.
 Notice of Allowance in U.S. Appl. No. 13/779,232, mailed Sep. 18, 2014, 10 pages.

* cited by examiner

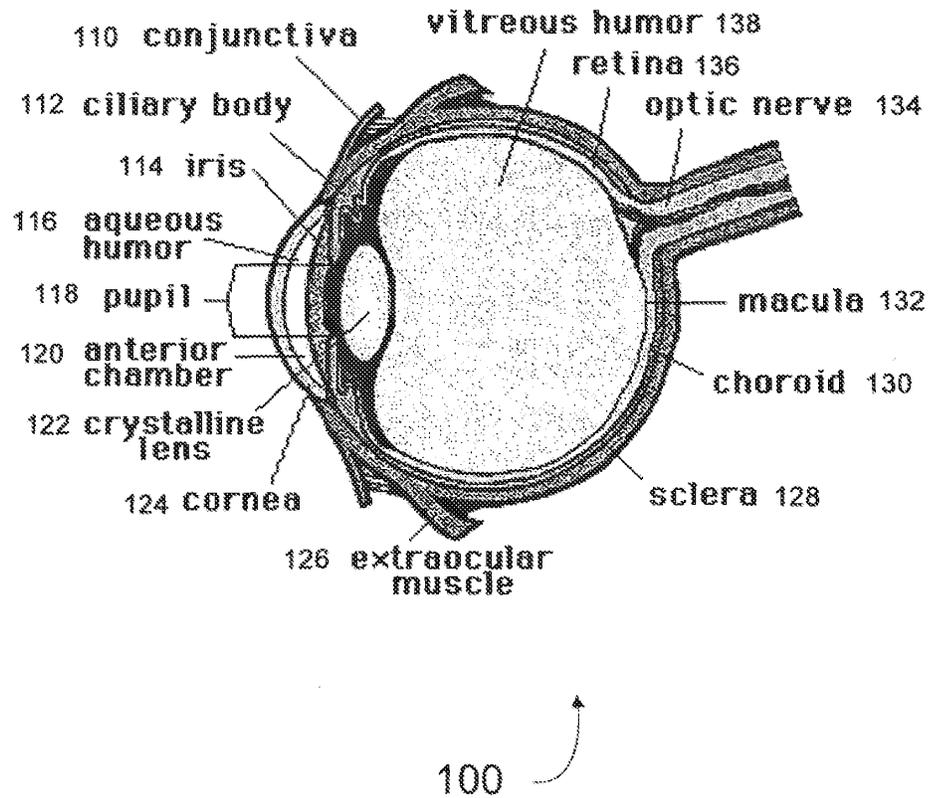


Figure 1

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