		4466706-A OR US-4572616-A OR US-4529268-A).did.					
L3043	39	(Artificial Intelligence) More like doc: US-20130329183-A1 Text: (JP-S49114285-A OR JP-S5466098-A OR US-5471658-A OR US-6115482-A OR US-20120105740-A1 OR US-7661818-B2 OR US-7806525-B2 OR WO-2007005938-A2 OR US-7810750-B2 OR US-20080144854-A1 OR US-7631968-B1 OR US-20080207275-A1 OR SG-172914-A1 OR JP-2010226660-A OR JP-5389493-B2 OR JP-2010231119-A OR GB-0912608-D0 OR US-20110213664-A1 OR KR-200459922-Y1 OR WO-2013188343-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:33 PM
L3044	33	"20050201585"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:43 PM
L3045	52	"20050264752"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2024/12/16 04:43 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3046	13	"2005167902"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:43 PM
L3047	21	"20050278446"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:43 PM
L3048	8	"20050052537"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2024/12/16 04:43 PM
L3049	23	"2005086522"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2024/12/16 04:43 PM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3050	17	"20050090295"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:43 PM
L3051	174	"7278734"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:57 PM
L3052	243	"7192136"	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 04:57 PM
L3054	146	"7150526"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2024/12/16 04:57 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3055	190	"7760898"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:58 PM
L3056	182	"7922321"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:59 PM
L3057	307	"7380936"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 04:59 PM
L3058	40	(Artificial Intelligence) More like doc: US-20050052537-A1 Text: (US-5610678-A OR JP-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2024/12/16 05:22 PM

		H10304234-A OR JP-H11164186-A OR US-7046279-B2 OR US-7474335-B2 OR US-6717737-B1 OR US-20050052537-A1 OR JP-3159530-U OR US-7991275-B2 OR KR-970028786-A OR JP-WO2005091620-A1 OR JP-4551475-B2 OR JP-2007097199-A OR JP-2005086522-A OR US-20110141295-A1 OR WO-2005091620-A1 OR US-8131142-B2 OR US-20100214449-A1 OR US-20220303465-A1 OR JP-2009124761-A).did.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3059	35	(Artificial Intelligence) More like doc: US-20030030597-A1 Text: (US-5539422-A OR TW-422965-B OR US-20030030597-A1 OR US-6771423-B2 OR US-20030184868-A1 OR US-20050078378-A1 OR US-7145726-B2 OR WO-9619746-A2 OR EP-0799435-A2 OR US-6094181-A OR US-5684497-A OR US-6356392-B1 OR US-5625372-A OR US-20180003985-A1 OR JP-5059272-B2 OR US-5905478-A OR US-20010050817-A1 OR WO-2014116615-A1 OR US-5991084-A OR US-8873149-B2).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:22 PM
L3060	50	(Artificial Intelligence) More like doc: US-20140049831-A1 Text: (DE-10103922-A1 OR JP-4022921-B2 OR JP-2005107038-A OR AT-E398296-T1 OR JP-2007178939-A OR JP-4929878-B2 OR JP-5235341-B2 OR JP-5201015-B2 OR US-8547618-B2 OR JP-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2024/12/16 05:22 PM

		5195707-B2 OR US-9239462-B2 OR US-20140049831-A1 OR EP-2698662-A1 OR JP-2014038239-A OR JP-6069946-B2 OR JP-2014191007-A OR JP-6065694-B2 OR JP-4006179-B2 OR CN-110954018-A OR JP-2002311361-A).did.	VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3061	36	(Artificial Intelligence) More like doc: US-20240036361-A1 Text: (US-12044901-B2 OR US-12140819-B1 OR US-20240377657-A1 OR US-11644693-B2 OR US-20230273464-A1 OR US-20220011603-A1 OR US-11921355-B2 OR US-20110187990-A1 OR US-20240036361-A1 OR US-20230359266-A1 OR US-7581833-B2 OR US-20170131575-A1 OR US-20220357599-A1 OR US-20180335650-A1 OR US-20170090219-A1 OR US-20130201440-A1 OR US-20200218094-A1 OR US-20120133885-A1 OR US-20150085245-A1 OR US-20190187492-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:22 PM
L3062	36	(Artificial Intelligence) More like doc: US-20230273464-A1 Text: (US-20230273464-A1 OR US-11644693-B2 OR US-11921355-B2 OR US-7760898-B2 OR US-20070147630-A1 OR US-20220011603-A1 OR US-20200218094-A1 OR US-20110187990-A1 OR US-7590233-B2 OR US-20220357599-A1 OR US-12025855-B2 OR US-9967682-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:22 PM

		US-12140819-B1 OR US-20040160572-A1 OR US-10284972-B2 OR US-20040160573-A1 OR US-7216973-B2 OR US-20060034478-A1 OR EP-1547434-B1 OR US-20130308089-A1).did.					
L3063	7	"20240036361"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:38 PM
L3064	12	"20230017635"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:38 PM
L3065	27	"20200012127"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:38 PM

L3066	79	"20170289323"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:38 PM
L3067	18	"20140049831"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:38 PM
L3068	20	"20130329183"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2024/12/16 05:38 PM
L3069	54	"20120050668"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE,	OR	ON	ON	2024/12/16 05:38 PM

			SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3070	58	"6911172"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:44 PM
L3071	627	"6349001"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:44 PM
L3072	116	"6771423"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:44 PM
L3073	125	"5835185"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2024/12/16 05:44 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3074	130	"5671037"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:44 PM
L3075	165	"5020150"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/12/16 05:45 PM
L3076	5	"12044901"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2024/12/17 08:52 AM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3077	8	"20010043266"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:29 PM
L3078	6	"20020089469"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:30 PM
L3079	5	"20020101510"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:30 PM
L3080	3	"20040178970"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2025/01/23 12:31 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3081	5	"20050275714"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:32 PM
L3082	27	"20060115130"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:33 PM
L3083	255	"20070081123"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2025/01/23 12:33 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3084	129	"4902120"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:34 PM
L3085	76	"5455638"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:35 PM
L3086	45	"6181304"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/01/23 12:35 PM
L3087	171082	(G02C11/10 OR G02C5/143 OR G02C5/146 OR G02C11/06 OR H02J7/0045 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2025/03/02 04:10 PM

		G02C2200/08 OR G02C5/14 OR G02C11/00 OR H02J7/00).cpc.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3103	3986	3087 AND 54	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:12 PM
L3104	2710	3087 AND 56	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:12 PM
L3105	663	3087 AND 61	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:12 PM
L3106	138	3087 AND 65	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2025/03/02 04:12 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L3107	20	3087 AND 49	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:12 PM
L3108	3	3087 AND 52	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:12 PM
L3109	104	"2856466"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:13 PM
L3110	98	"3104290"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2025/03/02 04:13 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L3111	70	"3665122"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 04:15 PM
L3112	40	(Artificial Intelligence) More like doc: US-2856466-A Text: (US-2168781-A OR US-2613282-A OR US-2856466-A OR US-3789163-A OR CN-110099347-A OR JP-2006162879-A OR DE-102008052682-A1 OR JP-H02135000-A OR US-3297832-A OR DE-2625654-A1 OR JP-S60105400-A OR US-4137431-A OR EP-1847868-B1 OR DE-8706344-U1 OR DE-1837151-U OR EP-1483938-B1 OR DE-2312250-A1 OR US-2830132-A OR DE-102013204153-B4 OR CN-101953175-A).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 04:28 PM
L3113	237	"4904078"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2025/03/02 04:33 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3114	334	(US-20050520-$ | US-20050524-$ | US-10013976-$ | US-10042186-$ | US-10113837-$ | US-10180572-$ | US-10222617-$ | US-10310296-$ | US-10410535-$ | US-10438106-$ | US-10484649-$ | US-10540907-$ | US-10624790-$ | US-10645348-$ | US-10742913-$ | US-10753709-$ | US-10777048-$ | US-10791783-$ | US-10796860-$ | US-10801813-$ | US-10827249-$ | US-10921578-$ | US-10976574-$ | US-10976575-$ | US-11048103-$ | US-11079202-$ | US-11103025-$ | US-11109137-$ | US-11112622-$ | US-11122698-$ | US-11143838-$ | US-11397337-$ | US-11425486-$ | US-11513371-$ | US-11562711-$ | US-11630331-$ | US-11644693-$ | US-11733549-$ | US-11829518-$ | US-11852901-$ | US-12044901-$ | US-12124116-$ | US-12171293-$ | US-20020098877-$ | US-20020111197-$ | US-20020118825-$ | US-20020176330-$ | US-20020186180-$ | US-20030003969-$ | US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 04:38 PM

		20030022690-$ | US- 20030067585-$ | US- 20030068057-$ | US- 20040000733-$ | US- 20040015403-$ | US- 20040086141-$ | US- 20040132509-$ | US- 20040156012-$ | US- 20040160572-$ | US- 20040160573-$ | US- 20050185815-$ | US- 20050239502-$ | US- 20060072067-$ | US- 20060088171-$ | US- 20060205449-$ | US- 20070003093-$ | US- 20070110256-$ | US- 20070173293-$ | US- 20070223748-$ | US- 20070248238-$ | US- 20080055194-$ | US- 20080130910-$ | US- 20080144264-$ | US- 20080144854-$ | US- 20080154337-$ | US- 20080181435-$ | US- 20080234847-$ | US- 20080304683-$ | US- 20090059381-$ | US- 20090080667-$ | US- 20090196443-$ | US- 20090209205-$ | US- 20090251409-$ | US- 20090303430-$ | US- 20100061533-$ | US- 20100202627-$ | US- 20100309427-$ | US- 20110084900-$ | US- 20110250958-$ | US- 20120249797-$ | US- 20120316455-$ | US- 20120316456-$ | US- 20130141313-$ | US- 20130180033-$ | US- 20130201440-$ | US- 20130346168-$ | US- 20140010389-$ | US- 20140233753-$ | US- 20140268008-$ | US- 20150181010-$ | US- 20150309316-$ | US- 20170078022-$ | US- 20170102558-$ | US- 20180060613-$ | US- 20220187609-$ | US- 2424935-$ | US- 2856466-$ | US- 2882348-$ | US-					

		2999136-$ | US- 3104290-$ | US- 3119903-$ | US- 3495898-$ | US- 3588384-$ | US- 3665122-$ | US- 3769663-$ | US- 3883701-$ | US- 3943925-$ | US- 39931702-$ | US- 46015403-$ | US- 4636048-$ | US- 4683587-$ | US- 4806011-$ | US- 4856086-$ | US- 4882769-$ | US- 4902120-$ | US- 4904078-$ | US- 5020150-$ | US- 5159639-$ | US- 5327178-$ | US- 5335285-$ | US- 5353378-$ | US- 5367345-$ | US- 5446788-$ | US- 5533130-$ | US- 5579400-$ | US- 5606743-$ | US- 5608808-$ | US- 5634201-$ | US- 5671037-$ | US- 5694475-$ | US- 5703670-$ | US- 5715323-$ | US- 5717479-$ | US- 5737436-$ | US- 5781272-$ | US- 5892564-$ | US- 5988812-$ | US- 6010216-$ | US- 6012812-$ | US- 6057966-$ | US- 6091832-$ | US- 6176576-$ | US- 6218958-$ | US- 6233344-$ | US- 6233345-$ | US- 6252970-$ | US- 6301050-$ | US- 6301367-$ | US- 6311155-$ | US- 6325507-$ | US- 6349001-$ | US- 6356392-$ | US- 6392798-$ | US- 6409338-$ | US- 6421031-$ | US- 6456721-$ | US-				

		6474816-$ | US-6490362-$ | US-6582075-$ | US-6629076-$ | US-6650894-$ | US-6690807-$ | US-6978162-$ | US-7013009-$ | US-7150526-$ | US-7158096-$ | US-7278734-$).DID.					
L3115	179	(US-7289767-$ | US-7321785-$ | US-7461936-$ | US-7512414-$ | US-7581833-$ | US-7661818-$ | US-7699486-$ | US-7814903-$ | US-7988283-$ | US-8184983-$ | US-8235524-$ | US-8323188-$ | US-8323189-$ | US-8328718-$ | US-8388164-$ | US-8449471-$ | US-8461988-$ | US-8467133-$ | US-8472120-$ | US-8477425-$ | US-8482488-$ | US-8482859-$ | US-8488246-$ | US-8491118-$ | US-8500636-$ | US-8538058-$ | US-8540364-$ | US-8543061-$ | US-8593795-$ | US-8684900-$ | US-8684922-$ | US-8686871-$ | US-8736516-$ | US-8750971-$ | US-8825468-$ | US-8855719-$ | US-8862186-$ | US-8905542-$ | US-8929954-$ | US-8964980-$ | US-8968195-$ | US-8979295-$ | US-9033493-$ | US-9060683-$ | US-9069380-$ | US-9081212-$ | US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 04:38 PM

		9089761-$ | US-9091851-$ | US-9097890-$ | US-9097891-$ | US-9128281-$ | US-9129295-$ | US-9134534-$ | US-9134793-$ | US-9160064-$ | US-9182596-$ | US-9217868-$ | US-9223134-$ | US-9229227-$ | US-9235262-$ | US-9264824-$ | US-9285589-$ | US-9301085-$ | US-9316827-$ | US-9316830-$ | US-9341843-$ | US-9366862-$ | US-9377862-$ | US-9378028-$ | US-9402121-$ | US-9405135-$ | US-9442290-$ | US-9488520-$ | US-9525936-$ | US-9526287-$ | US-9526292-$ | US-9568173-$ | US-9606375-$ | US-9609902-$ | US-9619201-$ | US-9720258-$ | US-9720260-$ | US-9744359-$ | US-9759917-$ | US-9808625-$ | US-9820658-$ | US-9839274-$ | US-9861820-$ | US-9864211-$ | US-9865176-$ | US-9910297-$ | US-9959777-$ | US-9974954-$ | US-9991699-$).DID.					
L3116	158	(AT-0820100311-$ | DA-1419941122-$ | DA-1419970304-$ | QR-1820030624-$ | TY-2020091223-$ | TO-20050520-$ | AT-2120090326-$ | AU-2005306412-$ | AU-2008358016-$ | AU-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2025/03/02 04:38 PM

		2012203662-$ | AU-2013263854-$ | CA-2375519-$ | CA-2588650-$ | CA-2932965-$ | CA-2969450-$ | CN-103676211-$ | CN-105009202-$ | CN-114815578-$ | CN-1687817-$ | CN-202975580-$ | CN-2760600-$ | CN-2854988-$ | DE-10207214-$ | EP-05851915-$ | EP-1828833-$ | EP-1952757-$ | EP-2167186-$ | EP-2941909-$ | EP-3000243-$ | ES-2547907-$ | FI-111674-$ | FR-2642856-$ | FR-2820936-$ | JP-2001203956-$ | JP-2010527557-$ | JP-2012249097-$ | JP-2013521576-$ | KR-101441873-$ | MX-2007005998-$ | SE-516509-$ | TO-20050524-$ | WO-2001003072-$ | WO-2007079478-$ | WO-2008135763-$ | WO-2010041245-$ | WO-2011007000-$ | WO-2011097564-$ | WO-2012040086-$ | WO-2012154938-$ | WO-2014100477-$ | WO-2014144507-$ | WO-2014158426-$ | WO-2015164287-$ | WO-2020028529-$ | WO-2021026234-$ | WO-2021243095-$ | WO-2024165923-$).DID.	MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3120	55	(US-10222617-$ | US-12078870-$ | US-12140819-$ | US-12164180-$ | US-20020027600-$ | US-20020101510-$ | US-20050052537-$ | US-20070047936-$ | US-4873576-$ | US-5610678-$ | US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2025/03/02 04:52 PM

		6549231-$ | US-6556240-$ | US-6717737-$ | US-7324748-$ | US-7499635-$ | US-7525596-$ | US-7576778-$ | US-7625143-$ | US-7665912-$ | US-8259184-$ | US-8730388-$ | US-9253378-$ | US-9451068-$ | US-9494807-$ | US-9619201-$ | US-9720258-$ | US-9720260-$ | US-9864211-$).DID.	NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3121	63	(EP-2214404-$ | JP-2000152066-$ | JP-2000187268-$ | JP-2003234935-$ | JP-2003316994-$ | JP-2005181356-$ | JP-2006235278-$ | JP-2008205569-$ | JP-2022041765-$ | JP-3843035-$ | JP-3906586-$ | JP-4110876-$ | JP-4433015-$ | JP-4529810-$ | JP-4617767-$ | KR-101005325-$ | KR-101665510-$ | KR-101696683-$ | WO-2014140823-$ | WO-2016048546-$ | WO-2020013313-$).DID.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 04:52 PM
L3122	709	3114 3115 3116 3120	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 04:52 PM
L3124	43	3122 AND (force near5 sens$4)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2025/03/02 04:53 PM

			AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3126	169	3122 AND touch$4	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 05:38 PM
L3127	42	3122 AND (touch$4 WITH switch)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 05:38 PM
L3128	34	"36407830".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2025/03/02 05:41 PM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)				
L3129	54	"2006055884"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 05:47 PM
L3130	34	"36407830".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/02 05:47 PM
L3131	39	(Artificial Intelligence) More like doc: WO-2006055884-A2 Text: (US-4902120-A OR JP-H08298694-A OR AU-759466-B2 OR US-6311155-B1 OR CN-2583696-Y OR CN-2735373-Y OR WO-2006055884-A2 OR EP-1828833-A2 OR CA-2932965-A1 OR CA-2588650-A1 OR US-20080089545-A1 OR CA-2932965-C OR US-7278734-B2 OR AU-2005306412-A1 OR US-20050201585-A1 OR KR-101231026-B1 OR EP-1828833-B1 OR AU-2005306412-A2 OR KR-20120090097-A OR KR-20070103367-A).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/02 05:50 PM

L3132	79	"6717737"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 08:09 AM
L3133	1	"32033316".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/03 08:09 AM
L3134	41	(Artificial Intelligence) More like doc: US-6717737-B1 Text: (GB-2143948-B OR US-6046712-A OR JP-3962115-B2 OR JP-H10240491-A OR JP-H10304234-A OR JP-2002116404-A OR US-20020171604-A1 OR US-6717737-B1 OR US-20110304704-A1 OR JP-2004328700-A OR US-5818733-A OR KR-102681095-B1 OR JP-2010081557-A OR DE-69720215-T2 OR JP-2023054260-A OR US-7477283-B2 OR US-20050162510-A1 OR US-7885681-B2 OR EP-1681852-B1 OR KR-20020021534-A).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 08:09 AM
L3135	79	"20070273611"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2025/03/03 08:47 AM

			AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3136	49	"34972808".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/03 08:47 AM
L3137	35	(Artificial Intelligence) More like doc: US-20070273611-A1 Text: (US-3689135-A OR US-3966310-A OR US-4102564-A OR JP-S6332624-A OR US-4815839-A OR US-4836670-A OR JP-H01312902-A OR US-4852988-A OR JP-H02164335-A OR JP-H02309925-A OR US-5231674-A OR GB-8916206-D0 OR US-4967186-A OR US-5778893-A OR US-5189512-A OR US-5183512-A OR WO-9518565-A1 OR US-5293187-A OR US-5468239-A OR US-5341181-A).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 08:47 AM
L3138	180935	2911 2917	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2025/03/03 09:09 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L3140	3464	3138 AND (force near3 sens$4)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 09:10 AM
L3141	553	3138 AND (force near3 sens$4) AND eyewear	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 09:11 AM
L3142	169	3138 AND (force near5 sens$4) AND (radiation near3 (detector OR sensor)) AND eyewear	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2025/03/03 09:13 AM

			JPO; DERWENT; IBM_TDB)				
L3143	22	"20050248719"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 09:15 AM
L3144	10	"60303263".fmid.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; JPO)	OR	ON	ON	2025/03/03 09:15 AM
L3145	37	(Artificial Intelligence) More like doc: US-12120477-B2 Text: (US-2904639-A OR US-5272757-A OR US-6729726-B2 OR US-7313246-B2 OR US-20050248719-A1 OR US-7792552-B2 OR CN-101390438-A OR US-20090216070-A1 OR US-9020168-B2 OR US-20130329183-A1 OR US-9395543-B2 OR US-9100732-B1 OR US-9261700-B2 OR US-9301040-B2 OR US-11825257-B2 OR US-20240056714-A1 OR US-20220078535-A1 OR US-11350196-B2 OR US-12120477-B2 OR US-10757495-B2).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2025/03/03 09:15 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	13414	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV.	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 01:06 PM
N2	143	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 01:06 PM
N3	129	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4)	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 01:06 PM
N4	125	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 01:06 PM

		eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND (communicat$4 near10 wireless$4) AND (audio OR speak$4) AND embed$4					
N5	103	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 01:06 PM
N379	91	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge	(US-PGPUB; USPAT)	OR	ON	ON	2024/09/04 11:10 AM
N406	97	((("HOWELL") near3 ("Thomas")) OR	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 04:44 PM

		(("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second					
N410	875	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND control$4 AND (memor$4 OR stor$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:01 PM
N411	170	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:01 PM
N412	132	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND connect$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:01 PM
N413	44	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:38 PM
N414	44	((eyewear$4 OR glasses$4 OR spetacl$4 OR	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:38 PM

		eyegalss$4) AND (temple SAME (speakers WITH audio))).clm.					
N415	15	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/13 05:38 PM
N416	10	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 02:57 PM
N417	6	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND temple AND ((speaker$2 OR audio) SAME (sound WITH guid$4))).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 02:57 PM
N418	6	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 02:57 PM
N419	5	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4)	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 03:41 PM

		AND batter$4 AND connect$4 AND (communicat$4 near10 wireless$4) AND (audio OR speak$4) AND embed$4).clm.					
N420	5	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 03:41 PM
N421	4	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 03:41 PM
N422	1	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 04:17 PM
N423	1	((eyewear$4 OR glasses$4 OR	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 04:17 PM

		spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4).clm.					
N424	1	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 04:17 PM
N425	1	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 05:00 PM
N426	0	((eyewear$4 OR glasses$4 OR	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 05:00 PM

		spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND amplif$6 AND customiz$4).clm.					
N429	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND (amplif$6 WITH customiz$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 05:23 PM
N430	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4)	(US-PGPUB; USPAT)	OR	ON	ON	2024/12/16 05:23 PM

		AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND (amplif$6 WITH customiz$4) AND (detect$3 WITH infrared)).clm.					
N431	92	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 03:53 PM
N432	88	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 03:53 PM

		AND right AND first AND second AND (motion near3 sensor)					
N433	82	((("HOWELL") near3 ("Thomas")) OR (("CHAO") near3 ("David")) OR (("THOMAS") near3 ("C")) OR (("TONG") near3 ("Peter"))).INV. AND (eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND (motion near3 sensor)	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 03:53 PM
N437	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND (force near5 sens$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 04:54 PM
N438	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 05:51 PM

		(memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND amplif$6 AND customiz$4 AND (force near5 sens$4)).clm.					
N439	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND (amplif$6 WITH customiz$4) AND (force near5 sens$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/02 05:51 PM
N441	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/03 08:07 AM

		AND second AND bridge AND partial$4 AND (force near5 sens$4)).clm.					
N442	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4) AND (batter$4 near10 rechargeable) AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND impair$4 AND compensat$4 AND (amplif$6 WITH customiz$4) AND (detect$3 WITH infrared) AND (force near5 sens$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/03 08:07 AM
N443	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND (force near5 sens$4)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/03 08:07 AM
N445	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND (circuit near10 board) AND (electric$4 WITH control$4) AND (memor$4 OR stor$4)	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/03 08:51 AM

		AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND (force near5 sens$4) AND (radiation near3 (detector OR sensor))).clm.					
N446	0	((eyewear$4 OR glasses$4 OR spetacl$4 OR eyegalss$4) AND frame AND circuit AND control$4 AND (memor$4 OR stor$4) AND batter$4 AND connect$4 AND communicat$4 AND (audio OR speak$4) AND wireless$4 AND embed$4 AND microphone AND left AND right AND first AND second AND bridge AND partial$4 AND (force near5 sens$4) AND (radiation near3 (detector OR sensor))).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2025/03/03 08:51 AM

PE2E SEARCH - Search History (Similarity Search)

Ref #	Sort and Retrieval Information	Text Selections	CPC Selections
L2784	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	No selections	No selections
L2785	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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	No selections

		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. (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. (Claims) 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.	
L2786	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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. (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;	(G02C11/10) Electronic devices other than hearing aids (G02C11/06) Hearing aids

		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. (Claims) 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.	
L2787	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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	(G02C5/143) Side-members having special ear pieces (G02C5/146) Side-members having special front end

		are also disclosed. (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. (Claims) 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.	

L2788	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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. (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	(G02C5/143) Side-members having special ear pieces (G02C5/146) Side-members having special front end (G02C11/06) Hearing aids (G02C11/10) Electronic devices other than hearing aids

		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. (Claims) 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.	
L2789	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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. (Claims) 1. A system, comprising: a head-worn personal electronic apparatus, including at least: a head-worn structure	(G02C5/143) Side-members having special ear pieces (G02C5/146) Side-members having special front end (G02C11/06) Hearing aids (G02C11/10) Electronic devices other than hearing aids (G02C2200/08) Modular frames, easily exchangeable frame parts and lenses (H02J7/0045) Circuit arrangements for charging or depolarising batteries or for supplying loads from batteries characterised by the mechanical construction concerning the insertion or the connection of the batteries

		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. (Claims) 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.	
L2901	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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.	No selections

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		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. (Claims) 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 contained within the head-worn structure, wherein the received user input operating to at least alter	

		an operation of the head-worn personal electronic 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; 1. (Previously Presented) A system, comprising: 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 (Claims) 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 at least partially in the charging apparatus, electrical connection is configured to result 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 at least	

		partially in the charging apparatus. 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; 2. (Previously Presented) A head-worn personal electronic apparatus, comprising: a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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. (Claims) 72. (New) A head-worn personal electronic apparatus, comprising: 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; 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 radiation detector contained within the head-worn structure and configured to capture radiation data, 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 the second	

		microphone is configured to at least pick-up an environmental audio input. the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus; (Claims) 95. (New) A head-worn personal electronic apparatus, comprising: a motion sensor 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 display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic 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. (Claims) a head-worn	

		structure configured to be worn by a user, the head-worn structure including a front section and first and second temples; a first speaker at least partially contained within the first temple of the head- worn structure; a second speaker at least partially contained within the second temple of the head-worn structure; a motion sensor at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus; a microphone at least partially contained within the head-worn structure, the microphone being positioned to pick up at least audio input from at least the user; a display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic apparatus; electronic circuitry contained within the head-worn structure and configured to control the display to present the information to the user of the head-worn personal electronic apparatus; and data communication circuitry at least partially contained within the head-worn structure. 100. (New) A head-worn personal electronic apparatus, comprising: (Claims) 08. (New) A head-worn personal electronic	

		apparatus, comprising: 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 first optical sensor at least partially contained within the first extended endpiece; a second optical sensor at least partially contained within the second extended endpiece; 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. a processor at least partially contained within the head-worn structure and configured to control operation of the head-worn personal electronic apparatus;	
L2902	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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	(G02C5/146) Side-members having special front end (G02C5/143) Side-members having special ear pieces

		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. (Claims) 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 contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn	

		personal electronic 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; 1. (Previously Presented) A system, comprising: 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 (Claims) 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 at least partially in the charging apparatus, electrical connection is configured to result 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 at least partially in the charging	

		apparatus. 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; 2. (Previously Presented) A head-worn personal electronic apparatus, comprising: a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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. (Claims) 72. (New) A head-worn personal electronic apparatus, comprising: 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; 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 radiation detector contained within the head-worn structure and configured to capture radiation data, 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 the second microphone is configured to at	

		least pick-up an environmental audio input. the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus; (Claims) 95. (New) A head-worn personal electronic apparatus, comprising: a motion sensor 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 display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic 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. (Claims) a head-worn structure configured to be	

		worn by a user, the head-worn structure including a front section and first and second temples; a first speaker at least partially contained within the first temple of the head- worn structure; a second speaker at least partially contained within the second temple of the head-worn structure; a motion sensor at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus; a microphone at least partially contained within the head-worn structure, the microphone being positioned to pick up at least audio input from at least the user; a display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic apparatus; electronic circuitry contained within the head-worn structure and configured to control the display to present the information to the user of the head-worn personal electronic apparatus; and data communication circuitry at least partially contained within the head-worn structure. 100. (New) A head-worn personal electronic apparatus, comprising: (Claims) 08. (New) A head-worn personal electronic apparatus, comprising:	

		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 first optical sensor at least partially contained within the first extended endpiece; a second optical sensor at least partially contained within the second extended endpiece; 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. a processor at least partially contained within the head-worn structure and configured to control operation of the head-worn personal electronic apparatus;	
L2903	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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	(G02C5/146) Side-members having special front end (G02C5/143) Side-members having special ear pieces (G02C11/06) Hearing aids (G02C11/10) Electronic devices other than hearing aids

		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. (Claims) 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 contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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; 1. (Previously Presented) A system, comprising: 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 (Claims) 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 at least partially in the charging apparatus, electrical connection is configured to result 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 at least partially in the charging apparatus.	

		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; 2. (Previously Presented) A head-worn personal electronic apparatus, comprising: a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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. (Claims) 72. (New) A head-worn personal electronic apparatus, comprising: 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; 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 radiation detector contained within the head-worn structure and configured to capture radiation data, 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 the second microphone is configured to at least pick-up an environmental	

		audio input. the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus; (Claims) 95. (New) A head-worn personal electronic apparatus, comprising: a motion sensor 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 display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic 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. (Claims) a head-worn structure configured to be worn by a user, the head-worn	

		structure including a front section and first and second temples; a first speaker at least partially contained within the first temple of the head- worn structure; a second speaker at least partially contained within the second temple of the head-worn structure; a motion sensor at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus; a microphone at least partially contained within the head-worn structure, the microphone being positioned to pick up at least audio input from at least the user; a display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic apparatus; electronic circuitry contained within the head-worn structure and configured to control the display to present the information to the user of the head-worn personal electronic apparatus; and data communication circuitry at least partially contained within the head-worn structure. 100. (New) A head-worn personal electronic apparatus, comprising: (Claims) 08. (New) A head-worn personal electronic apparatus, comprising:	

		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 first optical sensor at least partially contained within the first extended endpiece; a second optical sensor at least partially contained within the second extended endpiece; 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. a processor at least partially contained within the head-worn structure and configured to control operation of the head-worn personal electronic apparatus;	
L2904	Sort results by: Similarity to Application # 18/597,874 Retrieve results by: Application # 18/597,874	(Abstract) 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	(G02C5/146) Side-members having special front end (G02C5/143) Side-members having special ear pieces (G02C11/06) Hearing aids (G02C11/10) Electronic devices other than hearing aids (G02C2200/08) Modular frames, easily exchangeable frame parts and lenses (H02J7/0045) Circuit arrangements for

		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. (Claims) 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 contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus;	charging or depolarising batteries or for supplying loads from batteries characterised by the mechanical construction concerning the insertion or the connection of the batteries

		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; 1. (Previously Presented) A system, comprising: 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 (Claims) 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 at least partially in the charging apparatus, electrical connection is configured to result 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 at least partially in the charging apparatus.	

		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; 2. (Previously Presented) A head-worn personal electronic apparatus, comprising: a piezoelectric device configured to receive a user input based on a force induced on the piezoelectric device, the piezoelectric device being contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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. (Claims) 72. (New) A head-worn personal electronic apparatus, comprising: 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; 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 radiation detector contained within the head-worn structure and configured to capture radiation data, 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 the second microphone is configured to at least pick-up an environmental audio input.	

		the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus; (Claims) 95. (New) A head-worn personal electronic apparatus, comprising: a motion sensor 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 display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic 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. (Claims) a head-worn structure configured to be worn by a user, the head-worn structure including a front	

		section and first and second temples; a first speaker at least partially contained within the first temple of the head- worn structure; a second speaker at least partially contained within the second temple of the head-worn structure; a motion sensor at least partially contained within the head-worn structure and configured to provide motion data pertaining to the head-worn personal electronic apparatus; a microphone at least partially contained within the head-worn structure, the microphone being positioned to pick up at least audio input from at least the user; a display at least partially contained within the head-worn structure, the display configured to present information to the user of the head-worn personal electronic apparatus; electronic circuitry contained within the head-worn structure and configured to control the display to present the information to the user of the head-worn personal electronic apparatus; and data communication circuitry at least partially contained within the head-worn structure. 100. (New) A head-worn personal electronic apparatus, comprising: (Claims) 08. (New) A head-worn personal electronic apparatus, comprising: 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 first optical sensor at least partially contained within the first extended endpiece; a second optical sensor at least partially contained within the second extended endpiece; 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. a processor at least partially contained within the head-worn structure and configured to control operation of the head-worn personal electronic apparatus;	

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PTO/SB/08C (01-25)
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INFORMATION DISCLOSURE STATEMENT SIZE FEE – WRITTEN ASSERTION UNDER 37 CFR 1.98

Complete if Known

Application or Patent No.: 18/597,874	First Named Inventor: HOWELL et al.	Art Unit: 2872
Filing Date: March 6, 2024	Attorney Docket Number: IPVCP003X1C4X1C2	Examiner: LEI, JIE

Please see 37 CFR 1.17(v) and attached Instructions for completing this form to make the appropriate selection of an assertion under 37 CFR 1.98. For the information disclosure statement (IDS) submitted herewith, the applicant or patent owner certifies the following with respect to the cumulative number of applicant-provided or patent-owner provided items of information submitted to date including those in the accompanying IDS (select only one):

☐ No IDS size fee is required under 37 CFR 1.17(v) at this time.

☐ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(1).

☐ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(2).

☑ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(3).

NOTE: This form must be accompanied by PTO/SB/08a and/or PTO/SB/08b or equivalent.

DEPOSIT ACCOUNT

The Director is authorized to charge the fee indicated above in the amount of $ 800 for the IDS submitted herewith to deposit account 50-3874.

SIGNATURE

This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

If applicant or patent owner is a juristic entity (e.g., an LLC or corporation), this form must be signed by a registered practitioner. See 37 CFR 1.31.

If applicant or patent owner is a person or persons, this form may be signed by either a registered practitioner, or the applicant or patentee. Note that if multiple people together are the applicant or patentee (e.g., there are joint inventors who together are the applicant), then a signature is required from each person who is an applicant or patentee. *Submit multiple forms if more than one signature is required, see below*.*

Signature /C. Douglass Thomas/	Date March 24, 2025
Name (Print/Typed) C. Douglass Thomas	Practitioner Registration Number (if applicable) 32,947

■ * Total of 1 forms are submitted.

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

Instructions for Filling out the
"Information Disclosure Statement Size Fee – Written Assertion Under 37 CFR 1.98" Form
(Not to be Submitted to the USPTO)

Note: This form is to be used when applicant or patent owner files an Information Disclosure Statement (IDS) for consideration by the examiner. This form must be accompanied by PTO/SB/08a and/or PTO/SB/08b or equivalent.

Determining the cumulative number of applicant-provided or patent owner-provided items of information

The IDS size fee is based on the cumulative number of items of information provided by an applicant or patent owner during the pendency of the application or reexamination proceeding. It is the applicant's and patent owner's responsibility to track the cumulative number of items of information provided in the application or proceeding and provide a written assertion of any applicable IDS size fee due.

In determining the applicable written assertion for the cumulative number of applicant-provided or patent owner-provided items of information, "provided" refers to the items cited on an IDS under 37 CFR 1.98(a)(1) by an applicant or patent owner, whether or not an actual copy of the cited item is submitted by the applicant or patent owner to the USPTO. If a particular item provided by an applicant or patent owner on an IDS was not considered because the item was non-compliant and that particular item is provided on an IDS a second time in the same application or patent, it will not be counted again.

An item of information that an applicant cited in a parent application will not be counted in a child application (e.g., a continuation, continuation-in-part, or divisional application) for the purpose of the IDS size fees unless it is resubmitted, i.e., provided by the applicant on an IDS in the child application. Applicants who wish to avoid paying the IDS size fees in a child application for items of information considered in a parent application may do so by not resubmitting the items. An item of information must be resubmitted in the continuing application if the applicant desires the item of information to be printed on the patent. See MPEP 609.02, subsection II.A.2.

The cumulative count is determined for each application or patent separately. Continuing, CPA, and reissue applications and post-issuance proceedings will start with a count of zero. A request for continued examination (RCE) is not the filing of a new application, and thus the count will not reset when an RCE is filed.

Written Assertion

Check "[ ] No IDS size fee is required under 37 CFR 1.17(v) at this time" on the above PTO/SB/08c form when the IDS does not cause the cumulative number of applicant-provided or patent owner-provided items in this application or proceeding to:

- exceed 50, 100, or 200 items of information.

Check "[ ] The IDS is accompanied by the IDS size fee under 1.17(v)(1)" on the above PTO/SB/08c form when the IDS causes the cumulative number of applicant-provided or patent owner-provided items in this application or proceeding to:

- exceed 50 items of information but not exceed 100 items of information.

Check "[ ] The IDS is accompanied by the IDS size fee under 1.17(v)(2)" on the above PTO/SB/08c form when the IDS causes the cumulative number of applicant-provided or patent owner-provided items in this application or proceeding to:

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Note: If a fee under 1.17(v)(1) was previously paid, the fee currently due is the difference between the 1.17(v)(2) fee and the previously paid 1.17(v)(1) fee.

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Check "[ ] The IDS is accompanied by the IDS size fee under 1.17(v)(3)" on the above PTO/SB/08c form when the IDS causes the cumulative number of applicant-provided or patent owner-provided items in this application or proceeding to:

- exceed 200 items of information.

Note: If a fee under 1.17(v)(1) or (v)(2) was previously paid, the fee currently due is the difference between the 1.17(v)(3) fee and the previously paid 1.17(v)(1) or (v)(2) fee.

Select only one assertion on the PTO/SB/08c form above.

Note: the cumulative count of items of information includes all items of information already of record in a pending application or proceeding that were submitted via IDS(s) including those submitted prior to January 19, 2025.

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This section should only be filled out if the IDS size fee is due. Fees may be paid by check or money order (made payable to the Director of the United States Patent and Trademark Office), credit card (Form PTO-2038), or deposit account. When paying by deposit account, the amount of the IDS size fee to be charged to the deposit account must be specified to comply with 37 CFR 1.98(a)(4). General authorizations to charge fees to a deposit account are not compliant written assertions. When paying by credit card, to protect your credit card information, do not submit Form PTO-2038 electronically through USPTO's patent electronic filing system or any other USPTO Web site.

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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.

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	**03/24/2025 03:16:41 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 #	69681680	FILING DATE	03/06/2024
CUSTOMER #	34071	FIRST NAMED INVENTOR	Thomas A. Howell
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Peter Tong

Documents

TOTAL DOCUMENTS: 25

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
IPVCP003X1C4X1C2_AmdD Trans_3-25.pdf		1	Transmittal Letter	16 KB
IPVCP003X1C4X1C2_AmdD _AsFiled_3-21-final.pdf		44	-	178 KB
IPVCP003X1C4X1C2_Amd D_AsFiled_3-21-final-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	20 KB
IPVCP003X1C4X1C2_Amd D_AsFiled_3-21-final-CLM.pdf	(2-41)	40	Claims	155 KB
IPVCP003X1C4X1C2_Amd D_AsFiled_3-21-final-REM.pdf	(42-44)	3	Applicant Arguments/Remarks Made in an Amendment	27 KB

IPVCP003X1C4X1C2_IDSTrans_3-25.pdf	2	Letter specifying the conditions for filing under 37 CFR 1.97	21 KB
CA2270003.pdf	21	Foreign Reference	2207 KB
WO1994009398A1.pdf	20	Foreign Reference	765 KB
Request_Reexam_US10310296.pdf	94	Non Patent Literature	2421 KB
Order_Granting_Req_Reexam.pdf	21	Non Patent Literature	1910 KB
Yanulis_Declaration.pdf	47	Non Patent Literature	2162 KB
Merriam-Webster.pdf	10	Non Patent Literature	5464 KB
Shepherd_Bluetooth.pdf	10	Non Patent Literature	987 KB
Cheng_ForeheadPulseOximetry.pdf	5	Non Patent Literature	392 KB
Carlton_FramesAndLenses.pdf	8	Non Patent Literature	1154 KB
Pitts_Kleinstein_EnvironmentalVision.pdf	5	Non Patent Literature	833 KB
RIM_Blackberry.pdf	5	Non Patent Literature	238 KB
Drascic_Milgram_PerceptualIssues_AugmentedReality.pdf	13	Non Patent Literature	1165 KB
Spitzer_Wearable_IO.pdf	7	Non Patent Literature	440 KB
RespondentJointDisclosureOfInitialInvalidityContentions-Pt1.pdf	437	Non Patent Literature	13371 KB
18948670_Non-FinalOA_1-28-25.pdf	45	Non Patent Literature	2079 KB
RespondentJointDisclosureOfInitialInvalidityContentions-Pt2.pdf	1096	Non Patent Literature	24924 KB
RespondentJointDisclosureOfInitialInvalidityContentions-Pt3.pdf	1284	Non Patent Literature	21895 KB
RespondentJointDisclosureOfInitialInvalidityContentions-Pt4.pdf	392	Non Patent Literature	13353 KB
IPVCP003X1C4X1C2_IDS_A	4	Assertion regarding	334 KB

ssertion_3-25.pdf		Information Disclosure Statement (IDS) Size Fee (SB/08C)	
IPVCP003X1C4X1C2_1449_3-25.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	29 KB

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Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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RespondentJointDisclosureOfInitialInvalidityContentions-Pt4.pdf	F93F6F68B04526EB59D439393AB393DB73805CADB178EB1E16581F292A99201A0D4862249EEC7EB44D68C5C27D429053B9D62B68E1CF7FC67456B1EF5C8F3B2D
IPVCP003X1C4X1C2_IDS_Assertion_3-25.pdf	FA4BC8C248D6F2D34D187AFD6F133F62A3DA217B1E03CB25F7EB24E7F457650733D14AFD9860B149986A459C4C2C90F406DD256531386EC7FE9D67FF9342A9E1
IPVCP003X1C4X1C2_1449_3-25.pdf	0CFBC4E4E9858C845644D282138305E21009759C4F5D146D99B3B2C1832B7584992ADB1ED98DD5A23381B58634ECF7C7D30A6A961BE01EB2DE96A0925E607C81

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
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/597,874	**03/24/2025 03:16:41 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 #	69681680	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
CARD / 6752	**E20253NF17258579**	**Angela Nijim**

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

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1832	FILING AN INFORMATION DISCLOSURE STATEMENT THAT CAUSES THE CUMULATIVE NUMBER OF APPLICANT-PROVIDED ITEMS OF INFORMATION TO EXCEED 50 BUT NOT EXCEED 100	200.00	1	200.00
1834	FILING AN INFORMATION DISCLOSURE STATEMENT THAT CAUSES THE CUMULATIVE NUMBER OF APPLICANT-PROVIDED ITEMS OF INFORMATION TO EXCEED 200	800.00	1	800.00

1202	EACH CLAIM IN EXCESS OF 20	200.00	6	1200.00
			TOTAL AMOUNT:	**$2,200.00**

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.

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	2872
(Use Several Sheets if Necessary)		Page 1 of 2

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2004/0209489 A1	Oct-04	Clapper			
	2.	2005/0012683 A1	Jan-05	Chen			
	3.	2006/0028400 A1	Feb-06	Lapstun et al.			
	4.	2024/0412606 A1	Dec-24	Howell et al.			
	5.	2025/0076687 A1	Mar-25	Howell et al.			
	6.	4,516,157	May-85	Campbell			
	7.	5,444,876	Aug-95	Cooper et al.			
	8.	5,742,263	Apr-98	Wang et al.			
	9.	6,369,952 B1	Apr-02	Rallison et al.			
	10.	6,529,331 B2	Mar-03	Massof et al.			
	11.	7,187,960 B2	Mar-07	Abreu			
	12.	12,238,494 B2	Feb-25	Howell et al.			
	13.	12,242,138 B1	Mar-25	Howell et al.			
	14.	12,248,198 B2	Mar-25	Howell et al.			

Foreign Documents

							Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No
		CA 2,270,003 A1	Nov-99	CANADA				
		WO 94/09398 A1	Apr-94	WIPO				

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

	A	Request for Inter Partes Reexamination, U.S. Patent No. 10,310,296, filed January 30, 2025, 94 pgs.
	B	Order Granting Reexamination Request, Reexam No. 90/019,833 re U.S. Patent No. 10,310,296, dated March 18, 2025.
	C	Office Action for U.S. Patent Application No. 18/948,670, dated January 28, 2025.
	D	Respondents' Joint Disclosure of Initial Invalidity Contention, International Trade Commission Investigation No. 337-TA-1423, with Exhibits A1-A9, Exhibits B1-B9, and Exhibits C1-C8, filed January 21, 2025, pp. 1-2827. (copy submitted as Parts 1-4)
	E	Declaration of George Yanulis, D. Eng., accompanying Request for Inter Partes Reexamination of, U.S. Patent No. 10,310,296, dated January 29,

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	2872
		Page 2 of 2

		2025.
	F	Excerpts of Merriam-Webster, Inc., Merrian-Webster's American English Dictionary, USA (2003)
	G	R. SHEPHERD, Bluetooth wireless technology in the home, Electronics & Communication Engineering Journal, 195-203 (Oct. 2001)
	H	Eugene Y. Cheng, et al. Forehead Pulse Oximetry Compared with Finger Pulse Oximetry and Arterial Blood Gas Measurement, Department of Anesthesiology, Medical College of Wisconsin (1988)
	I	Jenean Carlton, Frames and Lenses, SLACK Inc. (2000) (excerpt)
	J	Donal G. Pitts and Robert N. Fleinstein, Environmental Vision: Interactions of the Eye, Vision, and the Environment, Butterworth-Heinemann (1993) (excerpt)
	K	RIM Blackberry 5810 and 5820 Smartphones, York University Computer Museum Canada, accessed January 25, 2025, https://museum.eecs.yorku.ca/items/show/214
	L	David Drascic and Paul Milgram, Perceptual Issues in Augmented Reality, Proc. SPIE Vol. 2653: Stereoscopic Displpays and Virtual Reality Systems III, San Jose, California, 123-134 (Feb. 1996)
	M	M.B. Spitzer et al., Video I/O for wearable computers, SPIE Conference on Helmet and Head-Mounted Displays IV, SPIE Vol. 3689, 278-283, Orlando, FL (Apr. 1999)

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: LEI, JIE
Filed: March 6, 2024	Group: 2872
Title: SYSTEM FOR POWERING 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.

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.

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-1423, filed

on October 10, 2024 pertaining to U.S. Patent Nos. 10,310,296; 11,762,224, and 12,078,870.

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

Apple Inc. Exhibit 1015 Page 401

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: LEI, JIE

Filed: March 6, 2024

Group: 2872

Title: SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS

AMENDMENT D TRANSMITTAL

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

Sir:

Transmitted herewith is an Amendment in the above-identified application.

The fee has been calculated as shown below.

	Claims After Amendment		Highest Previously Paid For	Present Extra	Small Entity Rate Fee	Large Entity Rate Fee
Total Claims	125	MINUS	119	6	x 80 =	x 200 = 1200
Independent Claims	6	MINUS	6	0	x 240 =	x 600 = 0
Multiple Dependent Claim Present and Fee Not Previously Paid					$	$
				Total	$0.00	$1200.00

☐ Applicant(s) hereby petition for a _____- month extension(s) of time to respond to the aforementioned Office Action.

☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 50-3874 (Order No. IPVCP003X1C4X1C2).

☒ Any fees due are being paid electronically herewith.

☒ Please charge any additional fees required to facilitate filing the enclosed response, to Deposit Account No. 50-3874 (Order No. IPVCP003X1C4X1C2).

Respectfully submitted,

/C. Douglass Thomas/

C. Douglass Thomas
Reg. No. 32,947

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: LEI, JIE
Filed: March 6, 2024	Group: 2872
Title: SYSTEM FOR POWERING HEAD-WORN PERSONAL ELECTRONIC APPARATUS	

AMENDMENT D

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

Dear Sir:

In response to the Office Action dated March 11, 2025, please amend the above-identified patent application as follows:

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

Remarks/Arguments begin on page 42 of this paper.

AMENDMENTS TO THE CLAIMS

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

Listing of Claims:

1. (Previously Presented) 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 contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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 at least partially in the charging apparatus, electrical connection is configured to result 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 at least partially in the charging apparatus.

2. (Currently Amended) 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 force sensing device configured to receive a user input based on a force induced on the force sensing device, the force sensing device being an electrical component configured to sense force, the force sensing device being contained

within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus 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. (Canceled).

5. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

6. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least accepting or declining a voice call to the user.

7. (Previously Presented) A system as recited in claim 1, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user.

8. (Previously Presented) A system as recited in claim 1, wherein the head-worn personal electronic apparatus is configured to support voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least accepting or declining a voice call to the user.

9. (Previously Presented) A system as recited in claim 1,

wherein the system comprises:

a mobile communication device at least for supporting audio output, the mobile communication device configured to store at least a hearing profile associated with the user, the stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear, the mobile communication device configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear, and the mobile communication device configured to transmit the customized audio output signals to the head-worn personal electronic apparatus,

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received by the head-worn personal electronic apparatus.

10. (Previously Presented) A system as recited in claim 9, wherein the mobile communication device is configured to support establishment of the hearing profile for the user.

11. (Previously Presented) A system as recited in claim 10, wherein the hearing profile for the user is established by the mobile communication device at least via generating audio tones and outputting such to at least the speaker and receiving a user indication corresponding to the user's ability to hear the generated audio tones.

12. (Previously Presented) A system as recited in claim 9, wherein the mobile communication device is configured to produce the customized audio output signals using frequency-dependent amplification.

13. (Previously Presented) A system as recited in claim 9,

wherein the mobile communication device is or includes a mobile phone, and

wherein the customized audio output includes music.

14. (Previously Presented) A system as recited in claim 9,

wherein the mobile communication device is or includes a mobile phone, and

wherein the customized audio output includes a voice conversation.

15. (Previously Presented) A system as recited in claim 9, wherein the customized audio output signals are produced based on amplifying or attenuating different frequency bands differently according to at least the stored hearing profile.

16. (Previously Presented) A system as recited in claim 9,

wherein the mobile communication device includes computing capabilities and a storage device, the storage device storing at least a software program

executed by the mobile communication device to enable the user to establish the hearing profile associated with the user, and

wherein the mobile communication device is configured to establish the hearing profile associated with the user via the software program executed by the mobile communication device based on the user interacting with the software program via the mobile communication device.

17. (Previously Presented) A system as recited in claim 16, wherein the software program at least interactively guides the user to establish the hearing profile for the user.

18. (Previously Presented) A system as recited in claim 17, wherein the software program at least interactively guides the user to establish the hearing profile for the user by at least causing various audio tones to be output to the user via at least the speaker, prompting the user to provide a hearing input with respect to one or more of the various audio tones being output, and receiving the hearing input pertaining to one or more of the various audio tones being output.

19. (Previously Presented) A system as recited in claim 18, wherein the mobile communication device is configured to wirelessly communicate with the head-worn personal electronic apparatus over a wireless network using the wireless communication circuitry.

20. (Previously Presented) A system as recited in claim 9, wherein the head-worn personal electronic apparatus includes a plurality of circuit boards, each of the plurality of circuit boards including at least one integrated circuit mounted thereto.

21. (Previously Presented) A system as recited in claim 20, wherein at least one of the plurality of circuit boards is a flexible printed circuit board.

22. (Previously Presented) A system as recited in claim 20, wherein at least one of the plurality of circuit boards has at least one integrated circuit mounted on a first side of the at least one of the plurality of circuit boards, and at least one integrated circuit mounted on a second side of the at least one of the plurality of circuit boards.

23. (Previously Presented) A system as recited in claim 9, wherein the head-worn structure comprises:

an infrared emitter configured to at least direct infrared signals towards the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn; and

an infrared detector configured to detect infrared radiation reflected back from the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn.

24. (Previously Presented) A system as recited in claim 23, wherein the electronic circuitry within the head-worn structure is configured to facilitate determining whether the head-worn structure is being worn by the user based on at least the detected infrared radiation.

25. (Previously Presented) A system as recited in claim 9, wherein the head-worn structure comprises:

a physical condition sensor configured to acquire data pertaining to at least a physical condition of the user, the physical condition sensor being provided at least partially internal to the head-worn structure.

26. (Previously Presented) A system as recited in claim 25, wherein the acquired data by the physical condition sensor includes data regarding temperature of the user.

27. (Previously Presented) A system as recited in claim 25, wherein the acquired data by the physical condition sensor includes data regarding vital signs of the user.

28. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is subtracted from the audio input picked-up from the first microphone.

29. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the electronic circuitry is configured to receive audio output signals to be output to the user via the speaker, and modify the audio output signals to be output to the user via the speaker to cancel at least a portion of noise associated with the environment, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

30. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 29, wherein the head-worn personal electronic apparatus comprises:

a physical condition sensor configured to acquire data pertaining to at least a physical condition of the user, the physical condition sensor being provided at least partially internal to the head-worn structure,

wherein the acquired data by the physical condition sensor includes data regarding vital signs or temperature of the user.

31. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 29, wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is used to remove undesired noise from the audio input picked-up from the first microphone.

32. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the electronic circuitry is configured to:

determine an ambient noise level based on at least signals picked-up from at least the second microphone; and

modify at least a portion of audio output signals to be output to the user via the speaker, with the modification being at least in part dependent on the ambient noise level.

33. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the first microphone faces the user when the head-worn personal electronic apparatus is being worn.

34. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 33, wherein the second microphone faces away from the user when the head-worn personal electronic apparatus is being worn.

35. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 34,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the electronic circuitry is configured to receive audio output signals to be output to the user via the speaker, and modify the audio output signals to be

output to the user via the speaker to cancel at least a portion of noise associated with the environment, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

36. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 34,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is used to remove undesired noise from the audio input picked-up from the first microphone.

37. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 34, wherein the electronic circuitry is configured to:

determine an ambient noise level based on at least signals picked-up from at least the second microphone; and

modify at least a portion of audio output signals to be output to the user via the speaker, with the modification being at least in part dependent on the ambient noise level.

38. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to receive a voice input from the user via at least the first microphone, support or receive determination of a requested operation from the voice input using voice recognition, and control operation by the head-worn personal electronic apparatus based on the requested operation.

39. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the head-worn personal electronic apparatus comprises:

an optical sensor contained within the head-worn structure and configured to capture optical sensor data,

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 optical sensor data captured by the optical sensor.

40. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 39, wherein the optical sensor is configured to sense at least infrared radiation, and wherein the optical sensor data captured includes at least infrared radiation data.

41. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn personal electronic apparatus is being worn; and

a radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

42. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 41, wherein the radiation detector comprises a photodetector.

43. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

an optical sensor at least partially contained within the head-worn structure and configured to capture data, the captured data being indicative of whether the head-worn personal electronic apparatus is being worn by the user,

wherein the head-worn personal electronic apparatus is configured to at least alter operation of the head-worn personal electronic apparatus based at least in part on the captured data.

44. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 43, wherein the optical sensor is configured to sense at least infrared radiation.

45. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

an infrared emitter contained within the head-worn structure and configured to emit infrared radiation towards the user when the head-worn personal electronic apparatus is being worn.

46. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn structure, the Hall effect detector being configured to capture data associated with a magnetic characteristic.

47. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive audio output signals to be output to the user via the speaker,

wherein the electronic circuitry including at least an integrated circuit, the electronic circuitry being configured to (i) store hearing characteristics associated with the user; (ii) customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored hearing characteristics associated with the user such that the customized audio output signals at least compensate for hearing impairment regarding the user's ability to hear; and (iii) output the customized audio output signals to the speaker, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

48. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 47, wherein the received audio output signals are wirelessly received from a mobile communication device associated with the user.

49. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive audio output signals to be output to the user via the speaker,

wherein the electronic circuitry including at least an integrated circuit, the electronic circuitry being configured to (i) store attributes associated with the user; (ii) customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored attributes

associated with the user; and (iii) output the customized audio output signals to the speaker, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

50. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 49, wherein the received audio output signals are wirelessly received from a mobile communication device associated with the user.

51. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive customized audio output signals for the user, the customized audio output signals having been customized based on at least predetermined hearing characteristics associated with the user such that the customized audio output signals at least compensate for hearing impairment regarding the user's ability to hear, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

52. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 51, wherein the customized audio output signals are wirelessly received from a mobile communication device associated with the user.

53. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 51,

wherein the first microphone is positioned to be directed towards the user when the head-worn personal electronic apparatus is being worn by the user; and

wherein the second microphone is configured to pick up at least ambient sound input associated with an environment in the vicinity of the head-worn personal electronic apparatus, the second microphone being positioned to be directed away from the user when the head-worn personal electronic apparatus is being worn by the user.

54. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 51,

wherein the second microphone is configured to pick up at least ambient sound input associated with an environment in the vicinity of the head-worn personal electronic apparatus, and

wherein the second microphone is positioned to be further away from mouth of the user than the first microphone when the head-worn personal electronic apparatus is being worn.

55. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 51,

wherein the second microphone is configured to pick up at least environmental audio input associated with an environment in the vicinity of the head-worn personal electronic apparatus, and

wherein the electronic circuitry is configured to process the audio input from at least the user picked-up via the first microphone to remove at least a portion of the environmental audio input associated with the environment picked-up via the second microphone.

56. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 54,

wherein the first microphone is positioned so as to be directed towards the user of the head-worn personal electronic apparatus, and

wherein the second microphone is positioned so as to be directed away from the user of the head-worn personal electronic apparatus, relative to the first microphone.

57. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 56, wherein the head-worn personal electronic apparatus comprises:

a physical condition sensor configured to acquire data pertaining to at least a physical condition of the user, the physical condition sensor being provided at least partially internal to the head-worn structure, the acquired data by the physical condition sensor includes (i) data regarding temperature of the user, or (ii) data regarding vital signs of the user.

58. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 50,

wherein the second microphone is configured to pick up at least ambient noise associated with an environment in the vicinity of the head-worn personal electronic apparatus, and

wherein the electronic circuitry is configured to:

determine an ambient noise level based on at least the ambient noise; and

modify at least a portion of the audio input picked-up via the first microphone, with the modification being at least in part dependent on the ambient noise level.

59. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 50, wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn personal electronic apparatus and configured to at least direct radiation towards the user when at least the head-worn personal electronic apparatus of the head-worn personal electronic apparatus is being worn; and

a radiation detector at least partially contained within the head-worn personal electronic apparatus and configured to detect a portion of the radiation directed towards the user that is reflected back from the user when the head-worn structure of the head-worn personal electronic apparatus is being worn,

wherein the radiation detector is operatively connected to the electronic circuitry, and wherein the electronic circuitry is configured to facilitate determining whether the head-worn personal electronic apparatus is being worn by the user based on at least the detected radiation.

60. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 59, wherein the detected radiation is at least infrared radiation.

61. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 60, wherein the speaker is configured to be at least partially inserted into the ear of the user.

62. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 50, wherein the head-worn personal electronic apparatus is configured to receive a voice input, support a determination of a requested operation from the voice input using voice recognition, and control operation by the head-worn personal electronic apparatus based on the requested operation.

63. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 50, wherein the customized audio output includes music that was wirelessly received via the wireless receiver.

64. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 50, wherein the customized audio output signals result from amplifying or attenuating different frequency bands differently according to at least the predetermined hearing characteristics associated with the user.

65. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 64,

wherein the second microphone is positioned to pick up at least environmental audio input associated with an environment around the head-worn personal electronic apparatus, and

wherein the electronic circuitry is configured to modify the customized audio output signals to be output to the user via the at least one speaker to cancel at least a portion of noise associated with the environment, the modification of the customized audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

66. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

a bone conducting electronic element at least partially contained within the head-worn structure.

67. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 66,

wherein the bone conducting electronic element associated with vibrations, and

wherein the bone conducting electronic element having electrical signals associated with the vibration.

68. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the motion detector includes at least an accelerometer.

69. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the wireless receiver is configured to operate with a Bluetooth network.

70. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the electronic circuitry includes at least a microprocessor.

71. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises:

an antenna contained within the head-worn structure of the head-worn personal electronic apparatus.

72. (Currently Amended) 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 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, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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;

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 radiation detector <u>at least partially</u> contained within the head-worn structure and configured to capture radiation data,

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 the second microphone is configured to at least pick-up an environmental audio input.

73. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 72, wherein the head-worn personal electronic apparatus is configured to receive a voice input from the user via at least the first microphone, support or receive determination of a requested operation from the voice input using voice recognition, and control operation by the head-worn personal electronic apparatus based on the requested operation.

74. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 73,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive audio output signals to be output to the user via the speaker, and

wherein the electronic circuitry is configured to modify the audio output signals to be output to the user via the speaker to cancel at least a portion of environmental noise, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

75. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 74,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the electronic circuitry includes at least an integrated circuit, and the electronic circuitry being configured to (i) store hearing characteristics associated with the user; (ii) customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored hearing characteristics associated with the user such that the customized audio output signals at least compensate for hearing impairment regarding the user's ability to hear; and (iii) output the customized audio output signals to the speaker, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

76. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 75,

wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn personal electronic apparatus is being worn, and

wherein the radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

77. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 76,

wherein the head-worn personal electronic apparatus is configured to support control of (i) audio output to the user via the speaker and (ii) voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least control of the audio output being provided to the user and/or accepting or declining a voice call to the user.

78. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 77, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic.

79. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 78, wherein the head-worn personal electronic apparatus comprises:

a bone conducting electronic element at least partially contained within the head-worn structure, the bone conducting electronic element being associated

with vibrations, and the bone conducting electronic element utilizing electrical signals associated with the vibration.

80. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 72,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive audio output signals to be output to the user via the speaker, and

wherein the electronic circuitry is configured to modify the audio output signals to be output to the user via the speaker to cancel at least a portion of environmental noise, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

81. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 80,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the electronic circuitry includes at least an integrated circuit, and the electronic circuitry being configured to (i) store attributes associated with the user; (ii) customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored attributes associated with the user; and (iii) output the customized audio output signals to the speaker, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

82. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 81,

wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn personal electronic apparatus is being worn, and

wherein the radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

83. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 82, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic; and

a plurality of circuit boards, each of the plurality of circuit boards including at least one electrical component mounted thereto, at least one of the plurality of circuit boards being a flexible printed circuit board, at least one of the plurality of circuit boards has at least one integrated circuit mounted on a first side of the at least one of the plurality of circuit boards, and at least one integrated circuit mounted on a second side of the at least one of the plurality of circuit boards.

84. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 82,

wherein the head-worn personal electronic apparatus is configured to support control of (i) audio output to the user via the speaker and (ii) voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least control of the audio output being provided to the user and/or accepting or declining a voice call to the user.

85. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 84, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic.

86. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 84, wherein the head-worn personal electronic apparatus comprises:

a bone conducting electronic element at least partially contained within the head-worn structure, the bone conducting electronic element being associated with vibrations, and the bone conducting electronic element utilizing electrical signals associated with the vibration.

87. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 86, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic.

88. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 84, wherein the head-worn personal electronic apparatus comprises:

a plurality of circuit boards, each of the plurality of circuit boards including at least one electrical component mounted thereto.

89. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 88, wherein at least one of the plurality of circuit boards is a flexible printed circuit board.

90. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 88, wherein at least one of the plurality of circuit boards has at least one integrated circuit mounted on a first side of the at least one of the plurality of circuit boards, and at least one integrated circuit mounted on a second side of the at least one of the plurality of circuit boards.

91. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 82, wherein the head-worn personal electronic apparatus comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user,

wherein at least the electronic circuitry is configured to facilitate determination at least whether the touch input associated with the user pertains to a first sliding direction or a second sliding direction with respect to the touch sensitive surface.

92. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 91, wherein the touch input by the touch sensitive surface operates to at least control audio volume level of the customized audio output for the user via the speaker.

93. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 72, wherein the head-worn personal electronic apparatus comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user,

wherein at least the electronic circuitry is configured to facilitate determination at least whether the touch input associated with the user pertains to a first sliding direction or a second sliding direction with respect to the touch sensitive surface.

94. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 93,

wherein the touch sensitive surface senses the touch input by at least sensing capacitance, and

wherein the touch input by the touch sensitive surface operates to at least control audio volume level of audio output configured to be provided to the user via the speaker.

Claims 95-120 (Canceled).

121. (Previously Presented) 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 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, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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;

a charging apparatus having at least a charging connector; and

a mobile communication device at least for supporting audio output, the mobile communication device configured to store at least a hearing profile associated with the user, the stored hearing profile associated with the user at least characterizes hearing impairment regarding the user's ability to hear, the mobile communication device configured to produce audio output signals customized for the user based on at least the stored hearing profile associated with the user such that the customized audio output signals at least compensate for the hearing impairment regarding the user's ability to hear, and the mobile communication device configured to wirelessly transmit the customized audio output signals to the head-worn personal electronic apparatus,

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals being received by the head-worn personal electronic apparatus,

wherein on placement of the head-worn personal electronic apparatus at least partially in the charging apparatus, electrical connection is configured to result 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 at least partially in the charging apparatus, and

wherein the customized audio output signals are produced based on amplifying or attenuating different frequency bands differently according to at least the stored hearing profile.

122. (Previously Presented) A system as recited in claim 121,

wherein the mobile communication device includes computing capabilities and a storage device, the storage device storing at least a software program executed by the mobile communication device to enable the user to establish the hearing profile associated with the user, and

wherein the mobile communication device is configured to establish the hearing profile associated with the user via the software program executed by the mobile communication device based on the user interacting with the software program via the mobile communication device.

123. (Previously Presented) A system as recited in claim 122, wherein the software program at least interactively guides the user to establish the hearing profile for the user by at least causing various audio tones to be output to the user via at least the speaker, prompting the user to provide a hearing input with respect to one or more of the various audio tones being output, and receiving the hearing input pertaining to one or more of the various audio tones being output.

124. (Previously Presented) A system as recited in claim 122, wherein the head-worn structure comprises:

an infrared emitter configured to at least direct infrared signals towards the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn; and

an infrared detector configured to detect infrared radiation reflected back from the user when at least the head-worn structure of the head-worn personal electronic apparatus is being worn,

125. (Previously Presented) A system as recited in claim 124, wherein the electronic circuitry within the head-worn structure is configured to facilitate determining whether the head-worn structure is being worn by the user based on at least the detected infrared radiation.

126. (Previously Presented) A system as recited in claim 124,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is canceled from the audio input picked-up from the first microphone.

127. (Previously Presented) A system as recited in claim 124,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the electronic circuitry is configured to receive audio output signals to be output to the user via the speaker, and modify the audio output signals to be output to the user via the speaker to cancel at least a portion of noise associated with the environment, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

128. (Previously Presented) A system as recited in claim 122,

wherein the second microphone is configured to pick-up an environmental audio input, and

wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is used to remove undesired noise from the audio input picked-up from the first microphone.

129. (Previously Presented) A system as recited in claim 122, wherein the head-worn structure comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn structure is being worn, and

a radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn structure is being worn.

130. (Previously Presented) A system as recited in claim 122, wherein the head-worn structure comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn structure, the Hall effect detector being configured to capture data associated with a magnetic characteristic.

131. (Previously Presented) A system as recited in claim 122, wherein the head-worn structure comprises:

a bone conducting electronic element at least partially contained within the head-worn structure, the bone conducting electronic element being associated with vibrations, and the bone conducting electronic element utilizing electrical signals associated with the vibration.

132. (Previously Presented) A system as recited in claim 122, wherein the head-worn structure comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user,

wherein at least the electronic circuitry is configured to facilitate determination at least whether the touch input associated with the user pertains to a first sliding direction or a second sliding direction with respect to the touch sensitive surface, and

wherein the touch input by the touch sensitive surface operates to at least control audio volume level of the customized audio output for the user via the speaker.

133. (Previously Presented) A system as recited in claim 132, wherein the head-worn structure comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn structure is being worn, and

a radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn structure is being worn.

134. (Previously Presented) A system as recited in claim 133, wherein the system comprises:

a Hall effect detector configured to capture data associated with a magnetic characteristic.

135. (Previously Presented) A system as recited in claim 134, wherein the head-worn structure comprises:

a bone conducting electronic element at least partially contained within the head-worn structure, the bone conducting electronic element being associated with vibrations, and the bone conducting electronic element utilizing electrical signals associated with the vibration.

136. (Currently Amended) 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 contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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;

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 radiation detector at least partially contained within the head-worn structure and configured to capture radiation data,

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 the second microphone is configured to at least pick-up an environmental audio input.

137. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 136, wherein the head-worn personal electronic apparatus comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user,

wherein at least the electronic circuitry is configured to facilitate determination at least whether the touch input associated with the user pertains to a first sliding direction or a second sliding direction with respect to the touch sensitive surface.

138. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 137,

wherein the touch sensitive surface senses the touch input by at least sensing capacitance, and

wherein the touch input by the touch sensitive surface operates to at least control audio volume level of audio output configured to be provided to the user via the speaker.

139. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 138,

wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn personal electronic apparatus is being worn, and

wherein the radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

140. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 139, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic; and

a plurality of circuit boards, each of the plurality of circuit boards including at least one electrical component mounted thereto, at least one of the plurality of circuit boards being a flexible printed circuit board, at least one of the plurality of circuit boards has at least one integrated circuit mounted on a first side of the at least one of the plurality of circuit boards, and at least one integrated circuit mounted on a seco139nd side of the at least one of the plurality of circuit boards.

141. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 139,

wherein the head-worn personal electronic apparatus is configured to support control of (i) audio output to the user via the speaker and (ii) voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least control of the audio output being provided to the user and/or accepting or declining a voice call to the user.

142. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 141, wherein the head-worn personal electronic apparatus comprises:

a bone conducting electronic element at least partially contained within the head-worn structure, the bone conducting electronic element being associated with vibrations, and the bone conducting electronic element utilizing electrical signals associated with the vibration.

143. (Previously Presented) A head-worn personal electronic apparatus as recited in claim 138,

wherein the head-worn personal electronic apparatus comprises:

an infrared radiation emitter at least partially contained within the head-worn structure and configured to at least direct infrared radiation towards the user when the head-worn personal electronic apparatus is being worn, and

wherein the radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the infrared radiation directed towards the user by the infrared radiation emitter that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

144. (New) 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 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 stress sensing device configured to receive a user input based on a force induced on the stress sensing device, the stress sensing device being contained within the head-worn structure and configured to produce an electrical signal indicative of stress, wherein the received user input operating to at least alter an operation of the head-worn personal electronic 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 contained within the head-worn structure;

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 radiation detector at least partially contained within the head-worn structure and configured to capture radiation data,

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.

145. (New) A head-worn personal electronic apparatus as recited in claim 144,

wherein the second microphone is configured to at least pick-up an environmental audio input,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive audio output signals to be output to the user via the speaker, and

wherein the electronic circuitry is configured to modify the audio output signals to be output to the user via the speaker to cancel at least a portion of environmental noise, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone.

146. (New) A head-worn personal electronic apparatus as recited in claim 145,

wherein the head-worn personal electronic apparatus comprises:

a radiation emitter at least partially contained within the head-worn structure and configured to at least direct radiation towards the user when the head-worn personal electronic apparatus is being worn, and

wherein the radiation detector at least partially contained within the head-worn structure and configured to detect a portion of the radiation directed towards the user by the radiation emitter that is reflected back from the user when the head-worn personal electronic apparatus is being worn.

147. (New) A head-worn personal electronic apparatus as recited in claim 146,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the electronic circuitry includes at least an integrated circuit, and the electronic circuitry being configured to (i) store attributes associated with the user; (ii) customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored attributes

associated with the user; and (iii) output the customized audio output signals to the speaker, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

148. (New) A head-worn personal electronic apparatus as recited in claim 147, wherein the head-worn personal electronic apparatus comprises:

at least a portion of a Hall effect detector at least partially contained within the head-worn personal electronic apparatus, the Hall effect detector being configured to capture data associated with a magnetic characteristic; and

a plurality of circuit boards, each of the plurality of circuit boards including at least one electrical component mounted thereto, at least one of the plurality of circuit boards being a flexible printed circuit board, at least one of the plurality of circuit boards has at least one integrated circuit mounted on a first side of the at least one of the plurality of circuit boards, and at least one integrated circuit mounted on a second side of the at least one of the plurality of circuit boards.

149. (New) A head-worn personal electronic apparatus as recited in claim 146,

wherein the head-worn personal electronic apparatus is configured to support control of (i) audio output to the user via the speaker and (ii) voice calls to the user, and

wherein the operation of the head-worn personal electronic apparatus being altered concerns at least control of the audio output being provided to the user and/or accepting or declining a voice call to the user.

150. (New) A head-worn personal electronic apparatus as recited in claim 149,

wherein the head-worn personal electronic apparatus is operable to at least output customized audio output,

wherein the wireless communication circuitry includes at least a wireless receiver configured to wirelessly receive customized audio output signals for the user, the customized audio output signals having been customized based on at least predetermined hearing characteristics associated with the user such that the customized audio output signals at least compensate for hearing impairment regarding the user's ability to hear, and

wherein the speaker is configured to generate at least a portion of the customized audio output for the user in accordance with at least the portion of the customized audio output signals.

151. (New) A head-worn personal electronic apparatus as recited in claim 144, wherein the head-worn personal electronic apparatus comprises:

a touch sensitive surface at least partially contained within the head-worn structure and configured to sense a touch input associated with the user,

wherein at least the electronic circuitry is configured to facilitate determination at least whether the touch input associated with the user pertains to a first sliding direction or a second sliding direction with respect to the touch sensitive surface.

152. (New) A head-worn personal electronic apparatus as recited in claim 151,

wherein the touch sensitive surface senses the touch input by at least sensing capacitance, and

wherein the touch input by the touch sensitive surface operates to at least control audio volume level of audio output configured to be provided to the user via the speaker.

REMARKS

In the Office Action, the Examiner allowed most claims, but rejected claims 2, 3, 5, 6, 28-38, 46 and 66-71 under 35 USC § 103(a). This rejection is fully traversed below.

Claims 2, 72 and 136 have been amended to further clarify the subject matter regarded as the invention. In addition, new claims 144-152 have been added to the application. Claims 1-3, 5-94 and 121-152 are now pending.

Reconsideration of the application is respectfully requested based on the following remarks.

FIRST TO INVENT

Given the early effective filing date of the present application, the application should be examined as a "first to invent" application. It appears that the Examiner's statement on page 2 of the Office Action referring to "first to file" is a typographical error.

PRIOR AMENDMENT

Applicant filed an Amendment on March 3, 2025 adding additional claims 121-143 to the application. This Amendment may not have been considered in the Office Action dated March 11, 2025. Consideration thereof is respectfully requested.

ALLOWABLE SUBJECT MATTER

In the Office Action, the Examiner allowed claims 1, 7-27 and 72-94. In addition, the Examiner indicated that claims 39-45 and 47-65 recite allowable subject matter.

REJECTION OF CLAIMS 2, 3, 5, 6, 28-38, 46 and 66-71 UNDER 35 USC § 103

In the Office Action, the Examiner rejected claims 2, 3, 5, 6, 28-38, 46 and 66-71 under 35 USC § 103 as being unpatentable over Spitzer (US Patent No. 6,349,001) in view of Jannard et al. (US Patent Pub. No. 2005/0050201585) and further in view of Kallman et al. (US Patent No. 5,835,185). Applicant respectfully disagrees with the rejection of each of such claims.

Claim 2 was rejected in view of a combination of Spitzer, Jannard et al. and Kallman et al. Applicant respectfully disagrees with the rejection of claim 2 for at least the following reasons.

Among other things, claim 2 recites "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 an electrical component configured to sense force, the force sensing device being contained within the head-worn structure, wherein the received user input operating to at least alter an operation of the head-worn personal electronic apparatus…."

On page 7 of the Office Action, the Examiner admits that neither Spitzer nor Jannard et al. teaches or suggest a force sensing device. In view of such deficiencies, the Examiner further relied on Kallman et al. On page 7 of the Office Action, the Examiner suggests that the switches S1, S2 may be touch-sensitive. Kallman et al. The switches S1, S2 disclosed in Kallman et al. are not force sensing, that is, the switches S1, S2 disclosed in Kallman et al., even if implemented in a touch-sensitive manner, would not be capable of sensing a force. Neither a push-button switch nor a touch-sensitive switch would sense force.

Applicant also submits that there is no reasonable rationale for one skilled in the art to seek to combine these three references, and thus no *prima facie* rejection of claim 2 (or any other rejected claim). Any alleged justification to combine these references is non-specific and/or without justification, improperly driven by hindsight, and fails to offer a reasonable rationale as to why one skilled in the art would attempt such a combination.

Based on the foregoing, it is submitted that claim 2 is patentably distinct from any combination of Spitzer, Jannard et al., and/or Kallman et al. Additional limitations (beyond those discussed above) recited in the independent claims or the dependent claims need not be further discussed because the limitations/arguments discussed above are sufficient to distinguish the claimed invention from the cited art. Accordingly, it is respectfully requested that the Examiner withdraw the rejection of claims 2, 3, 5, 6, 28-38, 46 and 66-71 under 35 U.S.C. § 103.

SUMMARY

It is submitted that the rejection under 35 USC § 103 has been traversed. Therefore, it is submitted that all claims are in condition for allowance.

Reconsideration of the application and an early Notice of Allowance are earnestly solicited. If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

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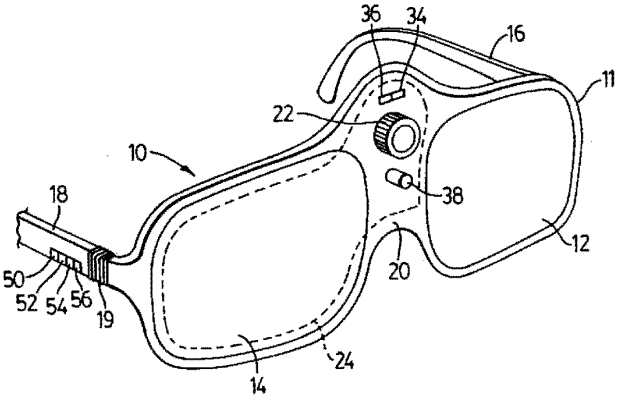
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(54) **CAMERA VIDEO MUNIE D'INTERFACE A LUNETTES**
(54) **VIDEO CAMERA WITH EYEGLASS INTERFACE**



(57) A video camera and display device includes an eyeglass unit, a camera device mounted to the eyeglass unit for producing a video signal, and a display screen mounted on the eyeglass unit for displaying images in response to the video signal. The display screen device is positioned to display the images within a field of view of the user while simultaneously allowing the user to directly view the scene being captured by the camera device. The video signal can be transmitted to a remote recording and control device for recording. The eyeglass unit can include two lenses, the display screen device being positioned behind one of said lenses.

ABSTRACT

A video camera and display device includes an eyeglass unit, a camera device mounted to the eyeglass unit for producing a video signal, and a display screen mounted on the eyeglass unit for displaying images in response to the video signal. The display screen device is positioned to display the images within a field of view of the user while simultaneously allowing the user to directly view the scene being captured by the camera device. The video signal can be transmitted to a remote recording and control device for recording. The eyeglass unit can include two lenses, the display screen device being positioned behind one of said lenses.

VIDEO CAMERA WITH EYEGLASS INTERFACE

This invention relates to portable video cameras.

Portable video cameras have been around for some time. However, such systems are often bulky and require that the user hold and aim the camera with at least one hand, which can be tiring after extended periods of time. Despite modern picture stabilization techniques, hand held cameras often produce a shaky picture as a result of movement of the user's hand. Hand held cameras can also be subject to being sporadically directed away from the user's line of site if the user is momentarily distracted. Some video camera devices have been conceived in attempts to solve these problems. For example, U.S. patent No. 4,516,157 issued May 7, 1985 to M. G. Campbell discloses a video recording device arranged to be worn by the user like a pair of spectacles. A miniature camera is mounted on the spectacle frame to record the scene in front of the user. A view finder is provided on one of the lenses of the spectacles for indicating what portion of the scene is available to the television camera. However, the view finder consists only of physical markings located on one of the lenses, and the user is unable to see the actual video image being recorded by the video camera while making the recording..

U.S. patent No. 5,583,571 issued December 10, 1996 to M. Friedland discloses a hands free video camera system which includes a headband that allows a compact camera to be strapped to a user's head. Again, the video camera system disclosed in this patent does not provide the user with real time viewing of the images being recorded.

It is therefore desirable to provide a compact, hands free video camera device which will track the user's line of sight while allowing the user to view a

real time image of what is being filmed by the video camera. It is also desirable to provide such device which allows the user to view the scene directly while simultaneously looking at the generated image.

According to one aspect of the invention there is provided a video camera and display device comprising an eyeglass unit adapted to be worn on a user's head, a camera device mounted to the eyeglass unit for creating a video signal representing scenes captured by the camera device, and a display screen device mounted on the eyeglass unit for displaying images in response to the video signal, the display screen device being positioned to display the images within a field of view of the user while simultaneously allowing the user to directly view the scene being captured by the camera device.

Preferably, the display screen device is positioned to display said image only within the field of view of one of the user's eyes and the field of view of the user's other eye is substantially unobstructed. The eyeglass unit can include a frame with two lenses having forward and rearward surfaces, the lenses being arranged so that in use one of the lenses will be positioned in front of one of the user's eyes and the other of the lenses will be positioned in front of the other of the user's eyes, the display screen device having a screen located behind the rearward surface of one of the lenses, the other lens being substantially transparent.

The video camera and display device can include a video recording and control device remote from the eyeglass unit, and transmission means for transmitting and receiving signals between the camera device and the remote video recording and control device such that the video signal can be recorded by, and the operation of the camera device controlled from, the remote video recording and control device. Preferably, the camera device has zoom capability

that can be controlled by the user through the remote recording and control device.

According to another aspect of the invention, there is provided a video camera and display device comprising an eyeglass unit adapted to be worn on a user's head, a camera device mounted to said eyeglass unit for creating a video signal representing scenes located in front of the camera device, a display screen device mounted on said eyeglass unit for displaying images in response to the video signal, the display screen device being positioned to display the images within a field of view of the user while simultaneously allowing the user to directly view the scene located in front of the camera device, and transmission means for transmitting the video signal to a remote recording device.

According to a further aspect of the invention, there is provided a video camera and recording device comprising an eyeglass unit adapted to be worn on a user's head, a camera device mounted to the eyeglass unit and arranged to create a real-time video signal representing a portion of a normal field of view of the user, a display screen device mounted on the eyeglass unit for displaying a real-time image in response to the video signal, the display screen device being positioned to display the image within a field of view of the user, and a recording and control device in communication with the camera device for recording the video image and controlling the operation of the camera device.

Further features and advantages will become apparent from the following detailed description of a preferred embodiment taken in conjunction with the accompanying drawings.

In the drawings,

Figure 1 is a perspective view taken from the front of a video camera and display device of the present invention;

Figure 2 is a perspective view of the video camera and display device of Figure 1 taken from the rear and the right side;

Figure 3 is a front view of an electronic circuit module of the video camera and display device;

Figure 4 is a cross sectional detail showing a display screen, this cross section being taken along the line IV-IV of Figure 2;

Figure 5 is a cross sectional detail showing a camera device, this cross section being taken along the line V-V of Figure 2;

Figure 6 is a perspective view of a portable remote video recording device for use with the video camera and display device;

Figure 7 illustrates cables that can be used to connect the remote video recording device to the video camera and display device;

Figure 8 is another perspective view of the video recording device of Figure 6 showing the device in an upright position and showing the use of an LCD viewing panel; and

Figure 9 is a perspective view of a remote control device for controlling the operation of the video recording device.

With reference to Figure 1, the video camera and display device of the present invention includes an eyeglass unit, indicated generally by 10, having a frame 11 which houses a first lens 12 and a second lens 14. Two rearwardly extending side arm supports 16 and 18 are connected by flexible connectors 19 to the frame 11. The side arm supports 16 and 18 are configured to hook around the user's ears in conventional eyeglass manner in order to secure the eyeglass unit 10 to the user's head. The frame 11 includes a central bridge section 20 designed to rest on the user's nose.

Mounted in the bridge section 20 of the frame 11 is a forwardly directed camera lens 22. The first lens 12 of the eyeglass unit is constructed of transparent

or substantially transparent material so that when the eyeglass unit 10 is worn by a user, the user's eye that is positioned behind the first lens 12 will have a largely unobstructed field of view. An electronic circuit module 24 (shown in phantom in Figure 1) is mounted on the back of the second lens 14 and the bridge section 20. The electronic circuit module 24 includes one or more populated circuit boards, and a moulded plastic cover to which the circuit boards are secured. The circuit module 24 is shaped so that it substantially conforms to the back of the lens 14 and bridge section 20. The electronic circuit module 24 substantially blocks the field of view which would otherwise be provided through the second lens 14.

With reference to Figure 3, mounted on a circuit board of module 24 is an image capture device 26 positioned behind the camera lens 22 for capturing images provided by light entering the lens 22 (see Figure 5). Image capture device 26 is preferably a commercially available solid-state charge-coupled device (CCD) which uses discrete light sensing elements to convert light photons into a voltage signal representing the image received by the CCD. Module 24 also includes a frame grabber chip 28 that is connected to the CCD 26 for receiving the voltage signal output by the CCD 26. The frame grabber chip 28, CCD 26, and lens 22 together provide a video camera device 25 which can create a real time video signal representing the image in front of the lens 22.

The electronic circuit module 24 also includes a display screen device 30 which is connected to the frame grabber chip 28 for displaying a real-time image in response to a video signal output by the frame grabber chip 28. As best seen in Figures 2 and 4, the display screen device 30 includes a rearward facing display screen 32 for displaying the real time video image. The display screen 32 is positioned so that it can be viewed by the user through the user's eye which is located behind the second lens 14 when the eyeglass unit is worn by the user, which allows the user to view the image that is being captured by the video

camera device of the eyeglass unit 10. The display screen device 30 is preferably a commercially available device having circuit means for converting the video signal output of the frame grabber chip 28 into a series of real-time images displayed on the video screen 32, which is preferably a small LCD screen.

The electronic circuit module 24 further includes an audio microphone 34 positioned above the CCD 26. As best seen in Figure 1, a forward portion of the microphone 34 is located within a slot 36 provided through the bridge 20 of the eyeglass frame 11. An infrared detector 38 is also included in the electronic circuit module 24 beneath the CCD 26. As best seen in Figure 1, a hole is provided through the bridge 20 to accommodate a forward end of the infrared detector 38. The electronic circuit module 24 includes a number of lead lines 40 leading from each of the electronic devices 26, 28, 30, 34 and 38 to four electrical connectors 42 through 48, which are located along the side of the electronic circuit module 24 that is located closest to the side arm support 18. The electrical connector 42 is connected to the audio microphone 34, the electrical connector 44 is connected to each of the electronic devices 26, 28, 30 and 34 for providing power to these devices, and the electrical connector 46 is connected to the frame grabber chip 28, which in turn is connected to the CCD 26. The electrical connector 48 is connected to the infrared detector 38.

As shown in Figures 1 and 2, a number of electrical ports are arranged along one side arm support of the eyeglass unit 10. The electrical ports 50, 52, 54 and 56 are each connected by flexible (not shown) conductors to the electrical connectors 42, 44, 46 and 48, respectively. These ports are provided to allow the eyeglass unit 10 to be connected by conductors 60 (shown in Figure 7) to a remote recording and control device 58, shown in Figures 6 and 8. The recording and control device 58 comprises a generally box-like housing 62, which is small and light enough to be easily carried at the user's side by means of a carrying strap 64

(or by some other carrying means such as a belt attachment). The housing 62 houses a video recording device 66, which in the preferred embodiment is a digital video disk (DVD) recording device, although other types of recording devices would be suitable as well.

An audio port 68, a power supply port 70, a video signal port 72 and an infrared port 74 are provided on the housing 62 for connection by electrical conductors 60 to the ports 50, 52, 54 and 56, respectively, of the eyeglass unit 10. These connections allow the recording and control device 58 to control the operation of, and receive signals from, the video camera device 25, microphone 34 and infrared detector 38 which are mounted in the electronic circuit module 24 of the eyeglass unit 10.

The recording and control device 58 includes a removable battery 76 which functions as the power supply for the recording and control device 58 and also the electronic components of the eyeglass unit 10. The battery 76 is preferably detachably mounted to the housing 62 so that it can be replaced and recharged as required.

As best illustrated in Figure 8, the recording and control device 58 preferably includes an integrally mounted LCD screen 78. The screen 78 is mounted to the housing 62 in such a manner that it can be rotated as indicated by the arrows 80 in order to facilitate viewing, and also folded flat against the housing 62 when not in use. An audio speaker 82 is also included in the recording device. With reference to Figure 6, a further strap 84 may be mounted on one side of the housing 58 through which the user's hand can be extended. A number of control buttons 86, 88 and 90 are preferably located on the housing 58 in such a manner that they can be activated by a user who has his or her hand inserted through strap 84. The button 90 is preferably a main power switch which activates

and deactivates the recording and control device 58 and the electronic circuitry of the eyeglass unit 10. The button 86 is a recording button which controls the recording function of the recording and control device 58. Button 88 is a three position switch which allows the user to zoom in and zoom out on a particular scene being captured by the CCD 26. A further lock/standby/record button 92 is also located on the housing to allow the recording and control device 58 to be operated in various modes. In lock mode, the device will not record at all, even if the recording button 86 is pressed. In standby mode, recording will occur when the recording button 86 is pressed. In recording mode, recording will occur continuously regardless of whether the recording button 86 is pressed. The recording and control device 58 also includes a variety of conventional play-back controls, illustrated generally by 94 for playing back and editing an image which has been recorded by DVD 66. The recording and control device 58 is preferably constructed in a manner similar to well known video camera recording devices which are commonly available, and thus the actual electronic circuitry of the device 58 will not be disclosed in any greater detail.

The lens 12 and 14 of the eyeglass unit 10 are preferably mirrored or darkened so that the presence of the electronic circuit module 24 behind the lens 14 is not readily apparent to other persons. The infrared detector 38 is provided to allow the operation of the recording and control device 58 to be controlled by a wireless remote infrared controller 96 (see Figure 9). The infrared detector 38 relays commands received from controller 96 to recording and control unit 58 via ports 56 and 74 and a conductor 60.

Preferably, the video camera device 25 of the present invention includes a zoom facility which is achieved electronically by having the frame grabber chip 28 select a smaller or larger area of the image captured by the CCD 26. In this regard, the CCD must have sufficient light sensing elements to provide acceptable

resolution. Preferably, the lens 22 is a single element lens having a short focal length so that the camera device 25 does not need to have focal adjustment.

With reference to the figures, the operation of the present invention will now be described. In use, the user would place the eyeglass unit 10 on his head. Power to and control of the functions of the electronic circuit module 24 would be provided by the recording and control device 58 via electrical connectors 60 extending from the ports 68 through 72 on the recording and control device 58 to the ports 50 through 54 located on the support arm 18. When the switch 90 is in the "on" position, the camera device 25 will capture images located in the direction in which the user points his head. In this regard, it will be appreciated that the camera device 25 is effectively capturing a portion of the image which would normally be in the field of view of the user. The signals generated by the CCD are provided to the frame grabber chip 28 which outputs a video signal suitable for display by the display screen device 30. The video signal provided to the display screen device 30 is also provided, via port 46, to the recording and control device 58. It will be understood that the image displayed by the display screen device 30 is the same image that will be recorded by the DVD recording device 66, and that the image displayed by the display screen device 30 is effectively a real time representation of the image being captured by CCD 26. Thus, the eyeglass unit 10 allows the user to have a substantially unobstructed direct field of view with one eye through lens 12, while simultaneously allowing the user's other eye to view the images that are being sent by the camera device 25 to the recording and control device 58. This allows the user to record the exact images which he wants to obtain without requiring the user to hold a video camera up to his eye. Thus, the user is able to record for long periods of time without worrying about arm fatigue.

The recording and control device 58 can be operated by the buttons located

on its housing 62, or by the infrared control device 96 in a conventional manner in order to record the images being provided by the video camera device 25. Activating the zoom button 88 on the housing 62 causes frame grabber chip 28 to capture the signal from a greater number of the light sensing elements of the CCD 26 (in the case of zoom-out) and fewer of the signals generated by light sensing elements of the CCD 26 (in the case of zoom-in). The result of the zoom-in or zoom-out operation is immediately displayed by display screen device 30. In addition to recording the video signal output by the eyeglass unit 10, the recording and control device 58 is also able to record an audio signal to accompany the video signal, via the audio microphone 34.

The video picture which has been recorded by DVD recording device 66 can be played back at any time for display on the LCD screen 78 that is mounted to the housing 62. Accompanying audio playback is provided by speaker 82. Preferably, the recording and control device 58 and electronic circuit module 24 are configured so that the recorded signal can be transmitted to the electronic circuit module 24 and viewed through the display screen device 30.

It will be appreciated that the eyeglass unit 10 could take a number of different configurations other than that described above and still allow the user to view a scene directly and also at the same time view the images being captured by the camera device 25. For example, the eyeglass unit 10 could have a single front wrap around lens rather than separated lenses 12 and 14. Furthermore, the camera lens 22 could be provided in a different location, such as behind lens 14 for example. Additionally, the eyeglass unit 10 could be packaged as a visor for a helmet. Also, the module 24 could be constructed so that it did not entirely obstruct the view from behind lens 14, thus allowing the eye behind lens 14 to view screen 32 and also the real world beyond the lens 14.

Although as described above, power for the electronic circuit module 24 is provided by a battery contained in the remote recording and control device 58, it will be appreciated that the eyeglass unit 10 could be constructed with a local power source such as a battery removably mounted on unit 10. Having a local power source would allow the electronic circuit module 24 to use transmission means other than physical wires 60 for communicating with the recording and control device 58. For example, radio wave transmission and reception devices could be located on each of the eyeglass unit 10 and the recording and control device 58 to allow them to communicate. In such a situation, it may not even be necessary for the user to carry around the recording and control device 58, as the user could use remote infrared control device 96 to control the functions of the recording and control device 58 within a certain physical range.

As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the following claims.

WHAT IS CLAIMED IS:

1. A video camera and display device comprising:

an eyeglass unit adapted to be worn on a user's head;

a camera device mounted to said eyeglass unit for creating a video signal representing scenes captured by said camera device; and

a display screen device mounted on said eyeglass unit for displaying images in response to said video signal, said display screen device being positioned to display said images within a field of view of the user while simultaneously allowing the user to directly view the scene being captured by said camera device.

2. A video camera and display device according to claim 1 wherein said display screen device is positioned to display said image only within the field of view of one the user's eyes, and the field of view of the user's other eye is substantially unobstructed.

3. A video camera and display device according to claim 1 or 2 including a video recording and control device remote from said eyeglass unit and transmission means for transmitting and receiving signals between said camera device and said remote video recording and control device such that said video signal can be recorded by, and the operation of said camera device controlled from, said remote video recording and control device.

4. A video camera and display device according to claim 3 wherein said camera device has zoom capability that can be controlled by the user through said remote recording and control device.

5. A video camera and display device according to claim 3 or 4 wherein said display screen device is arranged to receive a video signal from said remote

recording and control device so that video playback can be observed on said display screen device.

6. A video camera and display device according to any one of claims 3 to 5 further including an infrared control device, said eyeglass unit having an infrared detector located thereon for receiving commands from said infrared control device and transmitting said commands over said transmission means to said video recording and control device.

7. A video camera and display device according to any one of claims 3 to 6 wherein said remote video recording and control device includes a local video screen and a DVD video recording device.

8. A video camera and display device according to any one of claims 1 to 7 wherein said eyeglass unit includes a frame with two lenses having forward and rearward surfaces, said lenses being arranged so that in use one of said lenses will be positioned in front of one of the user's eyes and the other of said lenses will be positioned in front of the other of the user's eyes, said display screen device having a screen located behind the rearward surface of one of said lenses, the other of said lenses being substantially transparent.

9. A video camera and display device according to claim 8 wherein said eyeglass unit includes a bridge section located between said two lenses, a lens of said camera device being positioned on said bridge.

10. A video camera and display device comprising:

an eyeglass unit adapted to be worn on a user's head;

a camera device mounted to said eyeglass unit for creating a video signal representing scenes located in front of said camera device;

a display screen device mounted on said eyeglass unit for displaying images in response to said video signal, said display screen device being positioned to display said images within a field of view of the user while simultaneously allowing the user to view directly the scene located in front of said camera device; and

transmission means for transmitting said video signal to a remote recording device.

11. A video camera and display device according to claim 10 wherein said eyeglass unit includes two rearwardly extending side arm supports adapted to engage the user's ears and said transmission means includes an electrical port that is positioned on one of said side arm supports and that is electrically connected to said camera device.

12. A video camera and display device according to claim 10 or 11 wherein said camera device includes a charge coupled device and a frame grabber circuit.

13. A video camera and display device according to any one of claims 10 to 12 wherein said eyeglass unit includes two lenses, said display screen device being positioned on behind one of said lenses.

14. A video camera and display device according to any one of claims 10 to 13 wherein said display screen device includes an LCD display screen.

15. A video camera and recording device comprising:

an eyeglass unit adapted to be worn on a user's head;

a camera device mounted to said eyeglass unit and arranged to create a real-time video signal representing a portion of a normal field of view of the user;

a display screen device mounted on said eyeglass unit for displaying a real-

time image in response to said video signal, said display screen device being positioned to display said image within a field of view of the user; and

a recording and control device in communication with said camera device for recording the video image and controlling the operation of said camera device.

16. A video camera and recording device according to claim 15 wherein said display screen device is positioned to display said real-time image only within the field of view of one the user's eyes and the field of view of the user's other eye is substantially unobstructed.

17. A video camera and recording device according to claim 15 or 16 wherein said eyeglass unit includes two lenses, said display screen device being positioned behind one of said lenses.

18. A video camera and recording device according to any one of claims 15 to 17 wherein said camera device has zoom capability that can be controlled by the user through said recording and control device.

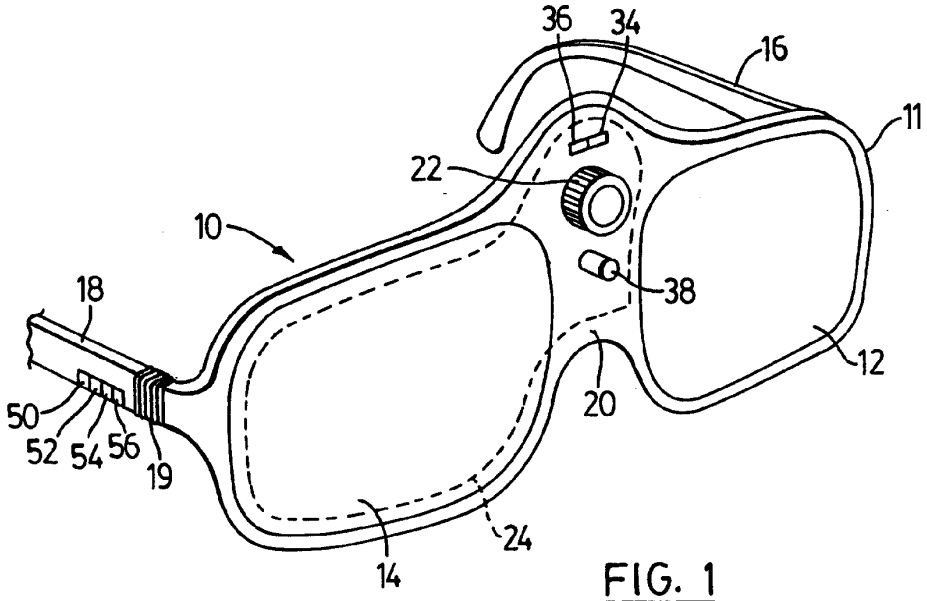

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FIG. 1

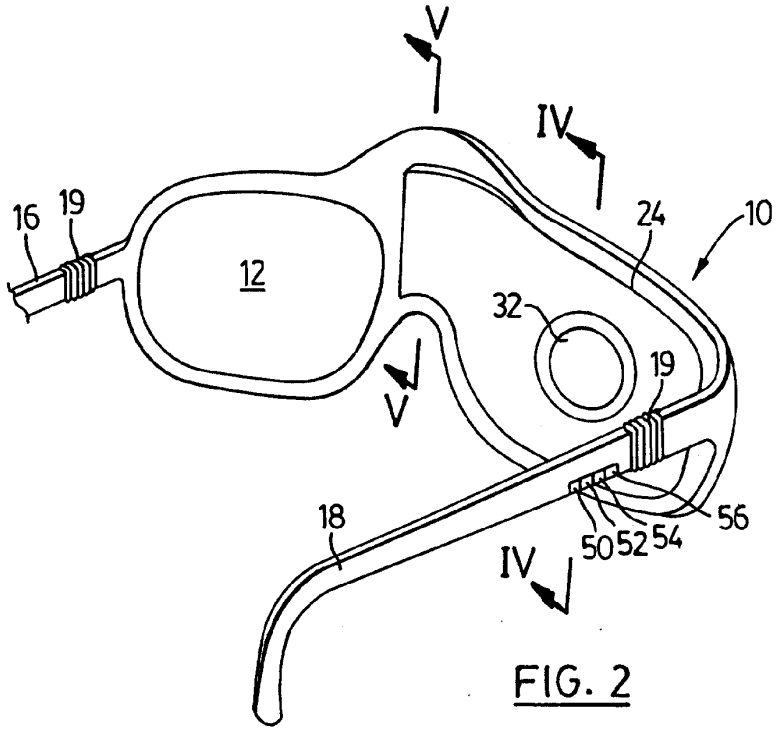

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FIG. 2

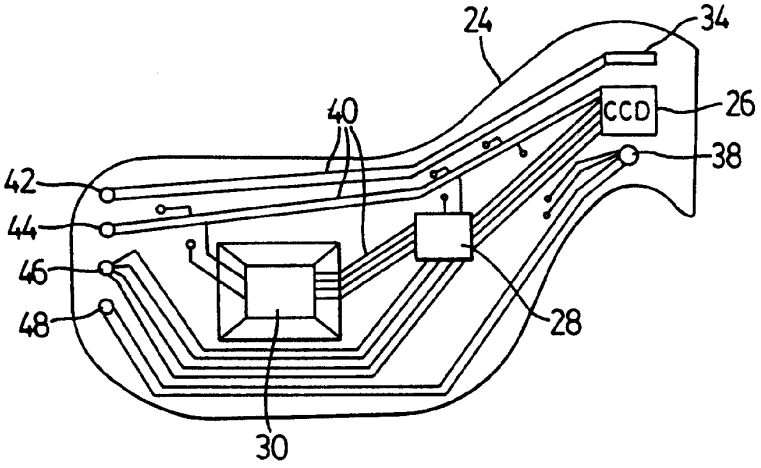


FIG. 3

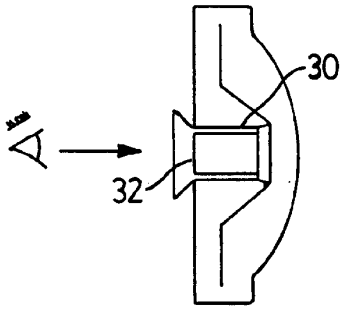


FIG. 4

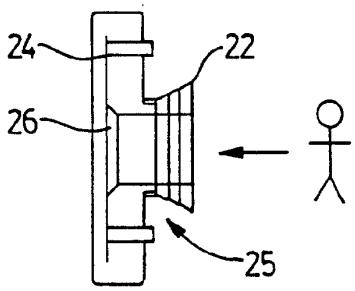


FIG. 5

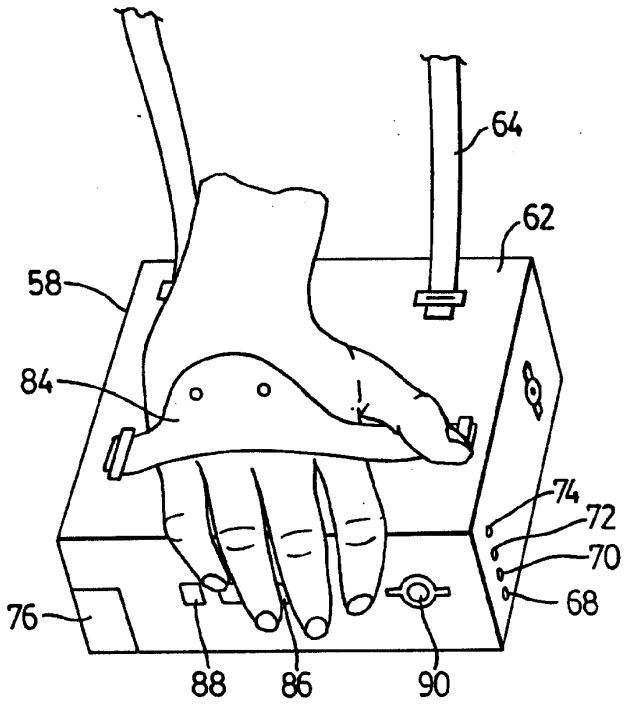


FIG. 6

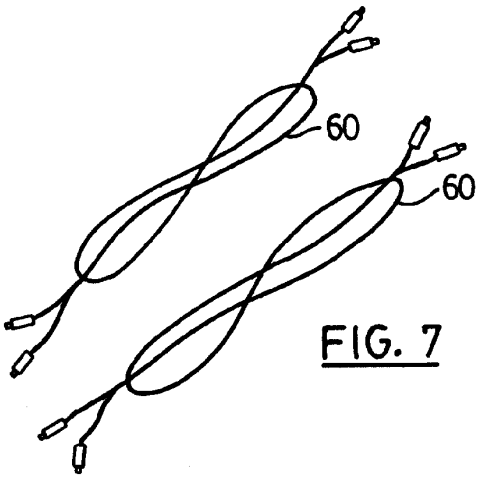


FIG. 7

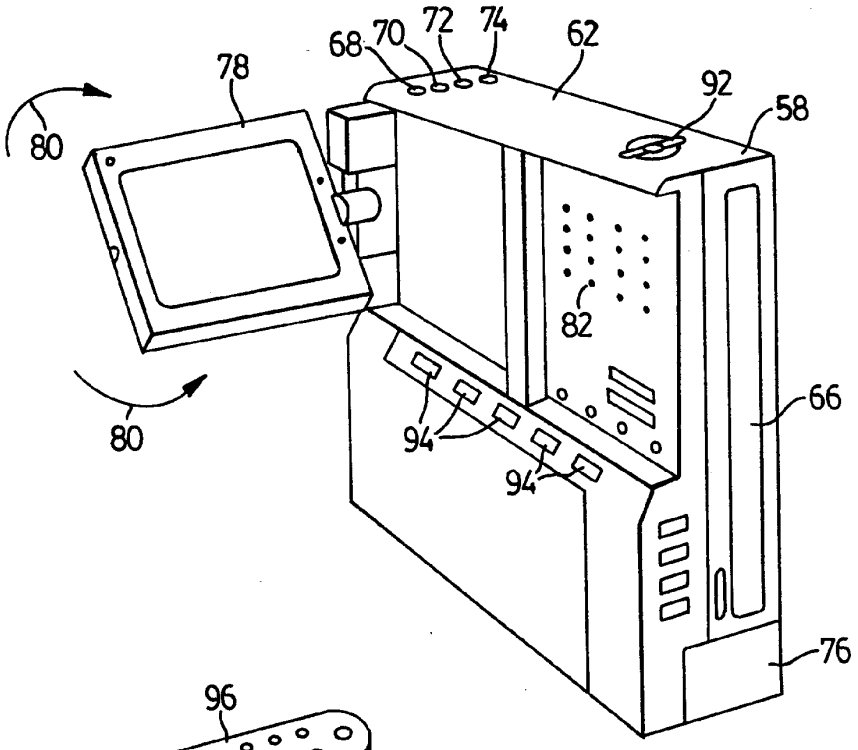


FIG. 8

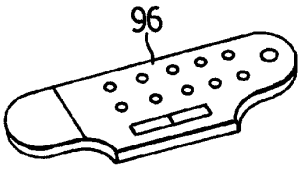


FIG. 9

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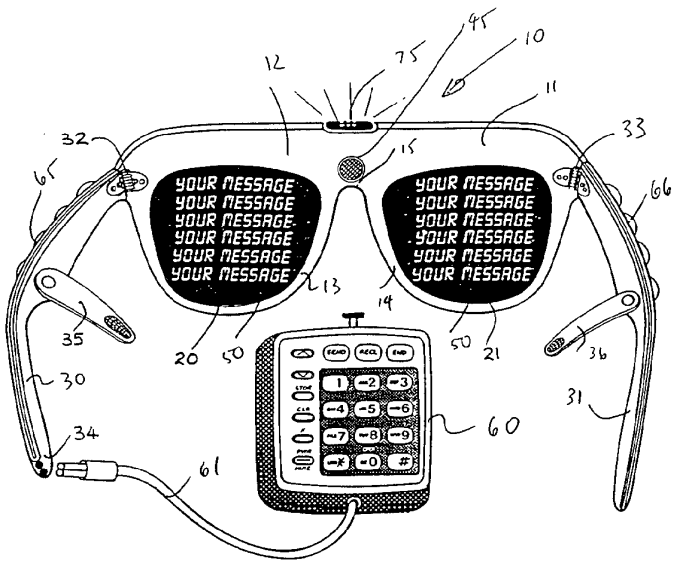
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(54) Title: EYE SCREEN MEANS WITH MOUNTED VISUAL DISPLAY AND COMMUNICATION APPARATUS



(57) Abstract

Eye screen means with mounted visual display (50) and communication apparatus (60). According to one aspect there is provided eye screen means such as a pair of spectacles (10) incorporating a receiver, an alphanumeric display (50), and means to display an alphanumeric message sensed by the receiver through the medium of the alphanumeric display (50).

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TITLE

EYE SCREEN MEANS WITH MOUNTED VISUAL DISPLAY AND COMMUNICATION APPARATUS

BACKGROUND ART

This invention relates to eye screen means with mounted visual display and communication apparatus. People who are forced to wear eye screen means such as prescription spectacles or sunglasses often also have a need to wear watches, carry communication paging devices or even carry portable telephones.

It is an object of this invention to combine the eye screen such as spectacles with one or more of the other items discussed above.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided eye screen means such as a pair of spectacles incorporating a receiver, an alphanumeric display, and means to display an alphanumeric message sensed by the receiver through the medium of the

alphanumeric display. The receiver may be directly in the eye screen means such as in the spectacle frames or it may be separate but suitably interconnected therewith, such as by cable.

The alphanumeric display may be liquid crystal display and may be positioned on the frame of the spectacles or alternatively may be positioned across a portion of the one or both the lenses of the spectacles.

According to another aspect of the present invention there is provided wearable eye screen means in the form of a pair of spectacles coupled to a power pack assembly via a detachable flexible lead, the temples of the spectacles including ear phones, a microphone being positioned in the frame of the spectacles whereby the eye screen means operates as a telephone.

Preferably the telephone is a mobile cellular telephone. Alternatively, the telephone may be adapted to receive signals from a base transmittal positioned in the proximity of the wearer of the spectacles.

In a preferred embodiment, the eye screen means described above may incorporate solar cells and/or button batteries to provide a source of electricity. Furthermore, the eye screen means may incorporate light or sound emitting devices to warn the user of the presence of a paging message or telephone contact.

It is also envisaged that the paging characteristics be coupled with the telephone characteristics so that the display of the pager can be used as a personal notebook in conjunction with the keyboard.

In a preferred embodiment, the spectacles may incorporate a time chip that can provide indication of time, preferably in hours, minutes, seconds, date, month, day and year as well as elapsed time. Other features may

include the addition of temperature sensors, providing a display of surrounding air temperature on the display, and a radio receiver for either AM or FM radio waves.

According yet another aspect of the present invention, eye screen means such as a pair of spectacles includes a display positioned on eye screen means such as on the lenses of the spectacles, with an optical system arranged so that the display can be readily viewed by the wearer of the eye screen means notwithstanding the fact that the lenses of the spectacles are positioned very closed to the eye of the wearer.

DESCRIPTION OF THE DRAWINGS

Various embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a perspective view taken from the rear of eye screen means in the form of a pair of spectacles,

Figure 2 is a perspective view of the front of the spectacles,

Figure 3 is a perspective view of the rear of the pair of spectacles illustrating a second embodiment,

Figure 4 is a front view of the spectacles shown in Figure 3, and

Figure 5 is a view of the rear of a pair of spectacles in a different embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The spectacles or sunglasses illustrated in the accompanying drawings are essentially similar to conventional spectacles that may be used with prescription lenses or sunglasses. The spectacles 10 include a frame 11 comprising a bridge 12 with a pair of downwardly projecting

rims 13, 14 separated by a nose bridge 15. The rims 13, 14 support either prescription lenses 20, 21 or shaded glass or plastics for use as sunglasses. An elongate arm 30, 31 or temple is pivotally secured at each side of the frame via a hinge 32, 33. The spectacles 10 are designed to be worn in an entirely conventional manner with the temples 30, 31 resting on the top of the ears and the nose bridge 15 resting on the nose of the wearer with the lenses 20, 21 positioned a short distance in front of the eyes of the wearer.

The spectacles described above have been adapted to carry a wide range of electrical/electronic componentry and thus it is important that the frame 11 and lenses 20, 21 of the spectacles are constructed to be as light as possible so that the overall assembly is not uncomfortably heavy.

The spectacles illustrated in the accompanying drawings are designed to provide a variety of functions. In the embodiment shown in Figures 1 and 2 the spectacles operate as a pager with a liquid crystal or LED display 50 transcribed across the lenses 20, 21 of the spectacles. The spectacles 10 are also designed to be used as a telephone by coupling one temple 30 to a detachable keyboard assembly 60 that it can also operate as a power source. The spectacles are also designed to carry solar panels 70 on the front of the frame 11 to provide an additional source of power. Alternatively, the panels may be on one or both of the arms. As a further power source, the spectacles are designed to carry a plurality of button batteries (not shown) which may be located either along the temples 30, 31 or across the bridge 12 of the frame 11. The display 50 for the pager may also be coupled to a timing device that can provide a digital time piece showing hours, minutes and seconds, a digital calender showing the

day, date, month and year and a stop watch showing elapse time. The display is alpha-numerical and has a fifty message memory. A small light 75 coupled to a beeper is positioned centrally at the top of the frame 11 of the spectacles to provide warning of an incoming message or in the case where the timing device may be used as an alarm, an audible or visual indication of activation of the alarm. Current micro-chip technology allows for an extensive memory facility in keeping with existing beeper standards. The activation of read/stop, index/delete, review/protect, hold/shift, buzzer on/off, and L.E.D. activator can be located on the top rim of the glasses or on one of the temples 30, 31. (A maximum of five buttons are all that is necessary for complete beeper operation). Current beeper features such as full display prompts, variations in alert tones/address indicators, protect function, manual and automatic scroll, low battery alert tones, repeat call detection are all incorporated utilising very little componentry.

In the embodiment shown in Figures 3 and 4, the alpha-numerical display 150 is positioned across the bridge 12 of the frame 11 of the spectacles. In this embodiment, once the alarm is activated, the spectacles must be slid forwardly or removed to enable the wearer to focus on the recorded message. A small part 151 of the upper portion of the lenses 20, 21 of the spectacles is designated to illustrate the time, calender, stop watch and alarm features. This portion 151 is kept discrete so as not to impair the view through the lens of the spectacles. In the embodiment shown in Figure 5, the display can be on one or both arms of the spectacles. In the embodiment shown in Figures 1 and 2, a special optical technique is used to place the message directly onto the lenses 20, 21 of the spectacles in a manner that the message can be interpreted

by the wearer notwithstanding the fact that the lens is in close proximity to the eyes of the wearer. This imaging technique is known as "a head-up display".

The temples 30, 31 or frame 11 of the spectacles incorporate a small radio receiver that is adapted to receive a paging message. Both temples are provided with a row of neatly disguised touch buttons 65, 66 that in the embodiments illustrated in Figures 1 to 4 are positioned in an array between the mid-span of each temple 30, 31 and its hinged connection 32, 33 to the frame.

The spectacles are also designed to be used either as a cordless telephone or as a cellular telephone. In either case, the keyboard assembly 60 of the telephone is a separate item that can be either wired to one end 34 of one temple 30 via a detachable lead 61 as shown in Figure 1 or could be in communication with the spectacles through signalling means such as infrared or radio frequency waves. The keyboard 60 provides a variety of features conventional to telephones but can also include other features such as adjustment of the timing device and use as a calculator. The keyboard may also incorporate a larger power source and houses the electrical/electronic circuitry that would be used with a conventional cellular telephone. The spectacles operate as the "handset" in that each temple 30, 31 is provided with a downwardly pivotable ear piece 35, 36 or speaker. A microphone 45 is positioned adjacent the bridge 12 of the frame of the spectacles so that the wearer of the spectacles can conduct a telephone conversation by simply turning down the ear pieces 35, 36 so that they are positioned adjacent the ear and then speaking normally with the voice being picked up by the centrally positioned microphone 45 which would be an omni-directional highly sensitive "dot" microphone.

It is understood that in a more simplistic

format, the spectacles may only operate as a cordless telephone with the signal being received from a receiver station positioned in the immediate proximity of the user of the wearer of the spectacles.

The power source carried by the spectacles, namely the button batteries and/or solar panels 70 are used to operate the low power facilities such as the display 50 of the pager and time piece. It is understood that the other componentry requiring greater levels of power would be fed from power carried in the power pack that forms part of the keyboard assembly 60. This power pack could be rechargeable in the conventional manner. The electrical wiring for the pager, telephone and other componentry would be molded within the frame 11 and temples 30, 31 of the spectacles. The temples 30, 31 of the spectacles and the frame 11 or reinforcing wires for the frame could also act as an aerial for the radio receiver(s). The keyboard assembly could be provided with a small retractable aerial (not shown) which allows the keyboard assembly 60 to operate as a transmitter. The lead 61 may be wound on a small spring loaded spool (not shown) carried by the keyboard assembly 60. The small switches positioned on the temples 30, 31 of the spectacles operate as mode switches controlling use and operation of the assembly as a whole. Further switching means may be provided as touch sensitive pads that may be located along the top of the frames, above the lenses, and even in certain circumstances on the lenses themselves. It is further understood that the display 50 may be illuminated by a small light emitting diode so that the display can be read in darkness. The facility of attachment to a separate keyboard also allows the assembly to operate as a very small personal computer and the keyboard can be used as a storage notebook for telephone numbers, addresses and personal memorandum. This

information would then be retrieved for display on the liquid crystal or LED display 50 or 150.

It should be appreciated that the display 50/150 may be provided directly on the lens of the spectacles and may be achieved by the use of fibre optic means or LED means embedded in the lenses in a manner such that the wearer does not perceive the presence of the display until it is activated. Alternatively, instead of embedding the display in the lenses it may be directed onto the lens by suitable optical means from a display carried by the frame itself.

The assembly described above has the advantages that by use of state of the art, electrical and electronic technology coupled with state of art technology associated with telecommunications, the features of a pager, telephone, timepiece, calculator and personal computer can all be incorporated into a conventional pair of spectacles. Consequently, those who are forced to wear spectacles through poor eyesight or constantly wear sunglasses have an opportunity to combine the conventional features of spectacles and sunglasses with the features usually associated with a watch, a separate handheld pager, and a telephone.

Although the embodiments described above has been restricted to spectacles it is understood that the invention may equally be adapted to use with other eye screen means such as with motorcycle or bicycle helmets which may incorporate a visor. People who have to wear such equipment also frequently have a need to use a pager, consult a watch or use a mobile telephone.

THE CLAIMS

1. Eye screen means such as a pair of spectacles incorporating a receiver, an alphanumeric display, and means to display an alphanumeric message sensed by the receiver through the medium of the alphanumeric display.

2. Eye screen mean according to claim 1 wherein the receiver is directly in the eye screen means such as in the spectacle frames or separate and suitably interconnected therewith.

3. Eye screen means according to claim 1, wherein the alphanumeric display is a liquid crystal display and is positioned on the frame of the spectacles or is positioned across a portion of the one or both the lenses of the spectacles.

4. Eye screen means in the form of a pair of spectacles coupled to a power pack assembly via a detachable flexible lead, the temples of the spectacles including ear phones, a microphone being positioned in the frame of the spectacles whereby the eye screen means operates as a telephone.

5. Eye screen means according to claim 4 wherein the telephone is a mobile cellular telephone or adapted to receive signals from a base transmittal positioned in the proximity of the wearer of the spectacles.

6. Eye screen means according to any one of the preceding claims further including solar cells and/or button batteries to provide a source of electricity.

7. Eye screen means according to any one of the preceding claims further comprising light or sound emitting devices to warn the user of the presence of a paging message or telephone contact.

8. Eye screen means according to any one of the preceding claims further comprising a time chip that can

provide indication of time, preferably in hours, minutes, seconds, date, month, day and year as well as elapsed time.

9. Eye screen means such as a pair of spectacles includes a display positioned on eye screen means such as on the lenses of the spectacles, with an optical system arranged so that the display can be readily viewed by the wearer of the eye screen means notwithstanding the fact that the lenses of the spectacles are positioned very closed to the eye of the wearer.

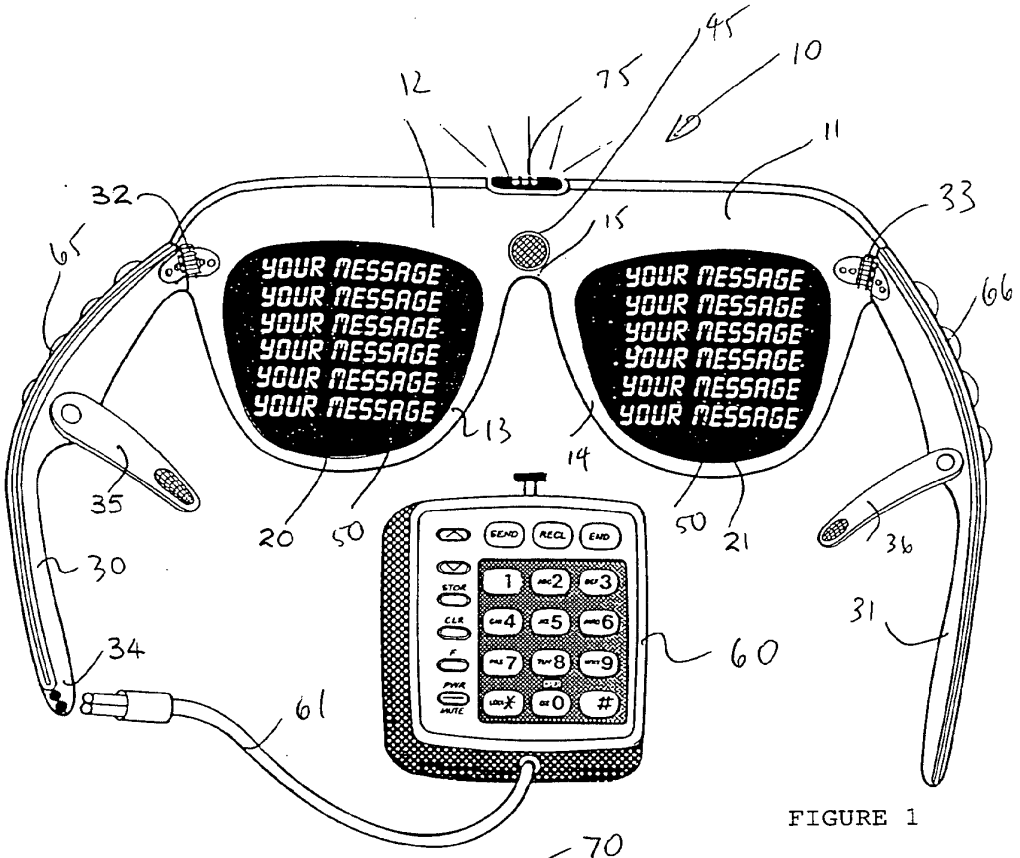


FIGURE 1

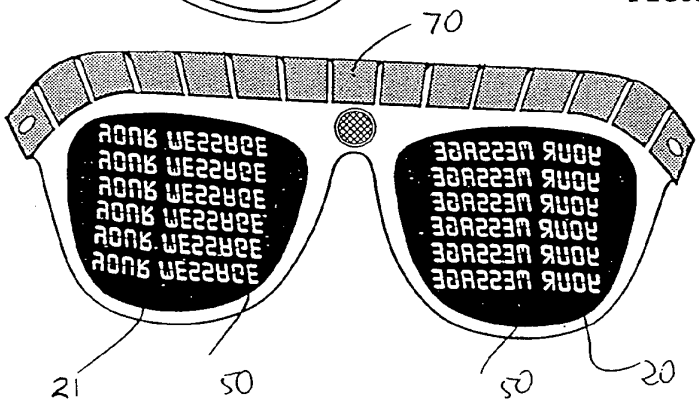


FIGURE 2

SUBSTITUTE SHEET

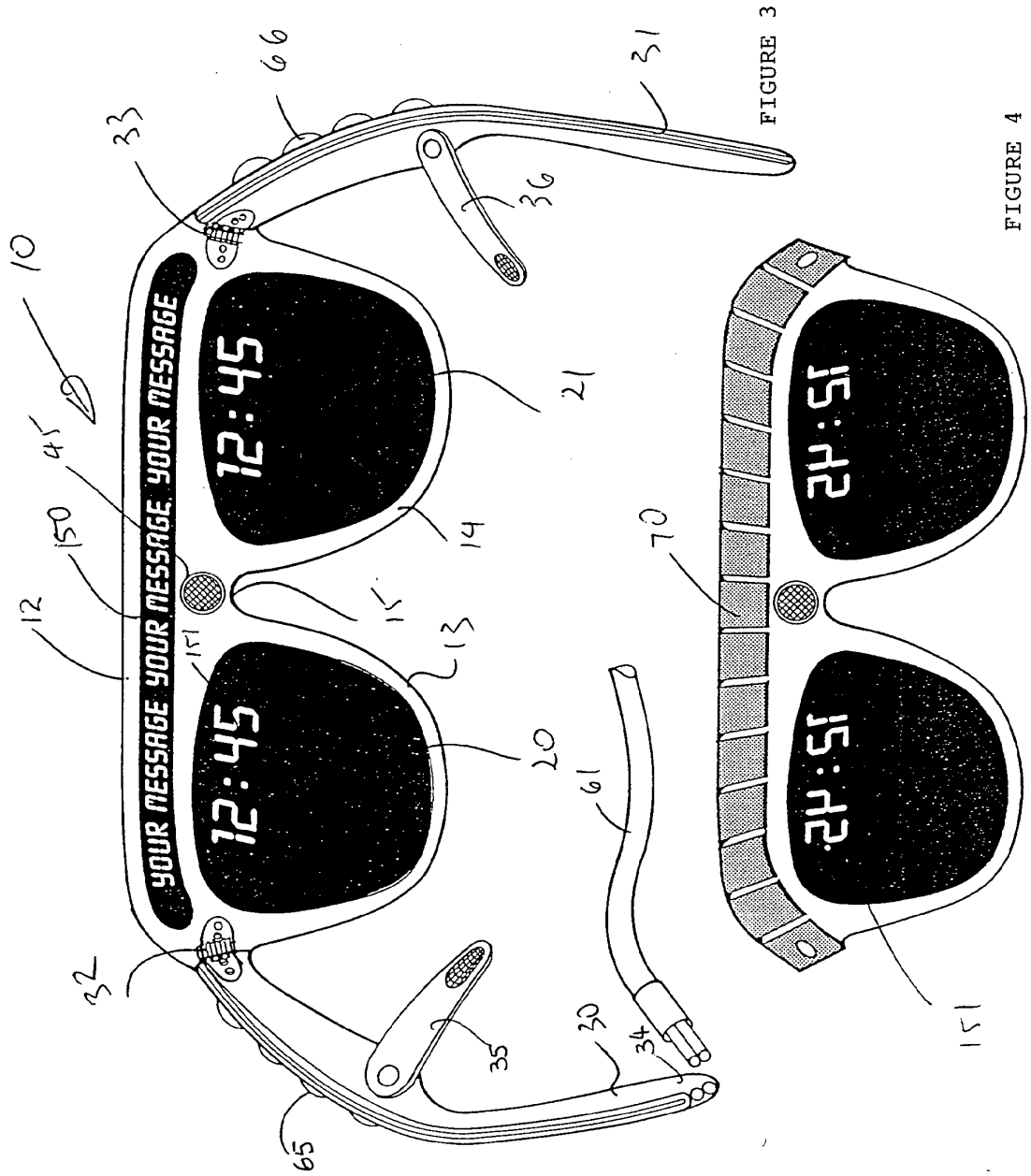


FIGURE 3

FIGURE 4

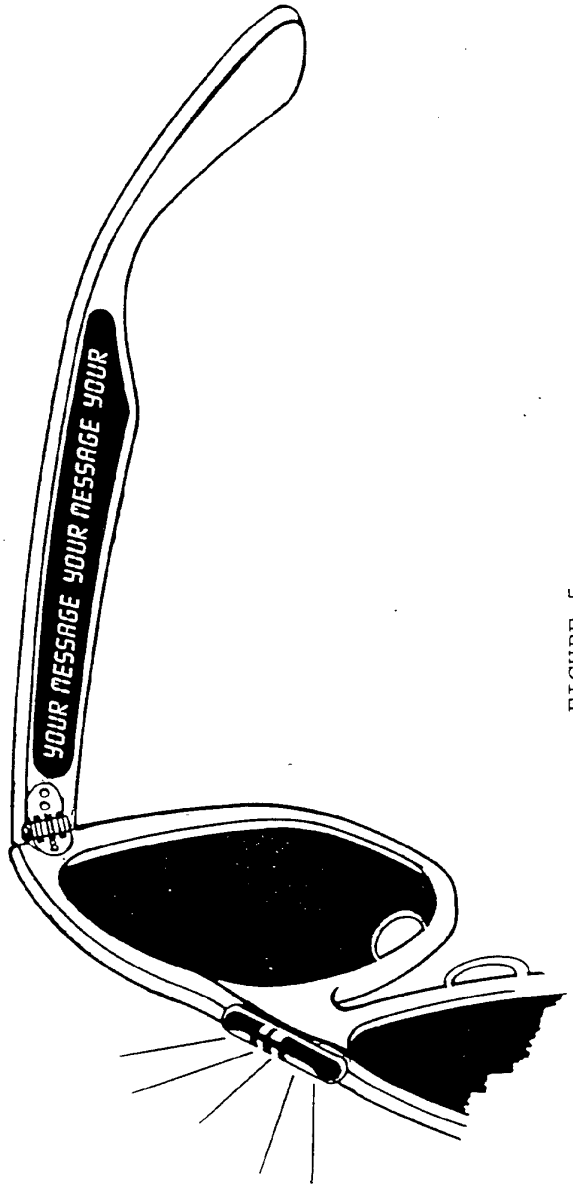


FIGURE 5

SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 93/00537

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl.[5] G02C 11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC G02C 11/00, G04B 47/00, 47/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU : IPC AS ABOVE PLUS g08B 5/22, 7/06, H04B 7/26, 7/005, H04M 1/05, 1/11

Electronic data base consulted during the international search (name of data base, and where practicable, search terms used)
DERWENT: (Spectacles or glasses or sunglasses or goggles or eyeglass(es)) and pager # or receiver # or message # or display: or microphone # or earphone # or telephone # or time or clock #)
JAPIO: - ditto -

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
	Derwent Abstract Accession No. 83-783125/41 Class W05, BE,A, 896221 (WILLEME) 18 July 1983 (18.07.83)	
X	abstract	1
Y	abstract	2,3,5-8
	DE,A, 3125964 (WEBER) 3 February 1983 (03.02.83)	
X	abstract, figures 6 and 14	1
Y	abstract, figures 6 and 14	2,3,5-8
	AU,A, 10407/92 (VOGT et al) 30 July 1992 (30.07.92)	
Y	pages 12,13 and 15, figures 13 and 14 (continued)	2,3,6

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 January 1994 (20.01.94)	3 FEB 1994 (3.02.94)
Name and mailing address of the ISA/AU	Authorized officer
AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA	D. BARNES
Facsimile No. 06 2853929	Telephone No. (06) 2832198

Form PCT/ISA/210 (continuation of first sheet (2)) (July 1992) copjne

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
Y	EP,A, 162184 (TARKANYI) 27 November 1985 (27.11.85) abstract	2,6
Y	US,A, 5020150 (SHANNON) 28 May 1991 (28.05.91) abstract	2,6
Y	DE,A, 2625654 (ZIELINSKI) 15 December 1977 (15.12.77) pages 6-8, figures 1 and 2	2,6
Y	WO,A, 91/03744 (CROWSON) 21 March 1991 (21.03.91) abstract	7
Y	DE,A, 3511263 (F A ZEISS C) 2 October 1986 (02.10.86) abstract	7
Y	Patent Abstracts of Japan, P-226, page 131, JP,A, 58-113912 (SUWA SEIKOSHA KK) 7 July 1983 (07.07.83) abstract	2,3,8
X	US,A, 4751691 (PERERA) 14 June 1988 (14.06.88) abstract	9
Y	abstract	3,8
X	US,A, 4796987 (LINDEN) 10 January 1989 (10.01.89) whole document	9
Y	whole document	3,8
A	Patent Abstracts of Japan, E-3, page 70, JP,A, 55-8142 (NIPPON DENSHIN DENWA KOSHA) 21 January 1980 (21.01.80) abstract	4

Form PCT/ISA/210 (continuation of second sheet)(July 1992) copjne

(continuation)

Box II continued

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are three inventions:

1. Claims 1-3 defining eye screen means incorporating a receiver, an alphanumeric display and means which displays an alphanumeric message sensed by the receiver on the alphanumeric display. It is considered that eye screen means incorporating a receiver, an alphanumeric display and means which displays a message on the display comprises a first "special technical feature".

2. Claims 4 and 5 defining eye screen means including detachable flexible lead, ear phones and microphone in the frame which operates as a telephone. It is considered that eye screen means which operates as a telephone comprises a second "special technical feature".

3. Claim 9 defining eye screen means with a display and an optical system arranged so the display can be readily viewed even when the lenses of the spectacles are positioned very close to the eye of the wearer. It is considered that the eye screen means with an optical system arranged so the display can be readily viewed even when the lenses are positioned very close to the eye of the wearer comprises a third "special technical feature".

Since the abovementioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept.

Box I **Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international search report has not established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II **Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims 1-3 defining eye screen means which displays an alphanumeric message sensed by a receiver on an alphanumeric display.
2. Claims 4 and 5 defining eye screen means which operates as a telephone.
3. Claim 9 defining eye screen means with a display and with an optical system arranged so the display can be readily viewed even when the lenses of the spectacles are positioned very close to the eye of the wearer.

as reasoned on the extra sheet:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically

claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
AU	10407/92	CA	2059597				
DE	2625654	JP	52149904				
WO	9103744	AU	64346/90	EP	489852	US	5045700
DE	3511263	EP	215870	WO	8605891		
							END OF ANNEX

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. 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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 18/597,874	Filing Date 03/06/2024	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	03/24/2025	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 125	Minus	** 119	= 6		x $200 =	1200
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 6	= 0		x $600 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	1200

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	Program Support Specialist
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/CRYSTAL QUEEN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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

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

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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 03/11/2025

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

EXAMINER	
LEI, JIE	

ART UNIT	PAPER NUMBER
2872	

MAIL DATE	DELIVERY MODE
03/11/2025	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.

Office Action Summary	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 --

Period for Reply

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

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

Status

1)☑ Responsive to communication(s) filed on 2/27/2025.

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

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

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

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

Disposition of Claims*

5) ☑ Claim(s) 1-3 and 5-94 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☑ Claim(s) 1,7-27 and 72-94 is/are allowed.

7) ☑ Claim(s) 2-3,5-6,28-38,46 and 66-71 is/are rejected.

8) ☑ Claim(s) 39-45 and 47-65 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

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

Application Papers

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

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

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

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

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

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

Attachment(s)

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

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

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

4) ☐ Other: _____.

DETAILED ACTION

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA. This office action is in response to a filing of 2/27/2025.

Continued Examination

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/27/2025 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-3, 5-6, 28-38, 46 and 66-71 are rejected under 35 U.S.C. 103 as being unpatentable over Spitzer (US 6349001) in a view of Jannard et al (US 20050201585), and in a view of Kallman et al (US 5835185).

Regarding Claim 2, Spitzer teaches a head-worn personal electronic apparatus (abstract, fig. 1), comprising:

a head-worn structure configured to be worn by a user (fig.1, 100);

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 (fig. 1, 108-audio; fig. 21, lower figure, audio outputs (--speakers), fixed to both temples; col. 9, line 49-52, The integration of microphones, speakers, camera and display within or upon the eyeglass frames makes possible a wide range of communication and recording devices, in addition to computer input and output devices);

a position detector at least partially contained within the head-worn structure (fig. 1, 110);

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 (fig. 1, 106- microphone; col. 8, line 1-5, a directional air conduction audio microphone may be used by placing it at the bottom of the eyeglass frame oriented so as to preferentially detect the sound of the user's speech);

a second microphone at least partially contained within the head-worn structure (fig. 21, upper figure, microphones, fixed to both temples; col. 8, line 1-15, A plurality of

microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected);

a battery contained within the head-worn structure (fig. 1, 112),

electronic circuitry contained within the head-worn structure, the electronic circuitry being electrically connected to at least the battery (fig. 1, 110- internal electronics and position sensors; col. 4, line 11-23, an eyeglass interface system 100; the eyeglass system is mounted a display assembly 102; a camera assembly 104; an audio output subsystem 108, an audio input subsystem 106 such as a microphone, an interconnection subsystem 110, and a power subsystem 112, such as internal batteries), and

wireless communication circuitry at least partially contained within the head-worn structure (fig. 15, 849; col. 8, line 41-44, integrated circuits 849 may be formed within the temple 800; col. 12, line 41-55, wherein the integrated circuits include a cellular telephone transceiver (--wireless communication); fig. 17C, 960,980, 925-battery; col. 9, line 6-25, The subsystems described above are connected to remote electronics either by wire as noted above, or by infrared link, radio frequency methods; comprises an RF

link in which signals are transmitted and received by antenna 980. These signals are passed to and from transceiver circuit 960, which is in communication with the 1/0 data stream).

But Spitzer does not specifically disclose that 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 rechargeable battery contained within the head-worn structure; 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 at least partially contained within the head-worn structure (figs.), wherein the received user input operating to at least alter operation of the head-worn electronic personal audio apparatus.

However, Jannard teaches a head-worn personal electronic apparatus (abstract; figs. 3A-M), 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 (fig. 3A, 10A, 40, ¶[0247], line 1-24, the audio devices 10, 10A, 10B, 10C, and 10D is provided wherein the audio devices can include and/or communicate with a variety of sensors, including but not limited to motion, radar, heat, light, smoke, air-quality, oxygen, CO and distance; GPS unit; fig. 3J, 304; fig. 22, 304, 322; ¶[0296], line 1-4, the user controls 322 include a button, dial, switch, lever, sensor, touchpad,

microphone, and/or any other input device that may be used by a user to control the audio device 304);

a rechargeable battery contained within the head-worn structure (fig. 3J, 274, 288; ¶[0169], line 1-14, charging a rechargeable battery carried by the eyeglass);

a force switch device configured to receive a user input based on a force induced on the force sensing device, the force sensing device being at least partially contained within the head-worn structure (figs. 3E and 3I, 73a-e), wherein the received user input operating to at least alter operation of the head-worn electronic personal audio apparatus (¶[0156], line 1-10, 71 the user can use a finger to actuate the button 73a and a thumb 69 to counteract the actuation force of the 71 finger by pressing on the lower surface of the ear stem 54'; ¶[0161], line 1-12, the internal cavity 252 includes at least one compartment configured to receive an electronic circuit board 264 which includes at least one switch for each of the buttons 73a, 73b; one for each of the buttons 73a, 73b, which are configured to control a volume output from the speakers 14A', 16A').

Therefore, it would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the system of Spitzer by the head-worn personal electronic apparatus of Jannard for the purpose of an audio device which is generally light-weight, and able to be worn comfortably by a user for an extended period of time. (¶[0310], line 1-6).

But Spitzer - Jannard combination does not specifically disclose that wherein a force sensing device.

However, Kallman teaches an eyewear system (abstract; fig. 4), wherein a force sensing device (col. 16, line 25-35, S1, S2 switches and 102, 104 corresponding push buttons may be located elsewhere in the frame; S1 and S2 switches may be implemented more conventionally, e.g. electronic, e.g., touch-sensitive, or electromechanical, e.g. microswitch, devices may be used).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention to modify the eyewear of Spitzer - Jannard combination by the eyewear system of Kallman for the purpose of extending useful battery life, reducing battery replacement cost and minimizing frame and temple size (col. 2, line 63—col. 3, line 5).

Regarding Claim 3, Spitzer -Jannard – Kallman combination teaches 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 (fig. 3J, 288, 284-printed circuit board; ¶[0169], line 1-21, the data transfer port 288; the data transfer port is configured to

operate according to the universal serial bus (USE) transfer protocol. In one implementation of the invention, the earstem is provided with a mini USE port. The mini USE port enables both downloading of digital music from a source into the eyeglass, as well as charging a rechargeable battery carried by the eyeglass, as disclosed in Jannard).

Regarding Claim 5, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support audio output to the user via the speaker (fig. 1, 108-audio; fig. 21, lower figure, audio outputs (--speakers), fixed to both temples, as disclosed in Spitzer), and

wherein the operation of the head-worn personal electronic apparatus being altered concerns control of the audio output being provided to the user (fig. 16, AUDIO CODECS AND AMPLIFIERS; AUDIO TRANSDUCERS, as disclosed in Spitzer).

Regarding Claim 6, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus is configured to support voice calls to the user, and wherein the operation of the head-worn personal electronic apparatus being altered concerns at least accepting or declining a voice call to the user (col. 10, line 5-21, An application of a display system using audio within the glasses is in a hands-free telephone interface. In such an application, the eyeglass system is connected lo telephone circuitry, such as a cellular or cordless telephone, provided in the module

1001; A keypad is unnecessary if voice recognition is employed. In such a case, the user speaks the command normally input by keypad, such as the number to dial, the send command, and so forth. The display within the interface module shows the number to be called for verification, just as the display on a cell phone would show the number, and after the appropriate send command is spoken, the call is placed, as disclosed in Spitzer).

Regarding Claim 28, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2,

wherein the second microphone is configured to pick-up an environmental audio input (fig. 21, upper figure, microphones, fixed to both temples, as disclosed in Spitzer), and

wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is subtracted from the audio input picked-up from the first microphone (col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 29, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2,

wherein the second microphone is configured to pick-up an environmental audio input (fig. 21, upper figure, microphones, fixed to both temples, as disclosed in Spitzer), and

wherein the electronic circuitry is configured to receive audio output signals to be output to the user via the speaker, and modify the audio output signals to be output to the user via the speaker to cancel at least a portion of noise associated with the environment, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone (col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 30, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 29, wherein the head-worn personal electronic apparatus comprises:

a physical condition sensor configured to acquire data pertaining to at least a physical condition of the user, the physical condition sensor being provided at least partially internal to the head-worn structure, wherein the acquired data by the physical

condition sensor includes data regarding vital signs or temperature of the user (¶[0247], line 1-10, wherein the audio devices can include and/or communicate with a variety of sensors, including but not limited to motion, radar, heat, light, smoke, air-quality, oxygen, CO and distance. Medical monitoring sensors are also contemplated. Sensors can be directed inwardly toward the user's body, or outwardly away from the body (e.g., sensing the surrounding environment), as disclosed in Jannard).

Regarding Claim 31, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 29, wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is used to remove undesired noise from the audio input picked-up from the first microphone (col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 32, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the electronic circuitry is configured to: determine an ambient noise level based on at least signals picked-up

from at least the second microphone; and modify at least a portion of audio output signals to be output to the user via the speaker, with the modification being at least in part dependent on the ambient noise level (col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 33, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the first microphone faces the user when the head- worn personal electronic apparatus is being worn (fig. 1, 106- microphone; col. 8, line 1-5, a directional air conduction audio microphone may be used by placing it at the bottom of the eyeglass frame oriented so as to preferentially detect the sound of the user's speech, as disclosed in Spitzer).

Regarding Claim 34, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 33, wherein the second microphone faces away from the user when the head-worn personal electronic apparatus is being worn (fig. 21, upper figure, microphones, --fixed to both temples, facing outwards, as disclosed in Spitzer).

Regarding Claim 35, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in 34,

wherein the second microphone is configured to pick-up an environmental audio input, and wherein the electronic circuitry is configured to receive audio output signals to be output to the user via the speaker, and modify the audio output signals to be output to the user via the speaker to cancel at least a portion of noise associated with the environment, the modification of the audio output signals being dependent at least in part on the environmental audio input picked-up via the second microphone ((fig. 21, upper figure, microphones, --fixed to both temples; col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 36, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in 34,

wherein the second microphone is configured to pick-up an environmental audio input, and wherein the environmental audio input picked-up from at least the second microphone is used at least for noise cancelation, and at least a portion of the environmental audio input picked-up from the second microphone is used to remove undesired noise from the audio input picked-up from the first microphone (col. 8, line 1-

15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer).

Regarding Claim 37, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 34, wherein the electronic circuitry is configured to:

determine an ambient noise level based on at least signals picked-up from at least the second microphone; and modify at least a portion of audio output signals to be output to the user via the speaker, with the modification being at least in part dependent on the ambient noise level (col. 8, line 1-15, A plurality of microphones may be used in order to make possible the implementation of noise reduction techniques using analog or digital signal processing. For certain applications, it is desirable to sense ambient sound instead of or in addition to the user's speech. For the particular application of assisting the hearing impaired, the microphone would be so oriented so that sound corning from the area in front of the user is preferentially detected, as disclosed in Spitzer)..

Regarding Claim 38, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn

personal electronic apparatus is configured to receive a voice input from the user via at least the first microphone, support or receive determination of a requested operation from the voice input using voice recognition, and control operation by the head-worn personal electronic apparatus based on the requested operation (col. 10, line 5-21, An application of a display system using audio within the glasses is in a hands-free telephone interface. In such an application, the eyeglass system is connected lo telephone circuitry, such as a cellular or cordless telephone, provided in the module 1001; A keypad is unnecessary if voice recognition is employed. In such a case, the user speaks the command normally input by keypad, such as the number to dial, the send command, and so forth. The display within the interface module shows the number to be called for verification, just as the display on a cell phone would show the number, and after the appropriate send command is spoken, the call is placed, as disclosed in Spitzer).

Regarding Claim 46, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises: at least a portion of a Hall effect detector at least partially contained within the head-worn structure, the Hall effect detector being configured to capture data associated with a magnetic characteristic (col. 11, line 24-41, The tracking sensors may comprise either magnetic and gravity sensors; within the eyeglass frame; the magnetic sensor may be based on the Hall effect, as disclosed in Spitzer).

Regarding Claim 66, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises: a bone conducting electronic element at least partially contained within the head-worn structure (fig. 11, 810; col. 7, line 28-48, use of bone conductivity transducers to allow the transducers to be concealed within the eyeglass frames. Bone conductivity transducers are designed to transmit sound vibrations directly to solid media (bone) and not to develop a pressure wave in air. As shown in FIG. 11, a bone conductivity transducer 810 serving as the speaker may be mounted to the temple 800 of 45 an eyeglass frame so as to be in contact with the skull at a point approximately centered over the ear, as disclosed in Spitzer).

Regarding Claim 67, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in 66, wherein the bone conducting electronic element associated with vibrations, and wherein the bone conducting electronic element having electrical signals associated with the vibration (col. 7, line 28-48, use of bone conductivity transducers to allow the transducers to be concealed within the eyeglass frames. Bone conductivity transducers are designed to transmit sound vibrations directly to solid media (bone), as disclosed in Spitzer).

Regarding Claim 68, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the motion detector includes at least an accelerometer (¶[0247], line 1-24, the audio devices 10, 10A, 10B, 10C, and 10D is provided wherein the audio devices can include and/or communicate

with a variety of sensors, including but not limited to motion, radar, heat, light, smoke, air-quality, oxygen, CO and distance; GPS unit, as disclosed in Jannard; col. 11, line 33-41, Many other types of sensors may be used for the head tracking system, including miniature gyroscopic or other inertial sensors, as disclosed in Spitzer).

Regarding Claim 69, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the wireless receiver is configured to operate with a Bluetooth network (¶[0282], line 1-15, audio devices, Communications link 306 may be any of a variety of information conduits known to those of skill in the art, including: a cable, a wire, a conductor, a bus, an RF signal, a radio signal, a satellite signal, a BLUETOOTH signal, etc., as disclosed in Jannard).

Regarding Claim 70, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the electronic circuitry includes at least a microprocessor (fig. 7, 714—computer, as disclosed in Jannard).

Regarding Claim 71, Spitzer -Jannard – Kallman combination teaches a head-worn personal electronic apparatus as recited in claim 2, wherein the head-worn personal electronic apparatus comprises: an antenna contained within the head-worn structure of the head-worn personal electronic apparatus (fig. 17C, 980—antenna, as disclosed in Jannard).

Allowable Subject Matters

5. Claims 1, 7-27 and 72-94 are allowed.

6. 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.

Regarding Claim 1, 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.

Regarding Claims 72, 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.

7. Claims 39-45 and 47-65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 39, 41, 43 and 45, these claims comprising allowable subject matters similar to that of claim 72 (see above).

Claims 40, 42 and 44 are also objected to as being dependent on respective claims of 39, 41 and 43.

Regarding Claims 47, 49 and 51, 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 customize the received audio output signals to produce customized audio output signals for the user based on at least a portion of the stored hearing

characteristics associated with the user such that the customized audio output signals at least compensate for hearing impairment regarding the user's ability to hear,

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

Claims 48, 50 and 52-65 are also objected to as being dependent on respective claims of 47, 50 and 51.

Response to Arguments

8. Applicant's arguments with respect to claims have been considered but are moot because the arguments do not apply to any of the references being used in the current new rejections.

Examiner's Note

9. Regarding the references, the Examiner cites particular figures, paragraphs, columns and line numbers in the reference(s), as applied to the claims above. Although the particular citations are representative teachings and are applied to specific limitations within the claims, other passages, internally cited references, and figures may also apply. In preparing a response, it is respectfully requested that the Applicant fully consider the references, in their entirety, as potentially disclosing or teaching all or part of the claimed invention, as well as fully consider the context of the passage as taught by the reference(s) or as disclosed by the Examiner.

Conclusion

10. 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.

11. 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.

12. 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	

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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	

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	JIE LEI	2872

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/03/2025								
	1	=								
	2	✓								
	3	✓								
	4	-								
	5	✓								
	6	✓								
	7	=								
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CLAIM		DATE								
Final	Original	03/03/2025								
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	44	O								
	45	O								
	46	✓								
	47	O								
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	JIE LEI	2872

CLAIM		DATE								
Final	Original	03/03/2025								
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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
3/2/2025 4:05:02 PM	Google Patents	Search Term 1 speaker Search Term 2 audio device Search Term 3 audio Search Term 4 support Search Term 5 wearable wireless Before Priority Date: priority:20000602
3/2/2025 4:05:33 PM	Google Scholar	spectacles hearing aid bow bone head
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
3/2/2025 4:05:41 PM	Google Scholar	temple amplifier hearing aid bow conductors

date, time	web site	search string
3/2/2025 4:05:41 PM	Google Patents	Search Term 1 temple Search Term 2 amplifier Search Term 3 hearing aid Search Term 4 bow Search Term 5 conductors Before Priority Date: priority:19560126
3/2/2025 4:05:52 PM	Google Scholar	battery hearing aid case sound frame
3/2/2025 4:05:52 PM	Google Patents	Search Term 1 battery Search Term 2 hearing aid Search Term 3 case Search Term 4 sound Search Term 5 frame Before Priority Date: priority:19570726
3/2/2025 4:07:28 PM	Google Scholar	hearing aid aperture housing ear bow
3/2/2025 4:07:28 PM	Google Patents	Search Term 1 hearing aid Search Term 2 aperture Search Term 3 housing Search Term 4 ear Search Term 5 bow Before Priority Date: priority:19560106
3/2/2025 4:08:52 PM	Google Scholar	hearing aid temple temples microphone housing

date, time	web site	search string
3/2/2025 4:08:52 PM	Google Patents	Search Term 1 hearing aid Search Term 2 temple Search Term 3 temples Search Term 4 microphone Search Term 5 housing Before Priority Date: priority:19570225
3/2/2025 4:13:34 PM	Google Scholar	hearing aid temples temple circuit recess
3/2/2025 4:13:34 PM	Google Patents	Search Term 1 hearing aid Search Term 2 temples Search Term 3 temple Search Term 4 circuit Search Term 5 recess Before Priority Date: priority:19551208
3/2/2025 4:13:41 PM	Google Scholar	lens eyeglasses eye makeup eyes
3/2/2025 4:13:41 PM	Google Patents	Search Term 1 lens Search Term 2 eyeglasses Search Term 3 eye Search Term 4 makeup Search Term 5 eyes Before Priority Date: priority:19670323
3/2/2025 4:13:48 PM	Google Scholar	shells headset microphone earphone clips

date, time	web site	search string
3/2/2025 4:13:48 PM	Google Patents	Search Term 1 shells Search Term 2 headset Search Term 3 microphone Search Term 4 earphone Search Term 5 clips Before Priority Date: priority:19681216
3/2/2025 4:13:56 PM	Google Scholar	compartment hearing aid case receiver microphone
3/2/2025 4:13:56 PM	Google Patents	Search Term 1 compartment Search Term 2 hearing aid Search Term 3 case Search Term 4 receiver Search Term 5 microphone Before Priority Date: priority:19691119
3/2/2025 4:31:02 PM	Google Scholar	penlight temple arms clip body portion
3/2/2025 4:31:02 PM	Google Patents	Search Term 1 penlight Search Term 2 temple Search Term 3 arms Search Term 4 clip Search Term 5 body portion Before Priority Date: priority:19720504
3/2/2025 4:31:56 PM	Google Scholar	temple tip electrical members engageable

date, time	web site	search string
3/2/2025 4:31:56 PM	Google Patents	Search Term 1 temple Search Term 2 tip Search Term 3 electrical Search Term 4 members Search Term 5 engageable Before Priority Date: priority:19710318
3/2/2025 4:32:07 PM	Google Scholar	eyeglasses leg portion straight mounting band holding
3/2/2025 4:32:07 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 leg portion Search Term 3 straight Search Term 4 mounting band Search Term 5 holding Before Priority Date: priority:19841113
3/2/2025 4:32:29 PM	Google Scholar	tubing transducer sound housing section
3/2/2025 4:32:29 PM	Google Patents	Search Term 1 tubing Search Term 2 transducer Search Term 3 sound Search Term 4 housing Search Term 5 section Before Priority Date: priority:19850611
3/2/2025 4:33:06 PM	Google Scholar	temples frame radio loud speakers speakers

date, time	web site	search string
3/2/2025 4:33:06 PM	Google Patents	Search Term 1 temples Search Term 2 frame Search Term 3 radio Search Term 4 loud speakers Search Term 5 speakers Before Priority Date: priority:19871120
3/2/2025 4:49:32 PM	Google Scholar	solar energy battery nose bridge bridge element lens
3/2/2025 4:49:32 PM	Google Patents	Search Term 1 solar energy Search Term 2 battery Search Term 3 nose bridge Search Term 4 bridge element Search Term 5 lens Before Priority Date: priority:19891107
3/2/2025 4:49:39 PM	Google Scholar	housing listening device assistive listening door sound
3/2/2025 4:49:39 PM	Google Patents	Search Term 1 housing Search Term 2 listening device Search Term 3 assistive listening Search Term 4 door Search Term 5 sound Before Priority Date: priority:19910219
3/2/2025 4:49:47 PM	Google Scholar	stem sleeve ear loudspeaker user

date, time	web site	search string
3/2/2025 4:49:47 PM	Google Patents	Search Term 1 stem Search Term 2 sleeve Search Term 3 ear Search Term 4 loudspeaker Search Term 5 user Before Priority Date: priority:19910617
3/2/2025 4:49:55 PM	Google Scholar	speaker wearer temples frame earphone
3/2/2025 4:49:55 PM	Google Patents	Search Term 1 speaker Search Term 2 wearer Search Term 3 temples Search Term 4 frame Search Term 5 earphone Before Priority Date: priority:19920611
3/2/2025 4:50:13 PM	Google Scholar	sleeve flexible hollow pair accessory
3/2/2025 4:50:13 PM	Google Patents	Search Term 1 sleeve Search Term 2 flexible Search Term 3 hollow Search Term 4 pair Search Term 5 accessory Before Priority Date: priority:19920214
3/2/2025 4:50:27 PM	Google Scholar	speakers pair speaker user iadd

date, time	web site	search string
3/2/2025 4:50:27 PM	Google Patents	Search Term 1 speakers Search Term 2 pair Search Term 3 speaker Search Term 4 user Search Term 5 iadd Before Priority Date: priority:19860804
3/2/2025 4:55:19 PM	Google Scholar	camera camera body viewfinder signal cpu
3/2/2025 4:55:19 PM	Google Patents	Search Term 1 camera Search Term 2 camera body Search Term 3 viewfinder Search Term 4 signal Search Term 5 cpu Before Priority Date: priority:19931230
3/2/2025 4:55:35 PM	Google Scholar	image photographing photographing mode mode images
3/2/2025 4:55:35 PM	Google Patents	Search Term 1 image Search Term 2 photographing Search Term 3 photographing mode Search Term 4 mode Search Term 5 images Before Priority Date: priority:20000906
3/2/2025 4:55:47 PM	Google Scholar	moving image image transforming displaying aiming device

date, time	web site	search string
3/2/2025 4:55:47 PM	Google Patents	Search Term 1 moving image Search Term 2 image Search Term 3 transforming Search Term 4 displaying Search Term 5 aiming device Before Priority Date: priority:20010131
3/2/2025 4:56:03 PM	Google Scholar	cameraman image image display eye recording apparatus
3/2/2025 4:56:03 PM	Google Patents	Search Term 1 cameraman Search Term 2 image Search Term 3 image display Search Term 4 eye Search Term 5 recording apparatus Before Priority Date: priority:19971127
3/2/2025 5:04:40 PM	Google Scholar	image pickup detection scene discrimination image pickup apparatus
3/2/2025 5:04:40 PM	Google Patents	Search Term 1 image pickup Search Term 2 detection Search Term 3 scene discrimination Search Term 4 image Search Term 5 pickup apparatus Before Priority Date: priority:20090130
3/2/2025 5:05:09 PM	Google Scholar	image lateral barrel accessory longitudinal

date, time	web site	search string
3/2/2025 5:05:09 PM	Google Patents	Search Term 1 image Search Term 2 lateral Search Term 3 barrel Search Term 4 accessory Search Term 5 longitudinal Before Priority Date: priority:20110805
3/2/2025 5:05:22 PM	Google Scholar	support glasses image sensor pair housing
3/2/2025 5:05:22 PM	Google Patents	Search Term 1 support Search Term 2 glasses Search Term 3 image sensor Search Term 4 pair Search Term 5 housing Before Priority Date: priority:20130315
3/2/2025 5:05:38 PM	Google Scholar	camera actuator casing msm actuators
3/2/2025 5:05:38 PM	Google Patents	Search Term 1 camera Search Term 2 actuator Search Term 3 casing Search Term 4 msm Search Term 5 actuators Before Priority Date: priority:20140926
3/2/2025 5:06:28 PM	Google Scholar	communication device eyewear receiver user speaker

date, time	web site	search string
3/2/2025 5:06:28 PM	Google Patents	Search Term 1 communication device Search Term 2 eyewear Search Term 3 receiver Search Term 4 user Search Term 5 speaker Before Priority Date: priority:20010621
3/2/2025 5:24:07 PM	Google Scholar	connector eyewear display assembly optical display helmet
3/2/2025 5:24:07 PM	Google Patents	Search Term 1 connector Search Term 2 eyewear Search Term 3 display assembly Search Term 4 optical display Search Term 5 helmet Before Priority Date: priority:20061214
3/2/2025 5:24:17 PM	Google Scholar	module interface system electronically enabled enabled interface speaker
3/2/2025 5:24:17 PM	Google Patents	Search Term 1 module Search Term 2 interface system Search Term 3 electronically enabled Search Term 4 enabled interface Search Term 5 speaker Before Priority Date: priority:20000602
3/2/2025 5:24:25 PM	Google Scholar	eyewear communication system base base link modular communication

date, time	web site	search string
3/2/2025 5:24:25 PM	Google Patents	Search Term 1 eyewear Search Term 2 communication system Search Term 3 base Search Term 4 base link Search Term 5 modular communication Before Priority Date: priority:20130612
3/2/2025 5:24:34 PM	Google Scholar	connector electronic device eyewear plate attachment member
3/2/2025 5:24:34 PM	Google Patents	Search Term 1 connector Search Term 2 electronic device Search Term 3 eyewear Search Term 4 plate Search Term 5 attachment member Before Priority Date: priority:20120217
3/2/2025 5:24:44 PM	Google Scholar	wearer input audio speaker source
3/2/2025 5:24:44 PM	Google Patents	Search Term 1 wearer Search Term 2 input Search Term 3 audio Search Term 4 speaker Search Term 5 source Before Priority Date: priority:20041222
3/2/2025 5:24:51 PM	Google Scholar	eyewear temple recited eyewear frame arm

date, time	web site	search string
3/2/2025 5:24:51 PM	Google Patents	Search Term 1 eyewear Search Term 2 temple Search Term 3 recited Search Term 4 eyewear frame Search Term 5 arm Before Priority Date: priority:20030415
3/2/2025 5:25:02 PM	Google Scholar	head electronic apparatus personal electronic user temple
3/2/2025 5:25:02 PM	Google Patents	Search Term 1 head Search Term 2 electronic apparatus Search Term 3 personal electronic Search Term 4 user Search Term 5 temple Before Priority Date: priority:20040728
3/2/2025 5:25:09 PM	Google Scholar	eyewear temple glasses side structure recited
3/2/2025 5:25:09 PM	Google Patents	Search Term 1 eyewear Search Term 2 temple Search Term 3 glasses Search Term 4 side structure Search Term 5 recited Before Priority Date: priority:20031009
3/2/2025 5:36:59 PM	Google Scholar	hearing aid casing wearer rear surface clasp

date, time	web site	search string
3/2/2025 5:36:59 PM	Google Patents	Search Term 1 hearing aid Search Term 2 casing Search Term 3 wearer Search Term 4 rear surface Search Term 5 clasp Before Priority Date: priority:19940815
3/2/2025 5:37:11 PM	Google Scholar	audio wearable speakers communication device audio system
3/2/2025 5:37:11 PM	Google Patents	Search Term 1 audio Search Term 2 wearable Search Term 3 speakers Search Term 4 communication device Search Term 5 audio system Before Priority Date: priority:20020826
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

date, time	web site	search string
12/13/2024 5:13:34 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 eyeglasses according Search Term 3 microphone Search Term 4 connector Search Term 5 connection Before Priority Date: priority:20020124
12/13/2024 5:13:40 PM	Google Scholar	solar cell integrated spectacles according integration glasses
12/13/2024 5:13:40 PM	Google Patents	Search Term 1 solar cell Search Term 2 integrated Search Term 3 spectacles according Search Term 4 integration Search Term 5 glasses Before Priority Date: priority:20020211
12/13/2024 5:13:49 PM	Google Scholar	electro lens active focal length layer
12/13/2024 5:13:49 PM	Google Patents	Search Term 1 electro Search Term 2 lens Search Term 3 active Search Term 4 focal length Search Term 5 layer Before Priority Date: priority:19990702
12/13/2024 5:13:57 PM	Google Scholar	values speaker listener location speech

date, time	web site	search string
12/13/2024 5:13:57 PM	Google Patents	Search Term 1 values Search Term 2 speaker Search Term 3 listener Search Term 4 location Search Term 5 speech Before Priority Date: priority:20001127
12/13/2024 5:16:29 PM	Google Scholar	patient treatment software prescription visual acuity
12/13/2024 5:16:29 PM	Google Patents	Search Term 1 patient Search Term 2 treatment Search Term 3 software Search Term 4 prescription Search Term 5 visual acuity Before Priority Date: priority:20020517
12/13/2024 5:16:35 PM	Google Scholar	yoke vibrating plate bone conductive speaker conductive speaker
12/13/2024 5:16:35 PM	Google Patents	Search Term 1 yoke Search Term 2 vibrating plate Search Term 3 bone conductive Search Term 4 speaker Search Term 5 conductive speaker Before Priority Date: priority:20020528
12/13/2024 5:16:42 PM	Google Scholar	array radiation filters absorptive transmission

date, time	web site	search string
12/13/2024 5:16:42 PM	Google Patents	Search Term 1 array Search Term 2 radiation Search Term 3 filters Search Term 4 absorptive Search Term 5 transmission Before Priority Date: priority:19961230
12/13/2024 5:16:48 PM	Google Scholar	eyewear according eyewear front frame sidepiece display
12/13/2024 5:16:48 PM	Google Patents	Search Term 1 eyewear according Search Term 2 eyewear Search Term 3 front frame Search Term 4 sidepiece Search Term 5 display Before Priority Date: priority:20020524
12/13/2024 5:16:55 PM	Google Scholar	exposure light color printed blue
12/13/2024 5:16:55 PM	Google Patents	Search Term 1 exposure Search Term 2 light Search Term 3 color Search Term 4 printed Search Term 5 blue Before Priority Date: priority:19980130
12/13/2024 5:17:02 PM	Google Scholar	wearer media device visual media cndot lens

date, time	web site	search string
12/13/2024 5:17:02 PM	Google Patents	Search Term 1 wearer Search Term 2 media device Search Term 3 visual media Search Term 4 cndot Search Term 5 lens Before Priority Date: priority:20020617
12/13/2024 5:24:36 PM	Google Scholar	electro active lens range finder optical
12/13/2024 5:24:36 PM	Google Patents	Search Term 1 electro Search Term 2 active Search Term 3 lens Search Term 4 range finder Search Term 5 optical Before Priority Date: priority:20000623
12/13/2024 5:24:45 PM	Google Scholar	support structure sensor tunnel temperature skin
12/13/2024 5:24:45 PM	Google Patents	Search Term 1 support structure Search Term 2 sensor Search Term 3 tunnel Search Term 4 temperature Search Term 5 skin Before Priority Date: priority:20020422
12/13/2024 5:25:04 PM	Google Scholar	ultrasonic khz ultra frequency waves

date, time	web site	search string
12/13/2024 5:25:04 PM	Google Patents	Search Term 1 ultrasonic Search Term 2 khz Search Term 3 ultra Search Term 4 frequency Search Term 5 waves Before Priority Date: priority:19971125
12/13/2024 5:30:05 PM	Google Scholar	eyeglass support wearer frame audio
12/13/2024 5:30:05 PM	Google Patents	Search Term 1 eyeglass Search Term 2 support Search Term 3 wearer Search Term 4 frame Search Term 5 audio Before Priority Date: priority:20020726
12/13/2024 5:30:12 PM	Google Scholar	rfid tag antenna structure antenna rfid module
12/13/2024 5:30:12 PM	Google Patents	Search Term 1 rfid tag Search Term 2 antenna structure Search Term 3 antenna Search Term 4 rfid Search Term 5 module Before Priority Date: priority:20020912
12/13/2024 5:30:17 PM	Google Scholar	sensor sound generating generating assembly melody eyeglass frames

date, time	web site	search string
12/13/2024 5:30:17 PM	Google Patents	Search Term 1 sensor Search Term 2 sound generating Search Term 3 generating assembly Search Term 4 melody Search Term 5 eyeglass frames Before Priority Date: priority:20021001
12/13/2024 5:30:24 PM	Google Scholar	recording device imaging system mobile imaging mobile user
12/13/2024 5:30:24 PM	Google Patents	Search Term 1 recording device Search Term 2 imaging system Search Term 3 mobile imaging Search Term 4 mobile Search Term 5 user Before Priority Date: priority:20011221
12/13/2024 5:30:33 PM	Google Scholar	subject data monitoring system display unit blood oxygen
12/13/2024 5:30:33 PM	Google Patents	Search Term 1 subject Search Term 2 data Search Term 3 monitoring system Search Term 4 display unit Search Term 5 blood oxygen Before Priority Date: priority:19991109
12/13/2024 5:30:40 PM	Google Scholar	display device information display spectacle frame speaker user

date, time	web site	search string
12/13/2024 5:30:40 PM	Google Patents	Search Term 1 display device Search Term 2 information display Search Term 3 spectacle frame Search Term 4 speaker Search Term 5 user Before Priority Date: priority:20021115
12/13/2024 5:42:29 PM	Google Scholar	image user affective information scene
12/13/2024 5:42:29 PM	Google Patents	Search Term 1 image Search Term 2 user Search Term 3 affective Search Term 4 information Search Term 5 scene Before Priority Date: priority:20021125
12/13/2024 5:42:36 PM	Google Scholar	equipment individual scanner smart tag smart
12/13/2024 5:42:36 PM	Google Patents	Search Term 1 equipment Search Term 2 individual Search Term 3 scanner Search Term 4 smart tag Search Term 5 smart Before Priority Date: priority:20021121
12/13/2024 5:42:43 PM	Google Scholar	state type display glasses type communication terminal voice

date, time	web site	search string
12/13/2024 5:42:43 PM	Google Patents	Search Term 1 state Search Term 2 type display Search Term 3 glasses type Search Term 4 communication terminal Search Term 5 voice Before Priority Date: priority:20021128
12/13/2024 5:42:52 PM	Google Scholar	audio modulated directional loudspeaker amplifier signal
12/13/2024 5:42:52 PM	Google Patents	Search Term 1 audio Search Term 2 modulated Search Term 3 directional loudspeaker Search Term 4 amplifier Search Term 5 signal Before Priority Date: priority:20021030
12/13/2024 5:43:00 PM	Google Scholar	assembly recited hat audio section
12/13/2024 5:43:00 PM	Google Patents	Search Term 1 assembly Search Term 2 recited Search Term 3 hat Search Term 4 audio Search Term 5 section Before Priority Date: priority:20030108
12/13/2024 5:43:08 PM	Google Scholar	light source clamp illumination socket light

date, time	web site	search string
12/13/2024 5:43:08 PM	Google Patents	Search Term 1 light source Search Term 2 clamp Search Term 3 illumination Search Term 4 socket Search Term 5 light Before Priority Date: priority:20020809
12/13/2024 5:43:16 PM	Google Scholar	optic eye adjacent folding image source folding optic
12/13/2024 5:43:16 PM	Google Patents	Search Term 1 optic Search Term 2 eye Search Term 3 adjacent folding Search Term 4 image source Search Term 5 folding optic Before Priority Date: priority:20010507
12/13/2024 5:43:32 PM	Google Scholar	user image user interface physical hand hand
12/13/2024 5:43:32 PM	Google Patents	Search Term 1 user Search Term 2 image Search Term 3 user interface Search Term 4 physical hand Search Term 5 hand Before Priority Date: priority:19991229
12/13/2024 5:54:14 PM	Google Scholar	glasses light assembly light housing pair

date, time	web site	search string
12/13/2024 5:54:14 PM	Google Patents	Search Term 1 glasses Search Term 2 light assembly Search Term 3 light Search Term 4 housing Search Term 5 pair Before Priority Date: priority:20030130
12/13/2024 5:54:22 PM	Google Scholar	support wearer eyeglass frame audio
12/13/2024 5:54:22 PM	Google Patents	Search Term 1 support Search Term 2 wearer Search Term 3 eyeglass Search Term 4 frame Search Term 5 audio Before Priority Date: priority:20000602
12/13/2024 5:54:28 PM	Google Scholar	video scaler overlay memory display
12/13/2024 5:54:28 PM	Google Patents	Search Term 1 video Search Term 2 scaler Search Term 3 overlay Search Term 4 memory Search Term 5 display Before Priority Date: priority:20001003
12/13/2024 5:54:36 PM	Google Scholar	dimensional subject frame frames model

date, time	web site	search string
12/13/2024 5:54:36 PM	Google Patents	Search Term 1 dimensional Search Term 2 subject Search Term 3 frame Search Term 4 frames Search Term 5 model Before Priority Date: priority:20001031
12/13/2024 5:54:46 PM	Google Scholar	bone conduction headset user band ear
12/13/2024 5:54:46 PM	Google Patents	Search Term 1 bone conduction Search Term 2 headset Search Term 3 user Search Term 4 band Search Term 5 ear Before Priority Date: priority:20010705
12/13/2024 5:54:52 PM	Google Scholar	display apparatus image display holding member combiner lens
12/13/2024 5:54:52 PM	Google Patents	Search Term 1 display apparatus Search Term 2 image display Search Term 3 holding member Search Term 4 combiner Search Term 5 lens Before Priority Date: priority:20000911
12/13/2024 5:54:59 PM	Google Scholar	glasses intelligent tag chip coil digital data

date, time	web site	search string
12/13/2024 5:54:59 PM	Google Patents	Search Term 1 glasses Search Term 2 intelligent tag Search Term 3 chip Search Term 4 coil Search Term 5 digital data Before Priority Date: priority:20030513
12/13/2024 5:55:06 PM	Google Scholar	light emitting emitting diodes illumination electrical user
12/13/2024 5:55:06 PM	Google Patents	Search Term 1 light emitting Search Term 2 emitting diodes Search Term 3 illumination Search Term 4 electrical Search Term 5 user Before Priority Date: priority:20030331
12/13/2024 5:55:15 PM	Google Scholar	display subsystem computer eye coupled
12/13/2024 5:55:15 PM	Google Patents	Search Term 1 display Search Term 2 subsystem Search Term 3 computer Search Term 4 eye Search Term 5 coupled Before Priority Date: priority:19961002
12/13/2024 5:55:27 PM	Google Scholar	support latching temple receiver female

date, time	web site	search string
12/13/2024 5:55:27 PM	Google Patents	Search Term 1 support Search Term 2 latching Search Term 3 temple Search Term 4 receiver Search Term 5 female Before Priority Date: priority:20030811

Web Search History

date, time	web site	search string
12/16/2024 3:07:04 PM	Google Scholar	audio wearable speakers communication device audio system
12/16/2024 3:07:04 PM	Google Patents	Search Term 1 audio Search Term 2 wearable Search Term 3 speakers Search Term 4 communication device Search Term 5 audio system Before Priority Date: priority:20020826
12/16/2024 3:07:12 PM	Google Scholar	ear eyeglass audio speakers frame
12/16/2024 3:07:12 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
12/16/2024 3:07:22 PM	Google Scholar	eyewear temple frame radio frequency frequency transceiver

date, time	web site	search string
12/16/2024 3:07:22 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
12/16/2024 3:07:28 PM	Google Scholar	earphone wearer eyeglass support lens
12/16/2024 3:07:28 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
12/16/2024 3:07:35 PM	Google Scholar	earphone player voice player voice present
12/16/2024 3:07:35 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
12/16/2024 3:07:43 PM	Google Scholar	content protection audio configuring bluetooth communication

date, time	web site	search string
12/16/2024 3:07:43 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
12/16/2024 3:07:59 PM	Google Scholar	band portion headphone device headphone wearer connecting members
12/16/2024 3:07:59 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
12/16/2024 3:08:07 PM	Google Scholar	music glasses sounding device circuit board chamber
12/16/2024 3:08:07 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
12/16/2024 3:08:51 PM	Google Scholar	eyeglass interface system camera audio integrated circuits

date, time	web site	search string
12/16/2024 3:08:51 PM	Google Patents	Search Term 1 eyeglass Search Term 2 interface system Search Term 3 camera Search Term 4 audio Search Term 5 integrated circuits Before Priority Date: priority:19971030
12/16/2024 3:17:07 PM	Google Scholar	documentation information documentation data data real information
12/16/2024 3:17:07 PM	Google Patents	Search Term 1 documentation Search Term 2 information Search Term 3 documentation data Search Term 4 data Search Term 5 real information Before Priority Date: priority:19990325
12/16/2024 3:17:13 PM	Google Scholar	data operating acquisition means designed observation
12/16/2024 3:17:13 PM	Google Patents	Search Term 1 data Search Term 2 operating Search Term 3 acquisition means Search Term 4 designed Search Term 5 observation Before Priority Date: priority:19990302
12/16/2024 3:17:19 PM	Google Scholar	arm phone user image phone body

date, time	web site	search string
12/16/2024 3:17:19 PM	Google Patents	Search Term 1 arm Search Term 2 phone Search Term 3 user Search Term 4 image Search Term 5 phone body Before Priority Date: priority:20001110
12/16/2024 3:17:27 PM	Google Scholar	language learning virtual world studying education
12/16/2024 3:17:27 PM	Google Patents	Search Term 1 language Search Term 2 learning Search Term 3 virtual world Search Term 4 studying Search Term 5 education Before Priority Date: priority:20020511
12/16/2024 3:17:41 PM	Google Scholar	image capture remote device image data images user
12/16/2024 3:17:41 PM	Google Patents	Search Term 1 image capture Search Term 2 remote device Search Term 3 image data Search Term 4 images Search Term 5 user Before Priority Date: priority:20010727
12/16/2024 3:17:47 PM	Google Scholar	multidimensional video receptors video data audio

date, time	web site	search string
12/16/2024 3:17:47 PM	Google Patents	Search Term 1 multidimensional Search Term 2 video Search Term 3 receptors Search Term 4 video data Search Term 5 audio Before Priority Date: priority:19980127
12/16/2024 3:17:54 PM	Google Scholar	reader keyboard indicia monitor light
12/16/2024 3:17:54 PM	Google Patents	Search Term 1 reader Search Term 2 keyboard Search Term 3 indicia Search Term 4 monitor Search Term 5 light Before Priority Date: priority:19981110
12/16/2024 3:18:02 PM	Google Scholar	wearer eyewear speaker microphone unit
12/16/2024 3:18:02 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
12/16/2024 3:18:13 PM	Google Scholar	support display support member user ear

date, time	web site	search string
12/16/2024 3:18:13 PM	Google Patents	Search Term 1 support Search Term 2 display Search Term 3 support member Search Term 4 user Search Term 5 ear Before Priority Date: priority:20010907
12/16/2024 3:39:49 PM	Google Scholar	values speaker listener location speech
12/16/2024 3:39:49 PM	Google Patents	Search Term 1 values Search Term 2 speaker Search Term 3 listener Search Term 4 location Search Term 5 speech Before Priority Date: priority:20001127
12/16/2024 3:39:56 PM	Google Scholar	audio video wearer pick mounting means
12/16/2024 3:39:56 PM	Google Patents	Search Term 1 audio Search Term 2 video Search Term 3 wearer Search Term 4 pick Search Term 5 mounting means Before Priority Date: priority:20020403
12/16/2024 3:40:03 PM	Google Scholar	eyewear according eyewear front frame sidepiece display

date, time	web site	search string
12/16/2024 3:40:03 PM	Google Patents	Search Term 1 eyewear according Search Term 2 eyewear Search Term 3 front frame Search Term 4 sidepiece Search Term 5 display Before Priority Date: priority:20020524
12/16/2024 3:40:10 PM	Google Scholar	tracking augmented reality frame acquisition video computer
12/16/2024 3:40:10 PM	Google Patents	Search Term 1 tracking Search Term 2 augmented reality Search Term 3 frame acquisition Search Term 4 video Search Term 5 computer Before Priority Date: priority:20011220
12/16/2024 3:40:20 PM	Google Scholar	speaker eyewear microphone wearer earstem
12/16/2024 3:40:20 PM	Google Patents	Search Term 1 speaker Search Term 2 eyewear Search Term 3 microphone Search Term 4 wearer Search Term 5 earstem Before Priority Date: priority:20011006
12/16/2024 3:40:31 PM	Google Scholar	eyeglasses wire dep electronic temple

date, time	web site	search string
12/16/2024 3:40:31 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
12/16/2024 3:40:39 PM	Google Scholar	user context wearable display processor information
12/16/2024 3:40:39 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
12/16/2024 3:40:50 PM	Google Scholar	touch headset user interface sensitive surface control output
12/16/2024 3:40:50 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
12/16/2024 3:40:59 PM	Google Scholar	housing portion communications device wireless communications right ear housing

date, time	web site	search string
12/16/2024 3:40:59 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
12/16/2024 3:53:50 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
12/16/2024 3:53:58 PM	Google Scholar	coil external frame external coil visor
12/16/2024 3:53:58 PM	Google Patents	Search Term 1 coil Search Term 2 external Search Term 3 frame Search Term 4 external coil Search Term 5 visor Before Priority Date: priority:20061222
12/16/2024 3:54:05 PM	Google Scholar	headphone cradle transmitter audio signal

date, time	web site	search string
12/16/2024 3:54:05 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
12/16/2024 3:54:12 PM	Google Scholar	data selection processing device data processing output
12/16/2024 3:54:12 PM	Google Patents	Search Term 1 data Search Term 2 selection Search Term 3 processing device Search Term 4 data processing Search Term 5 output Before Priority Date: priority:20070131
12/16/2024 3:54:40 PM	Google Scholar	glasses video media player type media memory card
12/16/2024 3:54:40 PM	Google Patents	Search Term 1 glasses Search Term 2 video Search Term 3 media player Search Term 4 type media Search Term 5 memory card Before Priority Date: priority:20070319
12/16/2024 3:54:46 PM	Google Scholar	arrangement headphones housing ear piece seal

date, time	web site	search string
12/16/2024 3:54:46 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
12/16/2024 3:54:53 PM	Google Scholar	headphone ear sound image image forward stereo sound
12/16/2024 3:54:53 PM	Google Patents	Search Term 1 headphone Search Term 2 ear Search Term 3 sound image Search Term 4 image forward Search Term 5 stereo sound Before Priority Date: priority:20070605
12/16/2024 3:55:02 PM	Google Scholar	optical optical element adjustable adjustable connector wearer
12/16/2024 3:55:02 PM	Google Patents	Search Term 1 optical Search Term 2 optical element Search Term 3 adjustable Search Term 4 adjustable connector Search Term 5 wearer Before Priority Date: priority:20061214
12/16/2024 3:55:18 PM	Google Scholar	communication device voice signal ambient noise adjusting polarization reversed

date, time	web site	search string
12/16/2024 3:55:18 PM	Google Patents	Search Term 1 communication device Search Term 2 voice signal Search Term 3 ambient noise Search Term 4 adjusting Search Term 5 polarization reversed Before Priority Date: priority:20070921
12/16/2024 4:14:43 PM	Google Scholar	video video signal display display device compressed
12/16/2024 4:14:43 PM	Google Patents	Search Term 1 video Search Term 2 video signal Search Term 3 display Search Term 4 display device Search Term 5 compressed Before Priority Date: priority:20080104
12/16/2024 4:14:50 PM	Google Scholar	host computing computing device external host display bluetooth
12/16/2024 4:14:50 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
12/16/2024 4:14:57 PM	Google Scholar	telephony profile phone psd network

date, time	web site	search string
12/16/2024 4:14:57 PM	Google Patents	Search Term 1 telephony Search Term 2 profile Search Term 3 phone Search Term 4 psd Search Term 5 network Before Priority Date: priority:20080908
12/16/2024 4:15:04 PM	Google Scholar	smartcard contacts mobile memory memory card interface
12/16/2024 4:15:04 PM	Google Patents	Search Term 1 smartcard Search Term 2 contacts Search Term 3 mobile memory Search Term 4 memory card Search Term 5 interface Before Priority Date: priority:20081006
12/16/2024 4:15:34 PM	Google Scholar	information user telescope electronic visual
12/16/2024 4:15:34 PM	Google Patents	Search Term 1 information Search Term 2 user Search Term 3 telescope Search Term 4 electronic Search Term 5 visual Before Priority Date: priority:20021210
12/16/2024 4:15:40 PM	Google Scholar	mounting user chassis virtual images

date, time	web site	search string
12/16/2024 4:15:40 PM	Google Patents	Search Term 1 mounting Search Term 2 user Search Term 3 chassis Search Term 4 virtual Search Term 5 images Before Priority Date: priority:20030103
12/16/2024 4:15:49 PM	Google Scholar	audio audio device signal transceiver user
12/16/2024 4:15:49 PM	Google Patents	Search Term 1 audio Search Term 2 audio device Search Term 3 signal Search Term 4 transceiver Search Term 5 user Before Priority Date: priority:20020726
12/16/2024 4:15:57 PM	Google Scholar	support wearer eyeglass frame audio
12/16/2024 4:15:57 PM	Google Patents	Search Term 1 support Search Term 2 wearer Search Term 3 eyeglass Search Term 4 frame Search Term 5 audio Before Priority Date: priority:20000602
12/16/2024 4:16:04 PM	Google Scholar	golfer image training aid golf training light

date, time	web site	search string
12/16/2024 4:16:04 PM	Google Patents	Search Term 1 golfer Search Term 2 image Search Term 3 training aid Search Term 4 golf training Search Term 5 light Before Priority Date: priority:20010327
12/16/2024 4:16:17 PM	Google Scholar	user virtual image spectacles display mounting
12/16/2024 4:16:17 PM	Google Patents	Search Term 1 user Search Term 2 virtual image Search Term 3 spectacles Search Term 4 display Search Term 5 mounting Before Priority Date: priority:20021210
12/16/2024 4:21:00 PM	Google Scholar	mount temple temples hinge ophthalmic
12/16/2024 4:21:00 PM	Google Patents	Search Term 1 mount Search Term 2 temple Search Term 3 temples Search Term 4 hinge Search Term 5 ophthalmic Before Priority Date: priority:19550804
12/16/2024 4:21:05 PM	Google Scholar	temple tube solid cavities injection

date, time	web site	search string
12/16/2024 4:21:05 PM	Google Patents	Search Term 1 temple Search Term 2 tube Search Term 3 solid Search Term 4 cavities Search Term 5 injection Before Priority Date: priority:19720922
12/16/2024 4:21:10 PM	Google Scholar	mold rigid liquid resin resin system flexible
12/16/2024 4:21:10 PM	Google Patents	Search Term 1 mold Search Term 2 rigid Search Term 3 liquid resin Search Term 4 resin system Search Term 5 flexible Before Priority Date: priority:19781027
12/16/2024 4:21:15 PM	Google Scholar	temple swimmer temple pieces eyepieces pieces
12/16/2024 4:21:15 PM	Google Patents	Search Term 1 temple Search Term 2 swimmer Search Term 3 temple pieces Search Term 4 eyepieces Search Term 5 pieces Before Priority Date: priority:19930818
12/16/2024 4:30:20 PM	Google Scholar	eyeglass frame frame extension arm eyeglass speaker

date, time	web site	search string
12/16/2024 4:30:20 PM	Google Patents	Search Term 1 eyeglass frame Search Term 2 frame Search Term 3 extension arm Search Term 4 eyeglass Search Term 5 speaker Before Priority Date: priority:20010621
12/16/2024 4:30:29 PM	Google Scholar	headset active noise parameters data handset
12/16/2024 4:30:29 PM	Google Patents	Search Term 1 headset Search Term 2 active noise Search Term 3 parameters Search Term 4 data Search Term 5 handset Before Priority Date: priority:20090717
12/16/2024 4:30:37 PM	Google Scholar	host computing computing device display device handheld wireless content
12/16/2024 4:30:37 PM	Google Patents	Search Term 1 host computing Search Term 2 computing device Search Term 3 display device Search Term 4 handheld wireless Search Term 5 content Before Priority Date: priority:20080328
12/16/2024 4:30:44 PM	Google Scholar	speaker support module coupling wearable support

date, time	web site	search string
12/16/2024 4:30:44 PM	Google Patents	Search Term 1 speaker Search Term 2 support Search Term 3 module Search Term 4 coupling Search Term 5 wearable support Before Priority Date: priority:20000602
12/16/2024 4:30:52 PM	Google Scholar	generating user interface synthetic jet enclosure user
12/16/2024 4:30:52 PM	Google Patents	Search Term 1 generating Search Term 2 user interface Search Term 3 synthetic jet Search Term 4 enclosure Search Term 5 user Before Priority Date: priority:20081219
12/16/2024 4:31:05 PM	Google Scholar	location audiovisual processor communication user
12/16/2024 4:31:05 PM	Google Patents	Search Term 1 location Search Term 2 audiovisual Search Term 3 processor Search Term 4 communication Search Term 5 user Before Priority Date: priority:20021127
12/16/2024 4:31:12 PM	Google Scholar	viewing system binocular viewing optical assembly optical pipe

date, time	web site	search string
12/16/2024 4:31:12 PM	Google Patents	Search Term 1 viewing system Search Term 2 binocular viewing Search Term 3 optical Search Term 4 assembly Search Term 5 optical pipe Before Priority Date: priority:20030425
12/16/2024 4:31:19 PM	Google Scholar	user arrangement according vehicle head information
12/16/2024 4:31:19 PM	Google Patents	Search Term 1 user Search Term 2 arrangement according Search Term 3 vehicle Search Term 4 head Search Term 5 information Before Priority Date: priority:20030829
12/16/2024 4:31:30 PM	Google Scholar	connectors frame body lens end portions section
12/16/2024 4:31:30 PM	Google Patents	Search Term 1 connectors Search Term 2 frame body Search Term 3 lens Search Term 4 end portions Search Term 5 section Before Priority Date: priority:19951113
12/16/2024 4:40:47 PM	Google Scholar	patient network data wireless sensor

date, time	web site	search string
12/16/2024 4:40:47 PM	Google Patents	Search Term 1 patient Search Term 2 network Search Term 3 data Search Term 4 wireless Search Term 5 sensor Before Priority Date: priority:20060516
12/16/2024 4:40:55 PM	Google Scholar	patient data network wireless appliance
12/16/2024 4:40:55 PM	Google Patents	Search Term 1 patient Search Term 2 data Search Term 3 network Search Term 4 wireless Search Term 5 appliance Before Priority Date: priority:20060512
12/16/2024 4:41:04 PM	Google Scholar	patient appliance network data heart
12/16/2024 4:41:04 PM	Google Patents	Search Term 1 patient Search Term 2 appliance Search Term 3 network Search Term 4 data Search Term 5 heart Before Priority Date: priority:20060512
12/16/2024 4:41:13 PM	Google Scholar	data motion user sensor band

date, time	web site	search string
12/16/2024 4:41:13 PM	Google Patents	Search Term 1 data Search Term 2 motion Search Term 3 user Search Term 4 sensor Search Term 5 band Before Priority Date: priority:20110610
12/16/2024 4:41:21 PM	Google Scholar	data wearable device motion user activity
12/16/2024 4:41:21 PM	Google Patents	Search Term 1 data Search Term 2 wearable device Search Term 3 motion Search Term 4 user Search Term 5 activity Before Priority Date: priority:20110610
12/16/2024 4:41:35 PM	Google Scholar	cord eyeglass tethered electrical recited
12/16/2024 4:41:35 PM	Google Patents	Search Term 1 cord Search Term 2 eyeglass Search Term 3 tethered Search Term 4 electrical Search Term 5 recited Before Priority Date: priority:20030415
12/16/2024 4:41:41 PM	Google Scholar	video audio stream camera participant

date, time	web site	search string
12/16/2024 4:41:41 PM	Google Patents	Search Term 1 video Search Term 2 audio Search Term 3 stream Search Term 4 camera Search Term 5 participant Before Priority Date: priority:20030724
12/16/2024 4:41:47 PM	Google Scholar	sunglasses frames band user pat
12/16/2024 4:41:47 PM	Google Patents	Search Term 1 sunglasses Search Term 2 frames Search Term 3 band Search Term 4 user Search Term 5 pat Before Priority Date: priority:20031028
12/16/2024 4:41:53 PM	Google Scholar	location concentrate microemulsion information surfactant
12/16/2024 4:41:53 PM	Google Patents	Search Term 1 location Search Term 2 concentrate Search Term 3 microemulsion Search Term 4 information Search Term 5 surfactant Before Priority Date: priority:20040223
12/16/2024 4:55:01 PM	Google Scholar	speaker audio device audio support wearable wireless

date, time	web site	search string
12/16/2024 4:55:01 PM	Google Patents	Search Term 1 speaker Search Term 2 audio device Search Term 3 audio Search Term 4 support Search Term 5 wearable wireless Before Priority Date: priority:20000602
12/16/2024 4:55:08 PM	Google Scholar	radiation output electronic circuit recited monitoring
12/16/2024 4:55:08 PM	Google Patents	Search Term 1 radiation Search Term 2 output Search Term 3 electronic circuit Search Term 4 recited Search Term 5 monitoring Before Priority Date: priority:20040415
12/16/2024 4:55:14 PM	Google Scholar	glasses pair information recited event
12/16/2024 4:55:14 PM	Google Patents	Search Term 1 glasses Search Term 2 pair Search Term 3 information Search Term 4 recited Search Term 5 event Before Priority Date: priority:20031009
12/16/2024 4:55:22 PM	Google Scholar	image focus head mounted mounted display unit

date, time	web site	search string
12/16/2024 4:55:22 PM	Google Patents	Search Term 1 image Search Term 2 focus Search Term 3 head mounted Search Term 4 mounted display Search Term 5 unit Before Priority Date: priority:20040511
12/16/2024 4:55:38 PM	Google Scholar	patient network wireless appliance data
12/16/2024 4:55:38 PM	Google Patents	Search Term 1 patient Search Term 2 network Search Term 3 wireless Search Term 4 appliance Search Term 5 data Before Priority Date: priority:20060524
12/16/2024 4:55:47 PM	Google Scholar	user personal digital earpiece wearable personal data
12/16/2024 4:55:47 PM	Google Patents	Search Term 1 user Search Term 2 personal digital Search Term 3 earpiece Search Term 4 wearable personal Search Term 5 data Before Priority Date: priority:20110718
12/16/2024 4:56:01 PM	Google Scholar	patient sensor fall data motion

date, time	web site	search string
12/16/2024 4:56:01 PM	Google Patents	Search Term 1 patient Search Term 2 sensor Search Term 3 fall Search Term 4 data Search Term 5 motion Before Priority Date: priority:20051016
12/16/2024 4:56:17 PM	Google Scholar	source audio wearer speaker interface
12/16/2024 4:56:17 PM	Google Patents	Search Term 1 source Search Term 2 audio Search Term 3 wearer Search Term 4 speaker Search Term 5 interface Before Priority Date: priority:20041222
12/16/2024 4:56:31 PM	Google Scholar	wearer assembly speaker structured disposed
12/16/2024 4:56:31 PM	Google Patents	Search Term 1 wearer Search Term 2 assembly Search Term 3 speaker Search Term 4 structured Search Term 5 disposed Before Priority Date: priority:19960906
12/16/2024 5:21:01 PM	Google Scholar	bone conduction helmet headset user crown

date, time	web site	search string
12/16/2024 5:21:01 PM	Google Patents	Search Term 1 bone conduction Search Term 2 helmet Search Term 3 headset Search Term 4 user Search Term 5 crown Before Priority Date: priority:20100924
12/16/2024 5:21:09 PM	Google Scholar	patient appliance data network information
12/16/2024 5:21:09 PM	Google Patents	Search Term 1 patient Search Term 2 appliance Search Term 3 data Search Term 4 network Search Term 5 information Before Priority Date: priority:20060512
12/16/2024 5:21:16 PM	Google Scholar	temple electrical components eyeglasses rearward electrical
12/16/2024 5:21:16 PM	Google Patents	Search Term 1 temple Search Term 2 electrical components Search Term 3 eyeglasses Search Term 4 rearward Search Term 5 electrical Before Priority Date: priority:20030415
12/16/2024 5:21:22 PM	Google Scholar	user data augmented reality processor product

date, time	web site	search string
12/16/2024 5:21:22 PM	Google Patents	Search Term 1 user Search Term 2 data Search Term 3 augmented reality Search Term 4 processor Search Term 5 product Before Priority Date: priority:20110718
12/16/2024 5:21:31 PM	Google Scholar	ear bud wearer head elbow head band
12/16/2024 5:21:31 PM	Google Patents	Search Term 1 ear bud Search Term 2 wearer Search Term 3 head Search Term 4 elbow Search Term 5 head band Before Priority Date: priority:20120703
12/16/2024 5:21:38 PM	Google Scholar	earphone eyeglass wearer carried support
12/16/2024 5:21:38 PM	Google Patents	Search Term 1 earphone Search Term 2 eyeglass Search Term 3 wearer Search Term 4 carried Search Term 5 support Before Priority Date: priority:20000602
12/16/2024 5:21:44 PM	Google Scholar	eyeglasses wireless arms wireless communication frame

date, time	web site	search string
12/16/2024 5:21:44 PM	Google Patents	Search Term 1 eyeglasses Search Term 2 wireless Search Term 3 arms Search Term 4 wireless communication Search Term 5 frame Before Priority Date: priority:20030415
12/16/2024 5:21:49 PM	Google Scholar	head mounted mounted display signals unit display device
12/16/2024 5:21:49 PM	Google Patents	Search Term 1 head mounted Search Term 2 mounted display Search Term 3 signals Search Term 4 unit Search Term 5 display device Before Priority Date: priority:20040909
12/16/2024 5:21:57 PM	Google Scholar	coupled microphone speaker eyeglasses frame
12/16/2024 5:21:57 PM	Google Patents	Search Term 1 coupled Search Term 2 microphone Search Term 3 speaker Search Term 4 eyeglasses Search Term 5 frame Before Priority Date: priority:20010621
12/16/2024 5:36:12 PM	Google Scholar	patient processor sensor data coupled

date, time	web site	search string
12/16/2024 5:36:12 PM	Google Patents	Search Term 1 patient Search Term 2 processor Search Term 3 sensor Search Term 4 data Search Term 5 coupled Before Priority Date: priority:20060516
12/16/2024 5:36:22 PM	Google Scholar	patient client data network treatment
12/16/2024 5:36:22 PM	Google Patents	Search Term 1 patient Search Term 2 client Search Term 3 data Search Term 4 network Search Term 5 treatment Before Priority Date: priority:20060512
12/16/2024 5:36:31 PM	Google Scholar	patient protocol data heart analyzer
12/16/2024 5:36:31 PM	Google Patents	Search Term 1 patient Search Term 2 protocol Search Term 3 data Search Term 4 heart Search Term 5 analyzer Before Priority Date: priority:20070524
12/16/2024 5:36:41 PM	Google Scholar	glasses eyewear temple user recited

date, time	web site	search string
12/16/2024 5:36:41 PM	Google Patents	Search Term 1 glasses Search Term 2 eyewear Search Term 3 temple Search Term 4 user Search Term 5 recited Before Priority Date: priority:20031009
12/16/2024 5:36:52 PM	Google Scholar	temple eyewear frame recited electrical components side section
12/16/2024 5:36:52 PM	Google Patents	Search Term 1 temple Search Term 2 eyewear frame Search Term 3 recited Search Term 4 electrical components Search Term 5 side section Before Priority Date: priority:20031009
12/16/2024 5:37:02 PM	Google Scholar	display information user gaze control
12/16/2024 5:37:02 PM	Google Patents	Search Term 1 display Search Term 2 information Search Term 3 user Search Term 4 gaze Search Term 5 control Before Priority Date: priority:20041001
12/16/2024 5:37:08 PM	Google Scholar	eye audio circuitry ear arm compartment

date, time	web site	search string
12/16/2024 5:37:08 PM	Google Patents	Search Term 1 eye Search Term 2 audio circuitry Search Term 3 ear Search Term 4 arm Search Term 5 compartment Before Priority Date: priority:20041013
12/16/2024 5:37:22 PM	Google Scholar	module user visualisation eye images
12/16/2024 5:37:22 PM	Google Patents	Search Term 1 module Search Term 2 user Search Term 3 visualisation Search Term 4 eye Search Term 5 images Before Priority Date: priority:20041029
12/16/2024 5:37:30 PM	Google Scholar	user data biometric authentication eyewear biometric
12/16/2024 5:37:30 PM	Google Patents	Search Term 1 user Search Term 2 data Search Term 3 biometric authentication Search Term 4 eyewear Search Term 5 biometric Before Priority Date: priority:20041129
12/16/2024 5:37:37 PM	Google Scholar	user signals accelerometer nose input

date, time	web site	search string
12/16/2024 5:37:37 PM	Google Patents	Search Term 1 user Search Term 2 signals Search Term 3 accelerometer Search Term 4 nose Search Term 5 input Before Priority Date: priority:20041229
12/16/2024 5:46:27 PM	Google Scholar	patient data appliance heart rate wearable
12/16/2024 5:46:27 PM	Google Patents	Search Term 1 patient Search Term 2 data Search Term 3 appliance Search Term 4 heart rate Search Term 5 wearable Before Priority Date: priority:20060512
12/16/2024 5:46:35 PM	Google Scholar	eyewear temple recited circuit board electrical components
12/16/2024 5:46:35 PM	Google Patents	Search Term 1 eyewear Search Term 2 temple Search Term 3 recited Search Term 4 circuit board Search Term 5 electrical components Before Priority Date: priority:20031009
12/16/2024 5:46:43 PM	Google Scholar	patient data wearable appliance network

date, time	web site	search string
12/16/2024 5:46:43 PM	Google Patents	Search Term 1 patient Search Term 2 data Search Term 3 wearable Search Term 4 appliance Search Term 5 network Before Priority Date: priority:20060512
12/16/2024 5:46:49 PM	Google Scholar	wireless wireless link quality link computer
12/16/2024 5:46:49 PM	Google Patents	Search Term 1 wireless Search Term 2 wireless link Search Term 3 quality Search Term 4 link Search Term 5 computer Before Priority Date: priority:20131220
12/16/2024 5:47:00 PM	Google Scholar	image distance optical element display subject
12/16/2024 5:47:00 PM	Google Patents	Search Term 1 image Search Term 2 distance Search Term 3 optical element Search Term 4 display Search Term 5 subject Before Priority Date: priority:20040206
12/16/2024 5:47:07 PM	Google Scholar	optical device substrate light waves reflecting surfaces optical

date, time	web site	search string
12/16/2024 5:47:07 PM	Google Patents	Search Term 1 optical device Search Term 2 substrate Search Term 3 light waves Search Term 4 reflecting surfaces Search Term 5 optical Before Priority Date: priority:20050210
12/16/2024 5:47:13 PM	Google Scholar	optical system image optical substrate display
12/16/2024 5:47:13 PM	Google Patents	Search Term 1 optical system Search Term 2 image Search Term 3 optical Search Term 4 substrate Search Term 5 display Before Priority Date: priority:20050210
12/16/2024 5:47:20 PM	Google Scholar	optical system light pipe light modes lens element
12/16/2024 5:47:20 PM	Google Patents	Search Term 1 optical system Search Term 2 light pipe Search Term 3 light Search Term 4 modes Search Term 5 lens element Before Priority Date: priority:20050322
12/16/2024 5:47:32 PM	Google Scholar	information recipient user stress identifier

date, time	web site	search string
12/16/2024 5:47:32 PM	Google Patents	Search Term 1 information Search Term 2 recipient Search Term 3 user Search Term 4 stress Search Term 5 identifier Before Priority Date: priority:20050414
12/16/2024 5:49:29 PM	Google Scholar	transmitter switch earphones antenna radio
12/16/2024 5:49:29 PM	Google Patents	Search Term 1 transmitter Search Term 2 switch Search Term 3 earphones Search Term 4 antenna Search Term 5 radio Before Priority Date: priority:19930119
12/16/2024 5:49:34 PM	Google Scholar	eye limbus iop changes recited
12/16/2024 5:49:34 PM	Google Patents	Search Term 1 eye Search Term 2 limbus Search Term 3 iop Search Term 4 changes Search Term 5 recited Before Priority Date: priority:19930804
12/16/2024 5:49:41 PM	Google Scholar	information recipient user station encrypted

date, time	web site	search string
12/16/2024 5:49:41 PM	Google Patents	Search Term 1 information Search Term 2 recipient Search Term 3 user Search Term 4 station Search Term 5 encrypted Before Priority Date: priority:20050414
12/16/2024 5:49:46 PM	Google Scholar	acquisition system data acquisition image target wearable data
12/16/2024 5:49:46 PM	Google Patents	Search Term 1 acquisition system Search Term 2 data acquisition Search Term 3 image Search Term 4 target Search Term 5 wearable data Before Priority Date: priority:20050317
12/16/2024 5:49:54 PM	Google Scholar	user signal image sight sound
12/16/2024 5:49:54 PM	Google Patents	Search Term 1 user Search Term 2 signal Search Term 3 image Search Term 4 sight Search Term 5 sound Before Priority Date: priority:20030512
12/16/2024 5:50:01 PM	Google Scholar	camera electronic image signal user

date, time	web site	search string
12/16/2024 5:50:01 PM	Google Patents	Search Term 1 camera Search Term 2 electronic Search Term 3 image Search Term 4 signal Search Term 5 user Before Priority Date: priority:20050530
12/16/2024 5:50:12 PM	Google Scholar	data media wearable device media control another
12/16/2024 5:50:12 PM	Google Patents	Search Term 1 data Search Term 2 media Search Term 3 wearable device Search Term 4 media control Search Term 5 another Before Priority Date: priority:20110610
12/16/2024 5:50:20 PM	Google Scholar	electronic device holder housing wearable user
12/16/2024 5:50:20 PM	Google Patents	Search Term 1 electronic device Search Term 2 holder Search Term 3 housing Search Term 4 wearable Search Term 5 user Before Priority Date: priority:20140110
12/16/2024 5:50:28 PM	Google Scholar	lens blocking blocking time controller user

date, time	web site	search string
12/16/2024 5:50:28 PM	Google Patents	Search Term 1 lens Search Term 2 blocking Search Term 3 blocking time Search Term 4 controller Search Term 5 user Before Priority Date: priority:20110915
12/16/2024 5:50:34 PM	Google Scholar	video processing unit video processing visual prosthesis prosthesis apparatus
12/16/2024 5:50:34 PM	Google Patents	Search Term 1 video Search Term 2 processing unit Search Term 3 video processing Search Term 4 visual prosthesis Search Term 5 prosthesis apparatus Before Priority Date: priority:20070614

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US	11183256			07/15/2005	US 60647826 US 60527565 US 60583169 US 60509631 US 10964011 US 60562798 US 60620238 US 60618107 US 60605191 US 11183256 US 60592045 US 60647836	US 20060023158 A1 US 7500747 B2	02/02/2006 03/10/2009
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US	11580222			10/11/2006	US 60583169 US 60725896 US 11183269 US 60787850 US 60846150 US 10964011 US 60725999 US 60527565 US 60509631 US 60562798 US 60620238 US 11580222 US 60618107 US 60605191 US 60592045 US 60647836	US 20070046887 A1 US 7581833 B2	03/01/2007 09/01/2009
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US	11700550			01/30/2007	US 60583169 US 11700550 US 11078855 US 60787850 US 60846150 US 60647826 US 60763854 US 60562798 US 60620238 US 60618107 US 60605191 US 60592045 US 60647836	US 20070186330 A1	08/16/2007

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CN	200710090621			04/02/2007	US 60787850	CN 101046557 A	10/03/2007
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US	12074302			03/03/2008	US 11521256 US 60527565 US 60583169 US 60509631 US 10964011 US 60562798 US 12074302 US 60605191 US 60592045	US 20080151179 A1 US 7621634 B2	06/26/2008 11/24/2009
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US	12317043			12/18/2008	US 60583169 US 11183276 US 10964011 US 11891411 US 12317043 US 60647826 US 60527565 US 60509631 US 60562798 US 60620238 US 60618107 US 12214435 US 60605191 US 60592045 US 60647836	US 20090141233 A1 US 7771046 B2	06/04/2009 08/10/2010
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