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(54) Title: AN IMPLANTABLE OPHTHALMIC DEVICE WITH MULTIPLE STATIC APERTURES

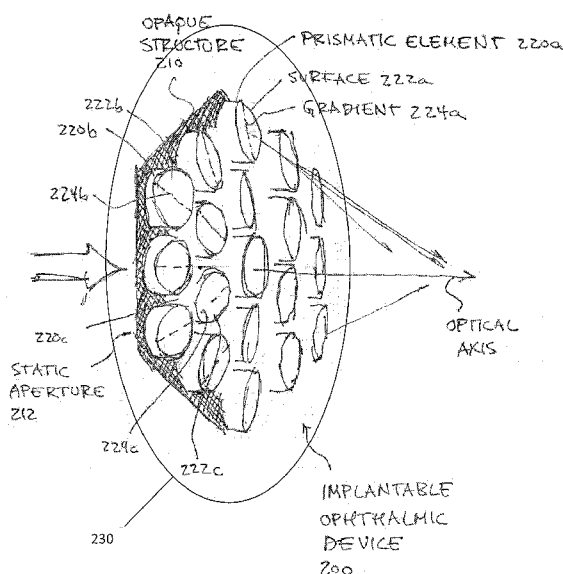


FIG. 2

(57) Abstract: An implantable ophthalmic device, such as
an intraocular lens, includes two or more apertures whose
sizes, shapes, and positions are fixed with respect to the
device itself. Each of these static apertures replicates an in-
cident image beam as a shifted image beam, where the direc-
tion and magnitude of the shift depend on the static aper-
ture's position with respect to the device's optical axis. The
device also includes a prismatic element optically coupled to
each static aperture. Each prismatic element receives the
shifted image beam from its corresponding static aperture
and refracts the shifted image beam such that the resulting
refracted beams form a single image at the image plane (ret-
ina). Together, the static apertures and the prismatic ele-
ments increase the device's effective depth of field (e.g., by
up to three Diopters).

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/25922

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61F 2/16 (2012.01)

USPC - 623/6.11

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)

USPC: 623/6.11

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 623/4.1, 6.25, 6.27, 6.28, 6.32, 6.33, 6.11 (keyword limited; terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(PGPB, USPT, EPAB, JPAB); Google

Search Terms Used: IOL, intraocular lens, prism\$4, multiple, plurality, lens\$2, intraocular, depth, opaque, aperture, apodiz\$5, mask, attenuat\$3, microlens, microlenses, phase, align\$4, sync\$9, shift\$3, match\$3, mismatch\$3

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2010/0110179 A1 (ZALEVSKY et al) 06 May 2010 (06.05.2010) fig 1, para [0022], [0058]-[0059]	1, 3, 6-8, 10, 15-16 ----- 2, 4-5, 9, 11-14, 17-19, 25-29
Y	US 2006/0034003 A1 (ZALEVSKY) 16 February 2006 (16.02.2006) para [0040], [0075], [0094], [0100]-[0101]	17, 20-24, 27
Y	US 2009/0234448 A1 (WEEBER et al) 17 September 2009 (17.09.2009) fig 7, para [0030], [0064]-[0065]	2, 11-13, 20-29
Y	US 4,976,732 A (VOROSMARTHY) 11 December 1990 (11.12.1990) fig 15, col 5, ln 18-25, col 5, ln 47-64	4-5, 9
Y	US 2009/0112314 A1 (SARVER et al) 30 April 2009 (30.04.2009) fig 1A, para [0030]	14
Y	US 2005/0256571 A1 (AZAR) 17 November 2005 (17.11.2005) para [0027]	18-19, 28
Y	US 5,699,142 A (LEE et al) 16 December 1997 (16.12.1997) col 3, ln 10-20	22, 26
Y	US 5,054,905 A (COHEN) 08 October 1991 (08.10.1991) col 5, ln 32-36	19, 24, 29

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"E" earlier application or patent but published on or after the international filing date

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"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

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"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

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