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(54) **Title:** REFLECTOR WITH FOCUSED OUTPUT

(57) **Abstract:** A reflector with focused output is disclosed. The reflector comprises a reference parabolic portion and a plurality of non-reference parabolic portions. A focal length of the plurality of non-reference parabolic portions is determined from a focal length of the reference parabolic portion. In one embodiment, the focal length of the plurality of non-reference parabolic portions is a perpendicularly projected distance from a focus of the reference parabolic portion onto a central axis of the plurality of non-reference parabolic portions. In one embodiment, the focal lengths of the reference parabolic portion and the plurality of non-reference parabolic portions are scaled by a constant. A method of designing a reflector and an obstruction light that uses the reflector is also disclosed.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2011/050852

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

F21V7/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

CNKI, CNPAT, WPI, EPODOC: reflect+, concave, convex, focal length, referen+, parabolic, obstruct+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US5258897A (KOITO MANUFACTURING CO., LTD.) 02 Nov.1993(02.11.1993) the whole document	1-19
A	US6493096B1 (KOITO MANUFACTURING CO., LTD.) 10 Dec.2002(10.12.2002) the whole document	1-19
A	JP9-129004A (KOITO MFG. CO., LTD.) 16 May 1997(16.05.1997) the whole document	1-19

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	“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
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“&”document member of the same patent family
“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	

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Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer ZHOU, Qingcheng Telephone No. (86-10)82245888

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP2003-249106A(ICHIKOH INDUSTRIES LTD.)05 Sep.2003(05.09.2003)the whole document	1-19
A	CN1114726A(SHENYANG INSTR & METERS TECHNO.) 10 Jan.1996(10.01. 1996) the whole document	1-19

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A. CLASSIFICATION OF SUBJECT MATTER

F21V7/06 (2006.01) i

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
US6493096B1	10.12.2002	FR2799271A1	06.04.2001
		DE10048142A1	19.04.2001
		JP2001101912A	13.04.2001
		GB2360379A	19.09.2001
		KR20010039958A	15.05.2001
		GB2360379B	22.10.2003
		KR100436807B	23.06.2004
		JP4050432B2	20.02.2008
		DE10048142B4	03.04.2008
US5258897A	02.11.1993	DE4200989A	06.08.1992
		FR2672109A1	31.07.1992
		FR2706586A1	23.12.1994
		GB2280740A	08.02.1995
		US5390097A	14.02.1995
		GB2253043B	03.05.1995
		GB2280740B	03.05.1995
		DE4200989C2	23.05.1996
		JP4248202A	03.09.1992
		JP2610546B2	14.05.1997
		GB2306637A	07.05.1997
		GB2306637B	29.04.1998
JP9-129004A	16.05.1997	US5931574A	03.08.1999
		JP3145910B2	12.03.2001
		EP1338468A2	27.08.2003
JP2003-249106A	05.09.2003	JP3966017B2	29.08.2007
CN1114726A	10.01.1996	NONE	