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(54) Title: METHODS FOR FORMING OPTIMIZED LENSES AND DEVICES THEREOF

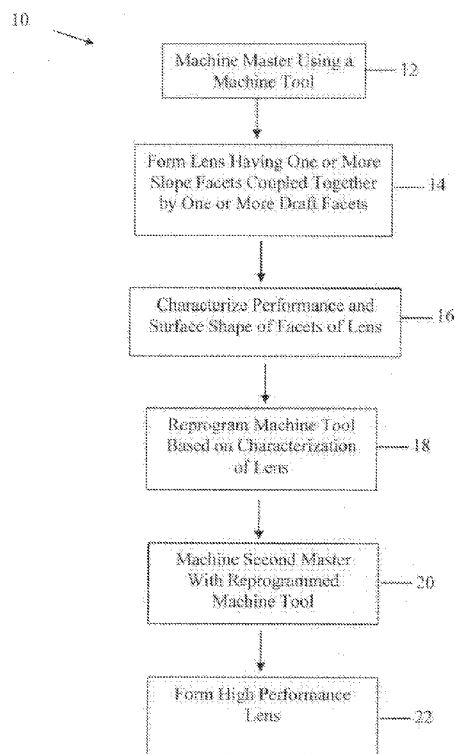


FIG. 1

(57) Abstract: This technology relates generally to methods for the fabrication of high performance lenses, in particular, lenses including a glass carrier and an at least partially transmissive layer with one or more slope facets coupled together by one or more draft facets on a surface of the glass carrier. The methods involve identifying geometric errors in the slope and draft facets to create correction factors and forming corrected slope and draft facets based on the correction factors. This technology also relates to the resulting lenses and lens arrays.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER***H01L 31/052(2006.01)i, H01L 31/18(2006.01)i, G02B 3/00(2006.01)i***

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)

H01L 31/052; G02B 1/11; H01L 35/00; H01L 31/0232; H01L 31/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: (photovoltaic, solar), lens, fresnel lens, transmissive

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2011-0030765 A1 (YANG MINJU) 10 February 2011 See abstract, paragraphs [0060]-[0088], claims 1-4 and figures 1-5, 7-8.	1-25
A	US 2005-0092360 A1 (ROY CLARK) 05 May 2005 See abstract, paragraphs [0023]-[0026], claims 11-13 and figure 1-2, 4.	1-25
A	US 2011-0056530 A1 (CHANG LIANN-BE) 10 March 2011 See abstract, paragraphs [0018]-[0019], claims 1, 9 and figures 2-6.	1-25
A	US 2009-0250095 A1 (THORLEY BRENT PERRY et al.) 08 October 2009 See abstract, paragraph [0045], claims 1, 16, 22 and figures 1, 6.	1,16,25



Further documents are listed in the continuation of Box C.



See patent family annex.

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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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011-0030765 A1	10.02.2011	AU 2009-234841 A1 EP 2278630 A1 JP W020-091257 22A1 WO 2009-125722 A1	15.10.2009 26.01.2011 15.10.2009 15.10.2009
US 2005-0092360 A1	05.05.2005	US 2008-0066799 A1	20.03.2008
US 2011-0056530 A1	10.03.2011	TW 201110384 A	16.03.2011
US 2009-0250095 A1	08.10.2009	None	