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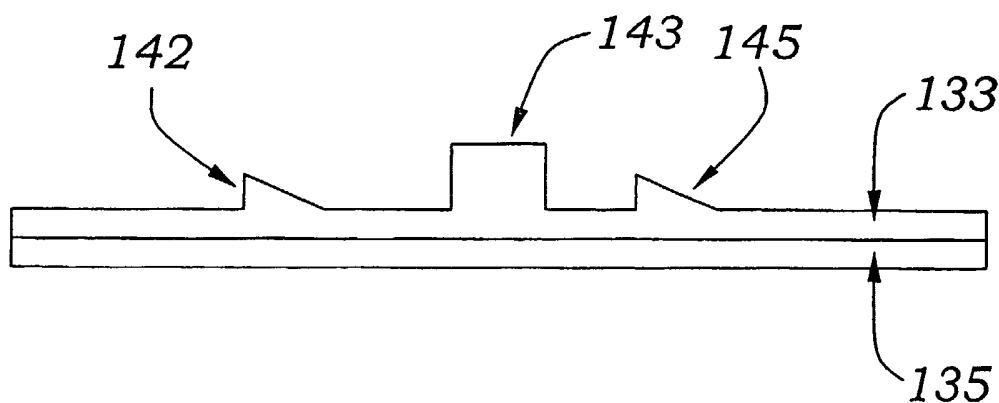
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(54) Title: PLANAR OPTICAL WAVEGUIDE



(57) Abstract: An embossed optical waveguide for light transmission and a method for creating a master and for generating the embossed optical waveguide therefrom. Optical elements (142, 143, 145) can be formed in a layer of polymer (133) after it is cured by reactive ion etching or ion beam milling. The polymer layer (133) which has an index of refraction of 1.55 or greater is bonded to a substrate (135), which is preferably polypropylene, having an index of refraction of preferably 1.50 or less. Since the refractive index of air is approximately 1.0, the polymer layer is sandwiched between two layers of low refractive material. The differences between the indices of refraction cause light projected into the polymer layer (133) to be guided in the polymer layer by total internal reflection. Furthermore, once the optical elements (142, 143, 145) have been formed in the polymer layer, it can be used as a master for generating embossments. The embossments are preferably generated by placing liquid polymer in contact with the master, curing it, and separating the cured polymer embossment from the master.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/15984

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G02B 06/10
US CL : 385/129
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)
U.S. : 385/14,129,130; 65/386,387

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)
Please See Continuation Sheet

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 2002/0039475 A1 (FURUYAMA) 04 April 2002 (04.04.2002), see figure 4, (0086)-(0089).	1, 3, 4, 7, 9, 15, 18. ----- 2, 5, 6, 16, 17
X	US 5,898,803 A (MUELLER-FIEDLER et al) 27 April 1999 (27.04.1999), see figure 1, column 2, lines 43-57.	1-4, 7, 15
X	US 5,170,448 A (ACKLEY et al) 08 December 1992 (08.12.1992), see figure 1, column 2, line 15, through column 4, line 55.	1, 3, 4, 7, 9, 15, 18
X --- Y	US 2001/0053260 A1 (TAKIZAWA et al) 20 December 2001 (20.12.2001), see figure 1, (0066), (0074), (0077).	1, 3, 4, 15, 18 ----- 2, 5, 6, 16, 17

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

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"O" document referring to an oral disclosure, use, exhibition or other means	
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INTERNATIONAL SEARCH REPORT

PCT/US03/15984

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: (polymer near4 waveguide), emboss\$7