

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 September 2004 (10.09.2004)

PCT

(10) International Publication Number
WO 2004/077125 A3

- (51) International Patent Classification:
G02B 26/02 (2006.01) G02B 3/14 (2006.01)
- (21) International Application Number:
PCT/IB2004/050133
- (22) International Filing Date:
19 February 2004 (19.02.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
03075556.5 25 February 2003 (25.02.2003) EP
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AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

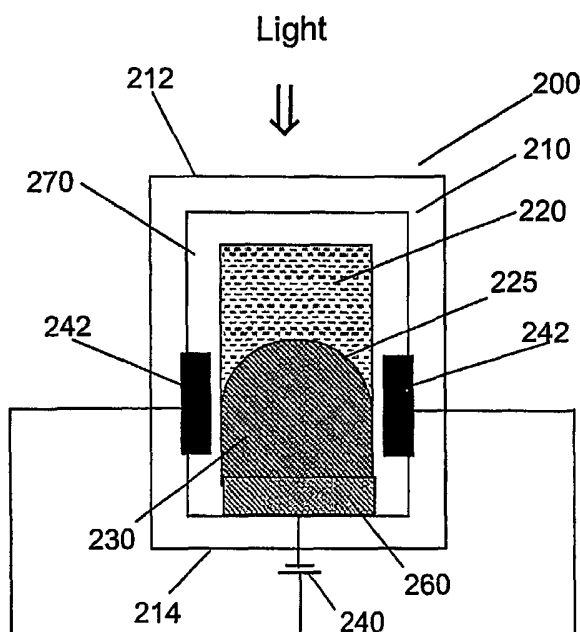
Declaration under Rule 4.17:
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:
— with international search report

(88) Date of publication of the international search report:
20 July 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVEMENTS IN AND RELATING TO FLUID FILLED DEVICES



(57) Abstract: A device (100; 200; 300; 400) comprising a sealed cavity (210) containing n volumes of fluids (80, 87; 220, 230; 320, 332; 420, 422, 430, 432) is described, where n is an integer and n > 2. Each volume of fluid is substantially immiscible with every contiguous volume of fluid. The cavity is defined by an interior surface divided into n continuous areas (60, 170; 260, 270; 360, 362, 370; 460, 462, 470, 472), each continuous area corresponding to and being in contact with a respective one of the volumes of fluid. The wettability of each area is such that each volume of fluid preferentially adheres to the corresponding continuous area rather than any one of the continuous areas adjacent to the corresponding area.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/050133

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G02B26/02 G02B3/14		
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 7 G02B		
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 practical, search terms used) EPO-Internal, INSPEC		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 079 368 A (DISTEFANO THOMAS HERMAN) 14 March 1978 (1978-03-14) column 4, line 23 - line 46; claim 8; figure 1A	1-11
A	--- EP 1 069 450 A (CANON KK) 17 January 2001 (2001-01-17) cited in the application paragraph '0015! - paragraph '0031!; figures 1,2	1-11
A	--- WO 02/069016 A (LIGHTWAVE MICROSYSTEMS CORP) 6 September 2002 (2002-09-06) cited in the application paragraph '0102! - paragraph '0115!; figure 4 --- -/--	1-11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
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Date of the actual completion of the international search	Date of mailing of the international search report	
14 June 2004	23/06/2004	
Name and mailing address of the ISA	Authorized officer	
European Patent Office, P.B. 5618 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	THEOPISTOU, P	

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/050133

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 582 391 A (LEGRAND JACQUES) 15 April 1986 (1986-04-15) column 2, line 66 -column 4, line 30; figures 1A,1B ---	1-11
A	US 6 369 954 B1 (BERGE BRUNO ET AL) 9 April 2002 (2002-04-09) abstract; figures -----	1-11

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/050133

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
US 4079368	A	14-03-1978	DE 2719505 A1	08-12-1977
			FR 2352364 A1	16-12-1977
			GB 1573165 A	13-08-1980
			JP 52140233 A	22-11-1977
EP 1069450	A	17-01-2001	JP 2000356751 A	26-12-2000
			JP 2000356792 A	26-12-2000
			EP 1069450 A2	17-01-2001
			US 6449081 B1	10-09-2002
WO 02069016	A	06-09-2002	US 2003012483 A1	16-01-2003
			WO 02069016 A2	06-09-2002
			WO 02068821 A2	06-09-2002
			US 2003006140 A1	09-01-2003
US 4582391	A	15-04-1986	FR 2524658 A1	07-10-1983
			EP 0090723 A1	05-10-1983
US 6369954	B1	09-04-2002	FR 2769375 A1	09-04-1999
			AT 214164 T	15-03-2002
			CA 2306249 A1	15-04-1999
			DE 69804119 D1	11-04-2002
			DE 69804119 T2	28-11-2002
			EP 1019758 A1	19-07-2000
			ES 2171041 T3	16-08-2002
			WO 9918456 A1	15-04-1999
			JP 2001519539 T	23-10-2001