(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 July 2000 (06.07.2000)

PCT

(10) International Publication Number
WO 00/39617 A3

(51) International Patent Classification[7]: G02B 6/34, 6/16

(21) International Application Number: PCT/US99/28865

(22) International Filing Date: 6 December 1999 (06.12.1999)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/205,943	4 December 1998 (04.12.1998)	US
09/399,495	20 September 1999 (20.09.1999)	US
09/455,865	6 December 1999 (06.12.1999)	US

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(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW.

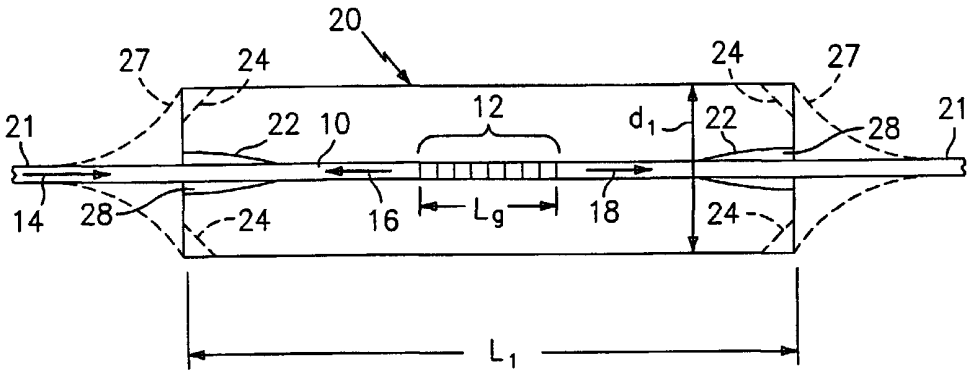
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

(88) Date of publication of the international search report:
10 May 2001

[Continued on next page]

(54) Title: TUBE-ENCASED FIBER GRATING



(57) Abstract: A tube-encased fiber grating includes an optical fiber (10) having at least one Bragg grating (12) impressed therein which is embedded within a glass capillary tube (20). Light (14) is incident on the grating (12) and light (16) is reflected at a reflection wavelength λ1. The shape of the tube (20) may be other geometries (e.g., a "dogbone" shape) and/or more than one concentric tube may be used or more than one grating or pair of gratings may be used. The fiber (10) may be doped at least between a pair of gratings (150, 152), encased in the tube (20) to form a tube-encased compression-tuned fiber laser or the grating (12) or gratings (150, 152) may be constructed as a tunable DFB fiber laser encased in the tube (20). Also, the tube (20) may have an inner region (22) which is tapered away from the fiber (10) to provide strain relief for the fiber (10), or the tube (20) may have tapered (or fluted) sections (27) which have an outer geometry that decreases down to the fiber (10) and provides added fiber pull strength. Also, the tube encased grating (12) exhibits lower mode coupling from the fiber core to the cladding modes due to the increased diameter of the cladding where the tube (20) is fused to the fiber (10) where the grating is located (12).

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INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/US 99/28865

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02B6/34 G02B6/16

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 469 520 A (MOREY WILLIAM W ET AL) 21 November 1995 (1995-11-21) cited in the application abstract; figure 3 column 2, line 14 - line 36 column 4, line 10 - line 55 ---	1-38
A	US 5 745 626 A (DUCK GARY STEPHEN ET AL) 28 April 1998 (1998-04-28) cited in the application abstract; figure 1 column 2, line 54 -column 3, line 17 column 4, line 63 -column 5, line 9 ---	1-38
A	US 4 636 031 A (SCHMADEL JR DONALD C ET AL) 13 January 1987 (1987-01-13) abstract; figure 1 column 2, line 50 -column 3, line 10 --- -/--	1-38

[X] Further documents are listed in the continuation of box C.

[X] 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
7 August 2000	14/08/2000

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INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/US 99/28865

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 855 608 A (NIPPON ELECTRIC CO) 29 July 1998 (1998-07-29) abstract; figure 1 column 4, line 3 - line 31	1-38

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US 99/28865

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		EP 0783718 A	16-07-1997
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