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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**

3 October 2013

(54) **Title:** OPTICAL FIBER CONNECTION SYSTEM INCLUDING OPTICAL FIBER ALIGNMENT DEVICE

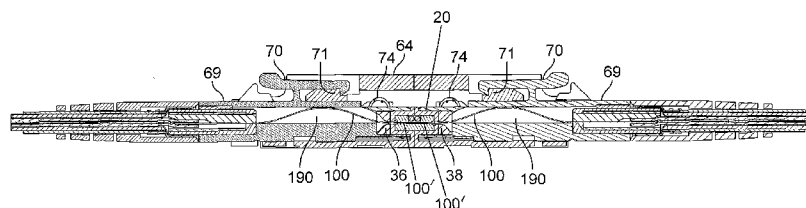


FIG. 19

(57) **Abstract:** The present disclosure relates to an optical fiber alignment device that has an alignment housing that includes first and second ends. The alignment housing defines a fiber insertion axis that extends through the alignment housing between the first and second ends. The alignment housing includes a fiber alignment region at an intermediate location between the first and second ends. First and second fiber alignment rods are positioned within the alignment housing. The first and second fiber alignment rods cooperate to define a fiber alignment groove that extends along the fiber insertion axis. The first and second fiber alignment rods each having rounded ends positioned at the first and second ends of the alignment housing.



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/052345

A. CLASSIFICATION OF SUBJECT MATTER
INV. G02B6/38 G02B6/36
ADD.

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)
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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/087151 A1 (BENJAMIN SELDON DAVID [US] ET AL) 2 April 2009 (2009-04-02) figure 13 figure 11	1-39, 56-59
A	----- US 4 201 444 A (ARNOLD BRUCE K [US] ET AL) 6 May 1980 (1980-05-06) figure 1 column 4, line 62 - line 64	1-39, 56-59
A	----- FR 2 282 650 A1 (CORNING GLASS WORKS [US]) 19 March 1976 (1976-03-19) figure 4 page 4, line 19 - line 22 ----- -/-	1-39, 56-59



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

7 August 2013

Date of mailing of the international search report

16/08/2013

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/052345

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 923 371 A (DALGLEISH JACK FRANK) 2 December 1975 (1975-12-02) figure 5 column 3, line 15 - line 19 -----	1-39, 56-59
A	US 4 964 689 A (WICHANSKY HOWARD [US]) 23 October 1990 (1990-10-23) figure 1 column 2, line 65 - line 66 -----	1-39, 56-59
Y	FR 2 528 587 A1 (ALLIANCE TECH IND [FR]) 16 December 1983 (1983-12-16) figure 1 figure 7 page 5, line 32 - line 33 -----	2-39, 56-59
Y	US 6 142 676 A (LU LIANG-JU [US]) 7 November 2000 (2000-11-07) figure 5 -----	40-55
Y	US 2010/129032 A1 (RILEY MIKE CRAIG [US] ET AL RILEY MIKE C [US] ET AL) 27 May 2010 (2010-05-27) figure 6 -----	40-55

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/052345

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-39, 56-59

an optical fiber alignment device comprising:
an alignment housing including first and second ends, the alignment housing defining a fiber insertion axis that extends through the alignment housing between the first and second ends, the alignment housing including a fiber alignment region at an intermediate location between the first and second ends;
first and second fiber alignment rods positioned within the alignment housing, the first and second fiber alignment rods cooperating to define a fiber alignment groove that extends along the fiber insertion axis;
first and second fiber contact members positioned within the alignment housing; and
a biasing arrangement for urging the first and second fiber contact members generally toward the fiber alignment groove, wherein the first and second fiber alignment rods each having rounded ends positioned at the first and second ends of the alignment housing;

2. claims: 40-55

a fiber optic connector comprising:
a connector body having an interface end;
a shutter mounted at the interface end of the connector body, the shutter being movable between a closed position and an open position; and
a latch mechanism carried with the connector body, the latch mechanism being movable between a latching position where the latch mechanism retains the shutter in the closed position, and a release position where the shutter can be moved from the closed position to the open position.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/052345

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