



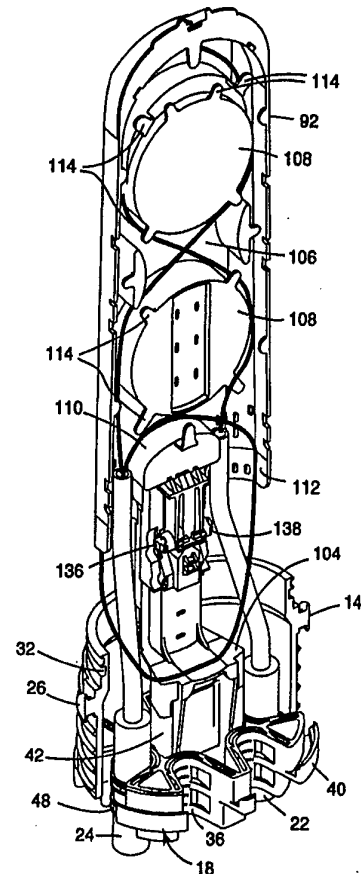
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : G02B 6/44</p>	<p>A3</p>	<p>(11) International Publication Number: WO 96/30792 (43) International Publication Date: 3 October 1996 (03.10.96)</p>
<p>(21) International Application Number: PCT/US96/02428 (22) International Filing Date: 23 February 1996 (23.02.96) (30) Priority Data: 08/414,189 31 March 1995 (31.03.95) US (71) Applicant: MINNESOTA MINING AND MANUFACTURING COMPANY [US/US]; 3M Center, P.O. Box 33427, Saint Paul, MN 55133-3427 (US). (72) Inventors: ALARCON, Sergio, A.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). JACKSON, Jerry, D.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). (74) Agents: MUSGROVE, Jack, V. et al.; Minnesota Mining and Manufacturing Company, Office of Intellectual Property Counsel, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 7 November 1996 (07.11.96)</p>	

(54) Title: CLOSURE WITH CABLE STRAIN RELIEF

(57) Abstract

A closure with improved cable strain relief (18), having a body with a closed end and an open end, a tubular base (14) having first and second ends with the open end of the body releasably secured to the first end of the base, and a strain relief member (18) attached to the second end of the base. The strain relief member is composed entirely of non-metallic components, and includes a plate having cutouts therein forming cable ports, each of the cutouts having a wall and an inner surface along the wall, there being a plurality of gripping teeth (36) along each inner surface, and each wall having at least one channel therein with entry and exit slots. A cable tie securing a cable in one of the cutouts is threaded through the channel, extending out the entry and exit slots. The plate advantageously has a plurality of outer surfaces shaped to fit snugly with an inner surface of the second end of the base, and flanges (40) located at each outer surface for attachment to an edge of the second end of the base. A mounting fixture (104) may be attached to the plate, adapted to receive an optical fiber storage tray or other support member such as a terminal block. The plate, wall, mounting fixture and flanges may be integrally formed of an injection-moldable, thermoplastic polymer.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/02428

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G02B6/44

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 6 G02B H02G

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 369 944 A (HOBART JR FLOYD E) 25 January 1983 see abstract; figures 1-5	1,4
Y	see column 2, line 32 - column 3, line 56	1,4;5,9, 11

Y	US 5 399 811 A (FREMGEN DIETER ET AL) 21 March 1995 see abstract; figures 1,2 see column 5, line 49 - column 6, line 47	1,5,6,9, 11,20

Y	WO 93 26070 A (RAYCHEM LTD ;RAYCHEM SA NV (BE); NOLF JEAN MARIE ETIENNE (BE)) 23 December 1993 see abstract; figures 3,4,6 see page 6, line 18-24 see page 8, line 17-21 see page 11, line 11 - page 12, line 21	1,5,6,9, 11,20

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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- *&* document member of the same patent family

Date of the actual completion of the international search

12 June 1996

Date of mailing of the international search report

27. 09. 96

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+ 31-70) 340-3016

Authorized officer
Beaven, G

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/02428

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 538 009 A (THOMAS & BETTS CORP) 21 April 1993 see abstract; figures 1,7,9,21 see column 7, line 41 - column 8, line 2 ---	1,4-6, 11,20
Y	US 3 604 835 A (HAMILTON DOUGLAS L P) 14 September 1971 see abstract; figures 1-3,6,10,11 see column 5, line 1-40 ---	1
Y	US 3 431 349 A (HAMILTON DOUGLAS L P) 4 March 1969 see column 3, line 51-74; figures 2-4,6 ---	1
Y	US 4 289 288 A (GRANSBERRY N KEITH ET AL) 15 September 1981 see column 4, line 8-17 see column 4, line 30-38; figure 1 ---	1
A	US 5 278 933 A (HUNSINGER TERRANCE D ET AL) 11 January 1994 cited in the application see figure 1 -----	1,3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 96/ 02428

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

1. CLAIMS : 1-11,20
2. CLAIMS : 12-19

FOR FURTHER INFORMATION PLEASE SEE FORM PCT/ISA/206 MAILED 26.06.96

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 fee, this Authority did not invite payment of any additional fee.

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.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

In/ tional Application No PCT/US 96/02428

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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