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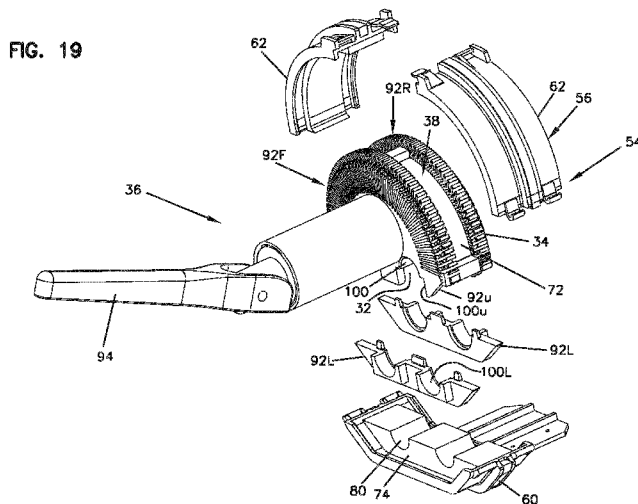
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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, 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, 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:

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

[Continued on next page]

(54) **Title:** CABLE SEALING DEVICE HAVING AUTONOMOUS SEAL CONTAINMENT



(57) **Abstract:** The present disclosure relates to a cable sealing device (30) for providing a seal about a cable (88, 90). The cable sealing device (30) includes a cable seal arrangement (38) that is pressurized to seal the cable (88, 90). The cable sealing device (30) includes an autonomous containment structure (92F, 92R, 56) for laterally and axially containing the sealing arrangement (38). The autonomous containment structure (92F, 92R, 56) includes a moveable portion (92F, 92R) that is moved to an actuated position to pressurize the cable seal arrangement (38). The cable sealing device (30) also includes a retention mechanism (129) for retaining the moveable portion (92F, 92R) in the actuated position. The autonomous containment structure (92F, 92R, 56) further includes an autonomous perimeter casing (56) mounted over the sealing arrangement (38) for laterally containing the cable sealing arrangement (38) such that the cable sealing arrangement (38) remains pressurized when the moveable portion (92F, 92R) is in the actuated position independent of whether the cable sealing device (30) is mounted within an enclosure (20). The cable sealing device (30) has a wrap-around configuration for allowing a cable (88, 90) to be laterally inserted into the cable sealing device (30).





— *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))*

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/058093

A. CLASSIFICATION OF SUBJECT MATTER
INV. H02G15/013 H02G15/076 H02G15/113 H02G15/117 G02B6/44
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)
H02G 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.
A	WO 01/41276 A2 (RXS KABELGARNITUREN GMBH & CO [DE]; MUELLER THORSTEN [DE]; ZIMMER RAIN) 7 June 2001 (2001-06-07) page 1, line 35 - page 4, line 5 page 5, line 1 - page 11, line 24; figures 1-14	1-13
A	WO 2007/118548 A1 (CCS TECHNOLOGY INC [US]; KNORR JENS [DE]; MUELLER THORSTEN [DE]; EICHS) 25 October 2007 (2007-10-25) page 4, line 12 - page 10, line 16; figures 1-3	1-13
A	WO 97/42693 A1 (RAYCHEM SA NV [BE]; RAYCHEM LTD [GB]; WAMBEKE ALAIN [BE]; VANONCKELEN) 13 November 1997 (1997-11-13) the whole document	1-13
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 11 October 2013	Date of mailing of the international search report 24/10/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Hermann, Robert
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/058093

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/02635 A1 (RAYCHEM SA NV [BE]; RAYCHEM LTD [GB]; DAMM JESPER [DK]) 23 January 1997 (1997-01-23) page 6, line 3 - line 9 page 8, last paragraph - page 10, last paragraph; claim 10; figures 1-6b -----	14-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2012/058093

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: 1-13

A cable sealing device comprising a perimeter seal which is connected to the cable seal arrangement by legs that extend through the autonomous perimeter casing.

2. claims: 14-16

A re-entrable telecommunications enclosure with a re-entrable housing wherein closing of the housing automatically causes the cable seal arrangement to be in a compressed state, and the telecommunications enclosure includes a retention mechanism that retains the cable seal arrangement in the compressed state when the telecommunications enclosure is re-entered.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/058093

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 0141276	A2	07-06-2001	AR 027894 A1	16-04-2003
			BR 0015769 A	08-10-2002
			CN 1408136 A	02-04-2003
			EP 1238451 A2	11-09-2002
			ES 2199191 T3	16-02-2004
			MX PA02005453 A	22-09-2003
			US 2002180163 A1	05-12-2002
			WO 0141276 A2	07-06-2001
WO 2007118548	A1	25-10-2007	AU 2007237567 A1	25-10-2007
			BR PI0709489 A2	19-07-2011
			CN 101421894 A	29-04-2009
			DE 202006006019 U1	14-06-2006
			EP 2005547 A1	24-12-2008
			US 2009309313 A1	17-12-2009
			WO 2007118548 A1	25-10-2007
WO 9742693	A1	13-11-1997	AT 222413 T	15-08-2002
			BR 9709145 A	09-05-2000
			CA 2251357 A1	13-11-1997
			CN 1217093 A	19-05-1999
			DE 69714720 D1	19-09-2002
			DE 69714720 T2	10-04-2003
			DK 897606 T3	07-10-2002
			EP 0897606 A1	24-02-1999
			ES 2180040 T3	01-02-2003
			ID 17187 A	11-12-1997
			IL 126423 A	10-12-2003
			JP 4131988 B2	13-08-2008
			JP 2000509954 A	02-08-2000
			PL 329278 A1	15-03-1999
			PT 897606 E	29-11-2002
			RU 2186449 C2	27-07-2002
			TR 9802191 T2	22-03-1999
US 6150608 A	21-11-2000			
WO 9742693 A1	13-11-1997			
WO 9702635	A1	23-01-1997	AR 002612 A1	25-03-1998
			AU 6231096 A	05-02-1997
			BR 9609474 A	29-06-1999
			CA 2225848 A1	23-01-1997
			EP 0835545 A1	15-04-1998
			JP H11507495 A	29-06-1999
			WO 9702635 A1	23-01-1997