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(71) Applicant *(for all designated States except US)*: **CORNING CABLE SYSTEMS LLC** [US/US]; Intellectual Property Department, Sp-ti-3-1, Corning, New York 14831 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LOGAN, Eric R.** [US/US]; 1136 38th Avenue NE, Hickory, North Carolina 28601 (US). **RASMUSSEN, Michael H.** [US/US]; 12432 Shale Drive, Keller, Texas 76248 (US). **RHYNE, Todd R.** [US/US]; 4074 Brickfield Street, Hickory, North Carolina 28602 (US).

(74) Agent: **MONTGOMERY, C. Keith**; Corning Cable Systems LLC, 800 17th Street NW, P.O. Box 489, Hickory, North Carolina 28603 (US).

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(54) Title: DUAL-JACKET CABLE AND TRANSITION ELEMENTS AND ASSEMBLIES THEREFOR

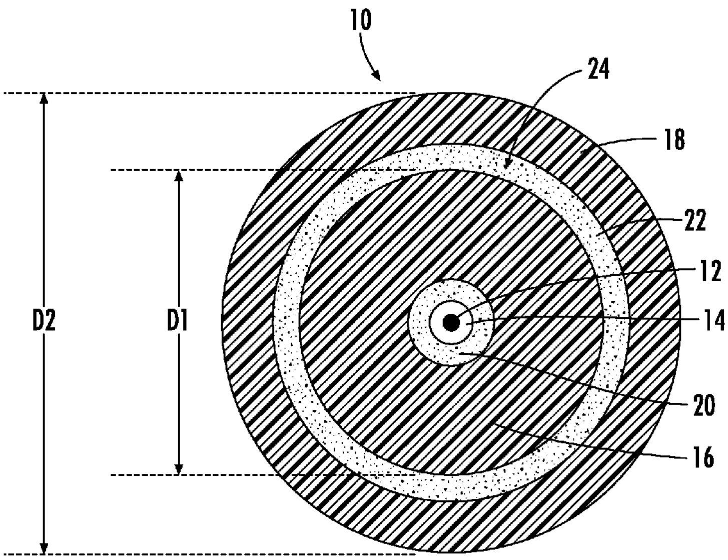

FIG. 1

(57) Abstract: A fiber optic cable has a first layer (20) of aramid strength elements surrounding the optical fiber (s), a first jacket (16) surrounding the layer (20), a second layer (22) of aramid strength elements surrounding the first jacket (16) and an outer second jacket (18). For connectorizing, an end portion of the second jacket (18) is removed and the exposed strength elements (22) are secured by a transition element (40,90,130,150). An end portion of the first jacket (16) is also removed and the strength elements (20) are secured by a second transition element (60,90,130,150).

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DUAL-JACKET CABLE AND TRANSITION ELEMENTS AND ASSEMBLIES THEREFOR

RELATED APPLICATIONS

[001] This application claims the benefit of U.S. Provisional App. No. 61/110,311, filed October 31, 2008, the entire contents of which are incorporated by reference as if presented herein.

TECHNICAL FIELD

[002] The present application relates to rugged drop cables.

BACKGROUND

[003] Bend-insensitive optical fibers provide greater flexibility and ease of installation than standard single- and multi-mode fiber cables incorporating conventional optical fibers. While the conveyed optical signal itself suffers little or no attenuation over tight bends, the optical fibers are subject to tensile, bending, and crush stresses, etc.

[004] Rugged drop cable designs have been utilized to protect bend-insensitive fibers and optical fibers in general. One conventional rugged drop cable has a tightly buffered optical fiber surrounded by aramid fibers (for tensile strength), and a heavy, fire retardant polymer jacket. Such cables are installed using standard techniques and may be subjected to tensile loads of 50 pounds (220 Newtons) or more. Such high tensile loads can cause the aramid fibers to break free from the cable jacket, which may cause the jacket to elongate elastically. During elongation of the cable jacket, the strength elements and the optical fiber may remain at their original lengths. A length difference ΔL therefore exists between the strength elements/fiber and the elongated jacket. When the tensile load is removed and the cable jacket returns to its original length, ΔL does not change, and the strength elements and optical fiber are compressively deformed, causing a phenomenon known as “wavy fiber.” Wavy fiber can be generally described

as severe sinusoidal or serpentine bending of one or more optical fibers within the cable jacket.

[005] Phenomena such as wavy fiber can be mitigated by further ruggedization of the drop cable, such as by the use of thicker cable jackets and heavier strength elements. Each additional protective element, however, increases cost, adds bulk to the cable, and may increase the difficulty in processing the fiber, e.g. connectorizing.

SUMMARY

[006] According to one embodiment of the present invention, a cable comprises an inner cable having an inner jacket of a first diameter, and an outer jacket surrounding the inner cable and having a second diameter. One or more layers of strength elements may also be included adjacent to the jackets.

[007] According to one aspect of the embodiment, the dual jackets and strength element layers provide ruggedness for installation, so that the cable can be pulled through relatively problematic environments. The outer jacket can be removed to expose the inner cable, which can be pulled through smaller, confined spaces, such as within a connection enclosure. The inner cable can also be sized so that it can be connectorized using existing parts and procedures within the connection enclosure. The cable therefore provides the installer with the installation advantages of heavier cables outside of a connection enclosure, and the routing and connectorization advantages of smaller cables inside the enclosure.

[008] According to another aspect, transition elements can be placed at the point of transition from the larger diameter cable to the inner cable. The transition elements can be used for strain relief and for securing the cable to a fixed assembly such as a connection enclosure.

[009] According to yet another aspect of the embodiment, cable is sufficiently rugged so as to mitigate or eliminate the effects of wavy fiber.

[010] It is to be understood that both the foregoing general description and the following detailed description present embodiments of the invention, and are intended to

provide an overview or framework for understanding the nature and character of the invention as it is claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[011] **FIG. 1** is a cross section a cable according to a first embodiment.

[012] **FIG. 2** illustrates an end of the cable shown in **FIG. 1**.

[013] **FIGS. 3-5** illustrate stripping the end of the cable shown in **FIG. 1** and the application of transition elements.

[014] **FIG. 6** illustrates an alternative transition element.

[015] **FIG. 7** illustrates another alternative transition element.

[016] **FIG. 8** illustrates yet another alternative transition element.

[017] **FIG. 9** shows an alternative method of securing the end of the cable.

[018] **FIGS. 10** and **11** illustrate the effects of tensile loading on the cable.

[019] **FIG. 12** illustrates a cable assembly including the cable of **FIG. 1**.

DETAILED DESCRIPTION

[020] Reference will now be made in detail to the present embodiments, examples of which are illustrated in the accompanying drawings. When practical, the same or similar reference numerals are used throughout the drawings to refer to the same or like parts.

[021] **FIG. 1** is a cross section of a cable **10** according to a first embodiment. **FIG. 2** illustrates an end of the cable **10**. Referring to **FIGS. 1** and **2**, the cable **10** has at least one optical fiber **12**, a tight buffer layer **14** surrounding the optical fiber **12**, an inner jacket **16** surrounding the tight buffer layer **14**, and an outer jacket **18** surrounding the inner jacket **16**. An inner strength element layer **20** can be disposed between the tight buffer layer **14** and the inner jacket **16**, and an outer strength element layer **22** can be disposed between the inner jacket **16** and the outer jacket **18**. The dual jackets and dual strength element layers provide the cable **10** with the necessary ruggedness for ease of

installation, and the versatility to be routed in confined spaces, while also being capable of termination using existing parts and methods.

[022] The optical fiber **12** can be, for example, a bend-insensitive optical fiber, such as fibers sold under the name ClearCurve™, available from Corning Incorporated. Other bend-insensitive fibers and conventional optical fibers can also be used. The inner jacket **16** and the outer jacket **18** can be polymeric and can include materials, such as, for example, flame-retardant polymers conforming to NEC® OFNR and CSA OFN FT-4 for riser rated cables. The terms “polymer” and “polymeric” as used in this specification allow for the presence of additives, such as are commonly used in flame-rated jacket materials.

[023] Any suitable jacket material may be used for the inner jacket **16** and the outer jacket **18**, such as, for example, polyurethanes (PU), polyvinylchloride (PVC), polyethylenes (PE), polyproplyenes (PP), UV-curable materials, and other polymer materials. The inner strength element layer **20** and the outer strength element layer **22** provide tensile strength to the cable **10**. The strength element layers **20, 22** can be comprised of high tensile strength fibers aligned generally along the length of the cable **10**. The fibers can be aramid or para-aramid synthetic fibers such as, for example, KEVLAR™, though other suitable materials may include fiberglass, polyester, high tensile polypropylene, and the like. The use of a layer of discrete tensile fibers provides tensile strength to the cable while also providing high flexibility for the cable **10**. The outer strength element layer **22** can be arranged so that some of the tensile fibers in the layer **22** contact the exterior of the inner jacket **16** and so that some of the tensile fibers contact the interior of the outer jacket **18**.

[024] Optical fibers used in the present embodiments may be coated with the tubular tight buffer layer **14**, which can be polymeric. In the illustrated example, a single optical fiber **12** is a bend-insensitive ClearCurve™ fiber capable of bending to a 5 mm radius without appreciable attenuation, and the tight buffer layer **14** is a 900 μm thick layer of flame-retardant PVC material. Other buffer layer thicknesses, such as 500 μm are also possible. The inner strength element layer **20** can be arranged so that some of the tensile fibers in the layer **20** contact the tight buffer layer **14** and so that some of the fibers contact the interior of the inner jacket **16**.

[025] As shown in **FIG. 1**, the cable **10**, and accordingly the outer jacket **18**, have an average or optimal diameter **D2**. The inner jacket **16**, inner strength element layer **20**, and the buffered optical fiber **12** form an inner cable **24** having an average or optimal outside diameter **D1** that is smaller than **D2**. The diameters **D1** and **D2** should be considered average diameters for the illustrated cross-section because some ovality and other defects may occur in manufacturing that cause the jackets to be non-circular to some degree. The diameter **D1** may be, for example, 80% or less of the diameter **D2**. In the illustrated embodiment, the diameter **D1** is 70% or less of the diameter **D2**.

[026] To manufacture the cable **10**, the tight-buffered optical fiber **12** is paid out through a non-stranded layer of tensile aramid yarn fibers that form the inner strength element layer **20**. Flame-retardant polymer material is then pressure-extruded over the inner strength element layer **20** to form the inner jacket **16**. The inner jacket **16**, inner strength element layer **20**, and the buffered optical fiber **12** form the inner cable **24**. In the exemplary embodiment, the nominal diameter **D1** is 2.9 mm. The land length of the extrusion die used to extrude the polymer material for the inner jacket **16** is controlled to achieve a reasonable bonding force of the aramid yarns of the inner strength element layer **20** to the inner jacket **16**. Bonding force can be determined by measuring the force required to remove a 10 inch section of the inner jacket **16** from the inner strength element layer **20**. According to one embodiment, the force can be in the range of 5 to 15 lbs (22-66 Newtons). The 2.9 mm diameter inner cable **24** is paid out through a helically stranded layer of tensile fibers to form the outer strength element layer **22**. In the illustrated embodiment, the fibers are aramid yarns of KEVLAR™. The inner drop cable **24** with helically stranded outer strength element layer **22** may then be passed through an applicator where a layer of mineral particulates (such as talc) is applied. The polymer outer jacket **18** is then extruded over the outer strength element layer **22**. In the exemplary embodiment, the outer jacket **18** has an outer diameter **D2** of 4.8 mm. The amount of mineral particulates applied and the amount of pressure in the extrusion die can be controlled to provide a moderate stripping force of the outer jacket **18** from the outer strength element layer **22**. The stripping force can be in the range of 5 to 40 lbs (22-178 Newtons) for the removal of a 10 inch section of outer jacket **18**.

[027] **FIG. 2** shows an end **28** of the cable **10** ready for processing steps such as connectorization and/or optical coupling to another fiber, either within the factory or in the field. According to the present invention, the dual jackets **16, 18** and dual strength element layers **20, 22** provide the cable **10** with the necessary ruggedness for installation in relatively harsh conditions. The inner cable **24** can be separated from the exterior remainder of the cable **10** by stripping away an end portion of the outer jacket **18** and layer **22**. The exposed portion of the inner cable **24** may then be routed through smaller, relatively confined spaces, where the additional ruggedness of the jacket **18** and layer **22** may not be required. Further, the inner cable **24** can be configured for connectorization using known parts and procedures, and is suitable for interface housings for multiple dwelling units (MDU). For example, the reduced diameter inner cable **24** can be installed in a housing, such as an Optisheath® MDU Terminal available from Corning Cable Systems, LLC. The ruggedness of the cable **10** also mitigates or eliminates the effects of wavy fiber in the cable **10**. The cable therefore provides the installer with the installation advantages of heavier cables and the routing, connectorization, and other processing advantages of smaller cables. An exemplary method of processing the cable **10** is described below with reference to **FIGS. 3-5**.

[028] **FIG. 3** shows an end portion **30** of the outer jacket **18** stripped away intact. The end portion **30** can be stripped away using a ring cut, using a commercially available wire stripper. A length of 24 inches to 48 inches of the end of the outer jacket **18** may be removed. Mineral particulate applied on the outer strength element layer **22** and the controlled extrusion of the outer jacket **18** can be selected to obtain a desired coupling strength. The coupling strength, or, the force required to pull the outer jacket **18** off of the inner jacket **16** and the outer strength element layer **22** can be selected so that is it less than the force required to elastically deform the inner jacket **16**. Elastic deformation of the inner jacket **16** may have the adverse effect of decoupling the bond between the inner layer of strength elements **20** and the inner jacket **16**.

[029] Referring to **FIG. 4**, after removal of the end portion **30** of the outer jacket **18**, an end portion (not shown) of the inner jacket **16** is removed in the same manner as the end portion **30** to expose a sufficient length of tightly buffered layer **14** and fiber **12**. The tensile strength fibers of the inner and outer strength element layers **20, 22** can be

trimmed and laid back along the respective inner and outer jackets, **16** and **18**, as shown in **FIG. 4**.

[030] Referring to **FIG. 5**, prior to connectorizing the cable **10**, one or more transition elements can be secured to the furcated end **36** of the cable. The transition elements, which include an outer transition element **40** and an inner transition element **60** in the illustrated embodiment, can be included for strain relief. Strain relief can be advantageous at locations such as at the point where the cable **10** enters an MDU and is abruptly of reduced diameter. The exemplary outer transition element **40** is a machined metallic piece with an interior threaded bore **44**. The threaded bore **44** can be threaded over the laid back fibers of the outer strength element layer **22** and the outer jacket **18** so that it is firmly secured to the jacket **18**. Similarly, the inner transition element **60** can be a crimp ring tightened around the laid back fibers of the inner strength element layer **20** and the inner jacket **16** so that it is secured to the jacket **16**. In the exemplary embodiment, the outer transition element **40** transitions the cable **10** from the 4.8 mm diameter outer jacket **18** to the 2.9 diameter inner jacket **16**. The inner transition element **60** can be part of the connectorization of the inner cable **24** of 2.9 mm diameter inner jacket **16** with a connector (shown in **FIG. 12**).

[031] With the transition elements attached, the fiber **12** can now be optically connected to a connector, such as connecting to a pigtailed connector, or, for directly connectorizing to a standard connector such as an SC connector, or to a field installable connector such as UniCam™ SC, ST and LC available from Corning Cable Systems, LLC. Connectorization can take place, for example, in a connection enclosure.

[032] **FIGS. 6-9** illustrate alternative configurations and arrangements for the outer transition element. **FIG. 6** illustrates an outer transition element **90** in the form of plastic clip-on piece. Referring also to **FIG. 4**, opposing sections **92, 94** of the transition element **90** can be crimped over the tensile fibers of the outer strength element layer **22** and over the outer jacket **18**. The opposing halves **92, 94** fold about a living hinge **96** and attach to one another through engagement of projections **102** with apertures **104**. **FIG. 7** illustrates an outer transition element **110** in the form of a metallic U-clip. Referring also to **FIG. 4**, the transition element **110** can be crimped over the tensile fibers of the outer strength element layer **22** and over the outer jacket **18**. **FIG. 8**

illustrates an outer transition element **130** in the form of a cable tie. Referring also to **FIG. 4**, the transition element **130** can be tightened around the tensile fibers of the outer strength element layer **22** and over the outer jacket **18**.

[033] As an alternative to securing the tensile fibers of the outer strength element layer **22** to the outer jacket **18**, the fibers can be secured to an exterior element. **FIG. 9**, for example, illustrates the tensile fibers of the outer strength element **22** secured under a screw terminal **150**.

[034] **Example**

[035] A cable **10** as illustrated in **FIGS. 1-2** is installed to optically connect a fiber connection enclosure such as a fiber distribution terminal (FDT) to an apartment unit in an MDU. The cable **10** is pulled between the FDT and an apartment unit using conventional means. The cable **10** is prepared for connectorization as shown in **FIGS. 3-5**. The FDT can be of conventional design, having a housing enclosing hardware, and an entry point through which cables are connected to the FDT. At the entry point, the outer transition element is secured to a holding device (e.g., a crimp holder) at the entry point to the FDT. Any of the transition elements disclosed in this specification are suitable for securing the cable at the entry point. The smaller diameter inner cable **24** is then routed through the interior of the FDT. The inner cable **24** is terminated using an OptiSnap™ connector using crimp bands.

[036] **FIGS. 10-11** illustrate the resistance of the cable **10** to the wavy fiber phenomenon. **FIG. 10** illustrates the cable **10** ready for installation, such as for pulling through ductwork, etc., when installing the cable **10** in a structure. A holding device such as a pressure clamp or a Kellum's grip can be used to securely couple to the outer jacket **18**, which enables the installer to exert the necessary force to pull the cable **10** through narrow openings or ducts. The presence of dual jackets **16, 18** and strength element layers **20, 22** provides high tensile strength and durability to the cable **10** during such installations. Initially, the cut end face of the cable **10** is substantially flush in the plane defined by axes **x** and **y**. Referring to **FIG. 11**, as the cable **10** is subjected to tensile pulling forces **FP** during installation, the elastic outer jacket **18** generally does not transfer excessive tensile loads to the inner jacket **16**. The outer jacket **18** may

therefore elongate and extend past the inner jacket **16** and the optical fiber **12** by a distance **ΔL**. According to one aspect, when the outer jacket **18** retracts to its original length, little or none of the compressive load is transmitted to the inner jacket **16**, thereby inhibiting or precluding the creation of wavy fiber in the cable **10**. In other words, the outer jacket **18** bears most or all of the positive and negative tensile loads of installation such that fiber(s) in the inner cable **24** is not subject to the wavy fiber phenomenon. The limited space within the cable jacket also inhibits buckling of the fiber **12**.

[037] **FIG. 12** illustrates the cable **10** of **FIG. 1** as part of a cable assembly **200**. The cable assembly **200** has an SC connector assembly **210** connected at the end of the cable **10**.

[038] Many modifications and other embodiments of the present invention, within the scope of the claims will be apparent to those skilled in the art. For instance, the concepts of the present invention can be used with any suitable composite cable designs and/or optical stub fitting assemblies. Thus, it is intended that this invention covers these modifications and embodiments as well those also apparent to those skilled in the art.

We claim:

1. A fiber optic cable, comprising:

at least one optical fiber;

a first layer of strength elements surrounding the at least one optical fiber;

a first jacket surrounding the first layer of strength elements;

a second layer of strength elements surrounding the first jacket; and

a second jacket surrounding the second layer of strength elements.

2. The fiber optic cable of claim 1, wherein the at least optical fiber is a tight buffered fiber.

3. The fiber optic cable of claims 1-2, wherein the strength elements are longitudinally extending fibers.

4. The fiber optic cable of claims 1-3, wherein an outside diameter of the second jacket is less than 5 millimeters.

5. The fiber optic cable of claims 1-4, wherein an outside diameter of the first jacket is less than 3 millimeters.

6. The fiber optic cable of claims 1-3, wherein an outside diameter of the first jacket is eighty per cent or less of an outside diameter of the second jacket.

7. The fiber optic cable of claims 1-3, wherein an outside diameter of the first jacket is seventy per cent or less of an outside diameter of the second jacket.

8. The fiber optic cable of claims 1-7, wherein the first jacket is an extruded polymeric tube and the second jacket is an extruded polymeric tube.

9. The fiber optic cable of claims 1-8, wherein the at least one optical fiber contacts the first layer of strength elements, the first layer of strength elements contacts an interior of the first jacket, an exterior of the first jacket contacts the second layer of strength elements, and the second layer of strength elements contacts an interior of the second jacket.

10. The fiber optic cable of claims 1-9, wherein the at least one optical fiber comprises a tight buffer layer.

11. A method of connectorizing a fiber optic cable, comprising:

providing a fiber optic cable having at least one optical fiber; a first jacket surrounding the at least one optical fiber, the at least one optical fiber and first jacket comprising an inner cable; and a second jacket surrounding the inner cable;

running the cable so that an end of the cable is at a connection enclosure;

removing an end portion of the second jacket to expose an end portion of the inner cable;

routing the end portion of the inner cable through the connection terminal;

removing an end portion of the first jacket to expose an end portion of the at least one optical fiber; and

connectorizing the end portion of the at least one optical fiber.

12. The method of claim 11, further comprising attaching a transition element to the fiber optic cable at a transition point where the end portion of the second jacket is removed.

13. The method of claims 11-12, wherein the inner cable further comprises a first layer of strength elements between the at least one optical fiber and the first jacket.

14. The method of claim 13, wherein the fiber optic cable further comprises a second layer of strength elements between the inner cable and the second jacket.

15. The method of claim 14, wherein the at least one optical fiber contacts the first layer of strength elements, the first layer of strength elements contacts an interior of the first jacket, an exterior of the first jacket contacts the second layer of strength elements, and the second layer of strength elements contacts an interior of the second jacket.

16. The method of claims 11-15, wherein the optical fiber is a tight buffered fiber.

17. The method of claims 11-17, wherein the strength elements are fibers.

18. The method of claims 11-17, wherein the first jacket has a nominal diameter of about 2.9 mm and the second jacket has a nominal diameter of about 4.8 mm.

19. The method of claims 11-18, further comprising attaching an outer transition element on the second jacket adjacent to where the end portion of the second jacket is removed.

20. The method of claim 19, further comprising securing the cable to the connection enclosure where the end portion of the second jacket is removed.

21. The method of claims 19-20, further comprising attaching an inner transition element on the first jacket adjacent to where the end portion of the first jacket is removed.

22. The method of claims 11-21, wherein the first jacket is an extruded polymeric tube and the second jacket is an extruded polymeric tube.

23. A fiber optic cable, comprising:

a tight-buffered optical fiber;

a first layer of aramid strength fibers surrounding the at least one optical fiber;

a polymeric tubular first jacket surrounding and contacting the first layer of aramid strength fibers;

a second layer of aramid strength fibers surrounding the polymeric first jacket; and

a polymeric tubular second jacket surrounding the second layer of aramid strength fibers, wherein

an outside diameter of the second jacket is less than 5 millimeters, and

an outside diameter of the first jacket is less than 3 millimeters.

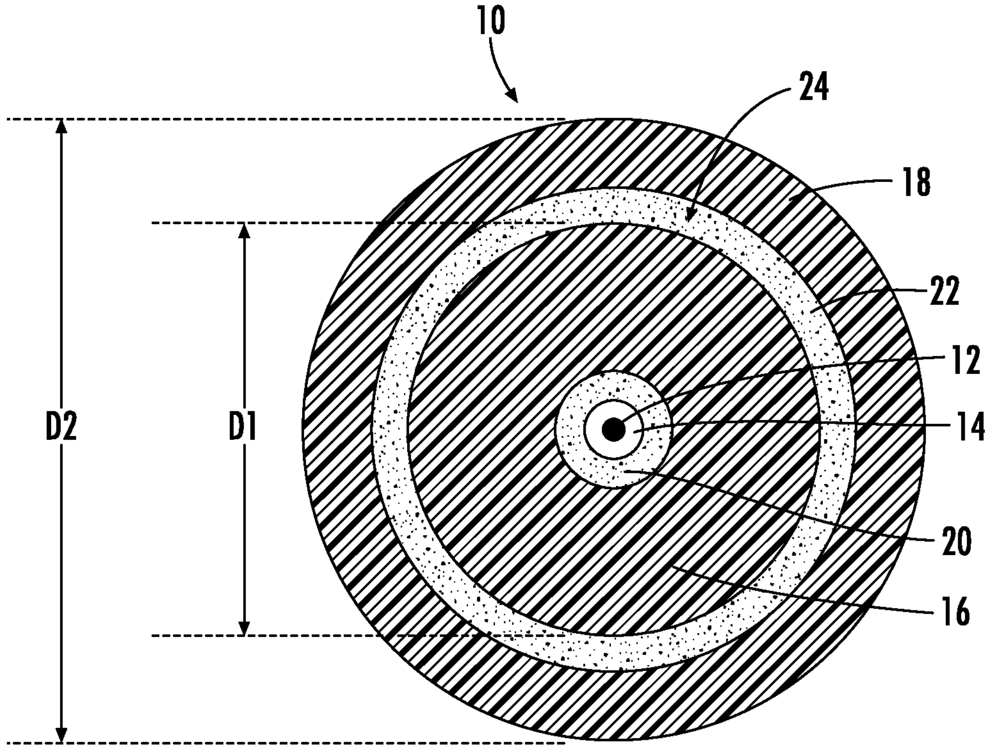

FIG. 1

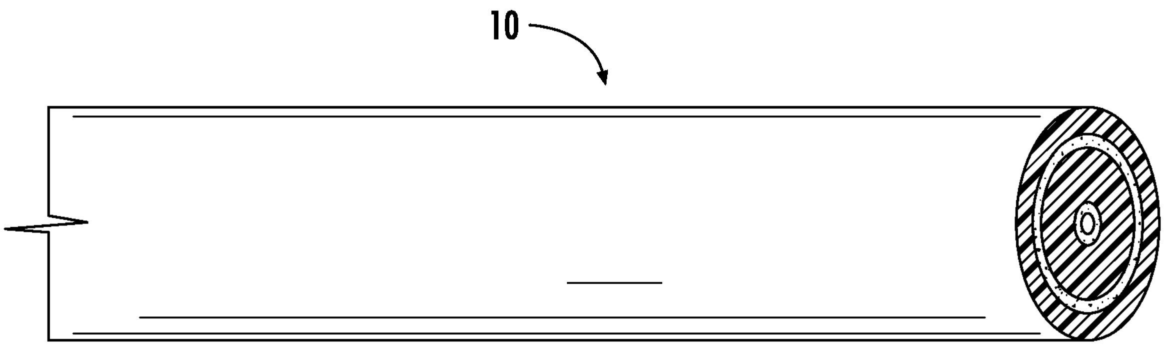

FIG. 2

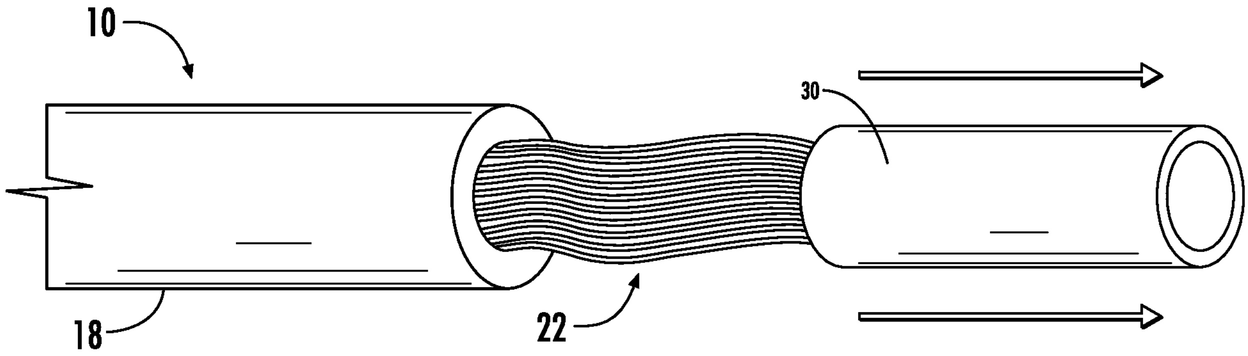

FIG. 3

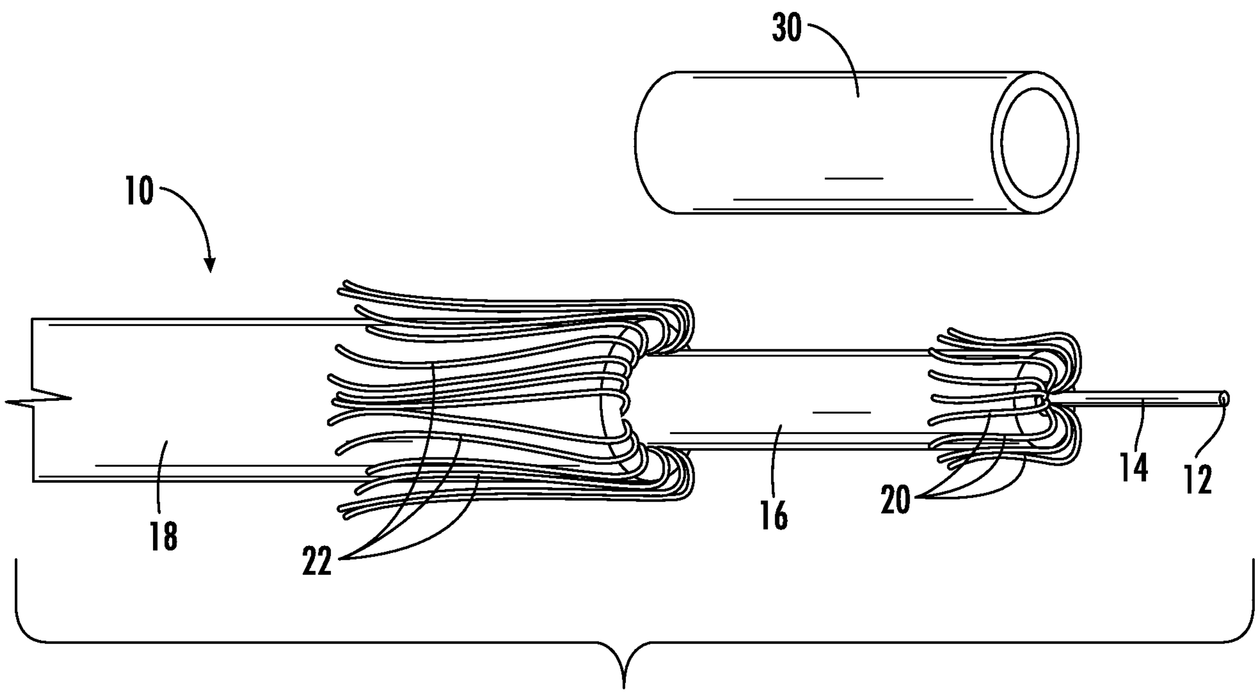

FIG. 4

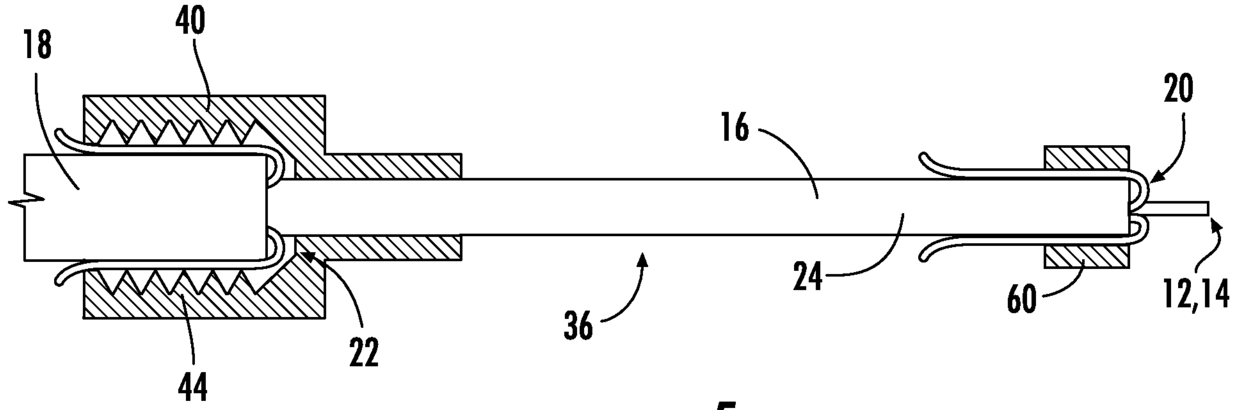

FIG. 5

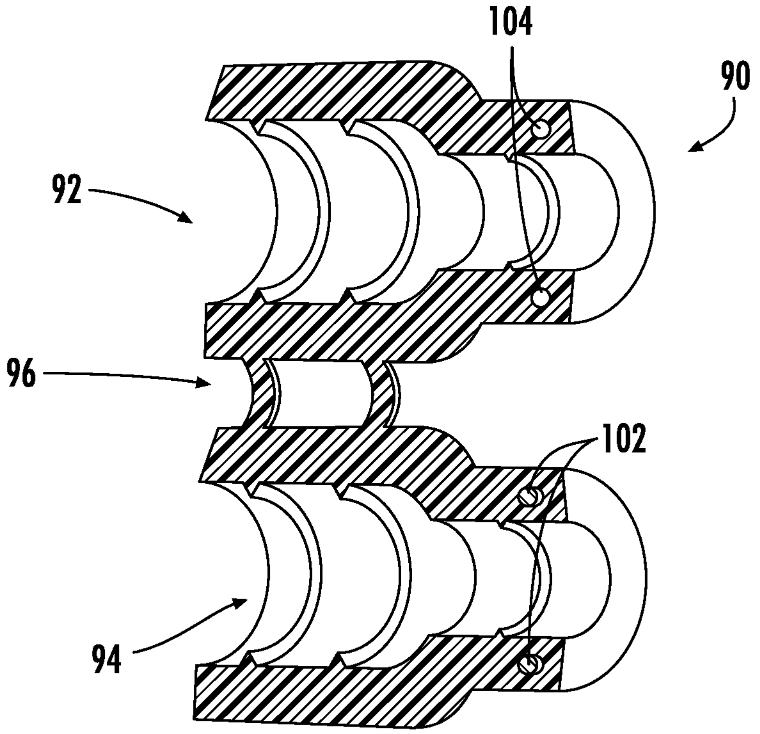

FIG. 6

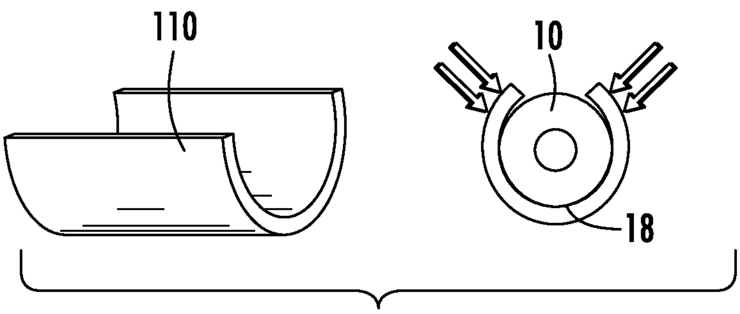

FIG. 7

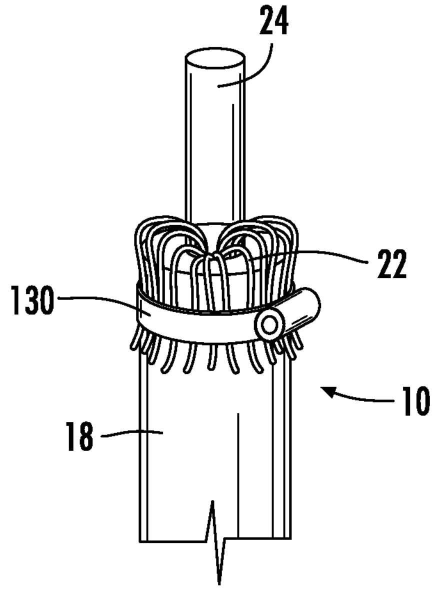

FIG. 8

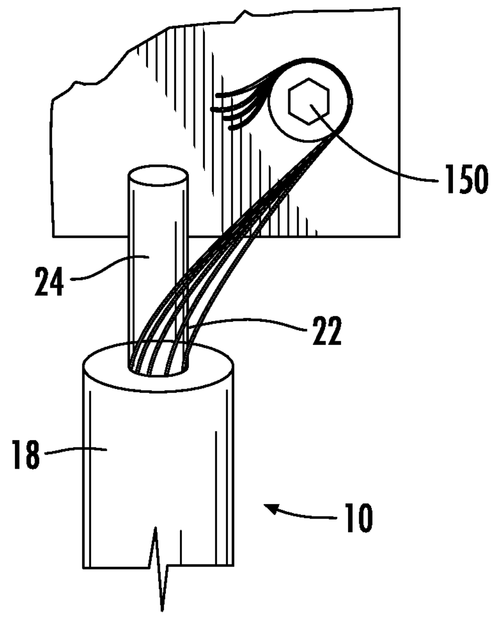

FIG. 9

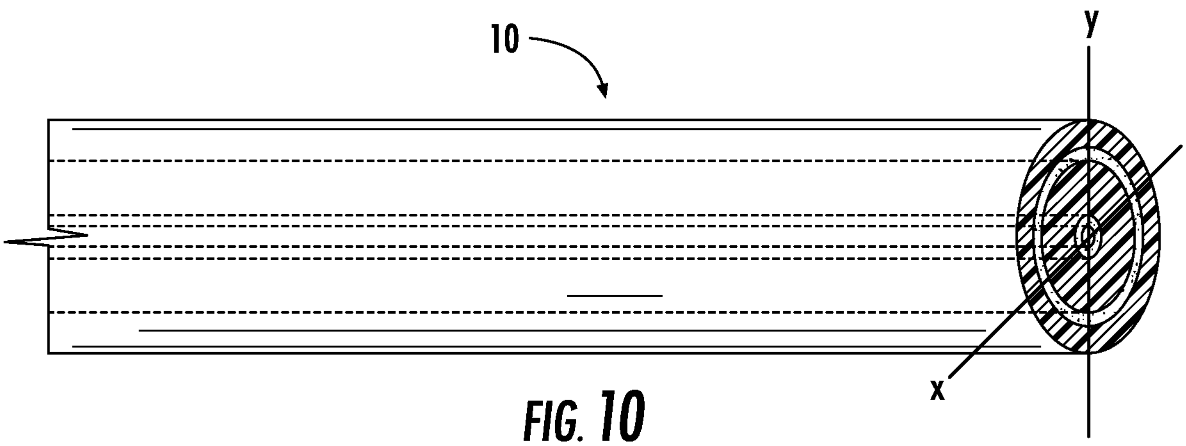

FIG. 10

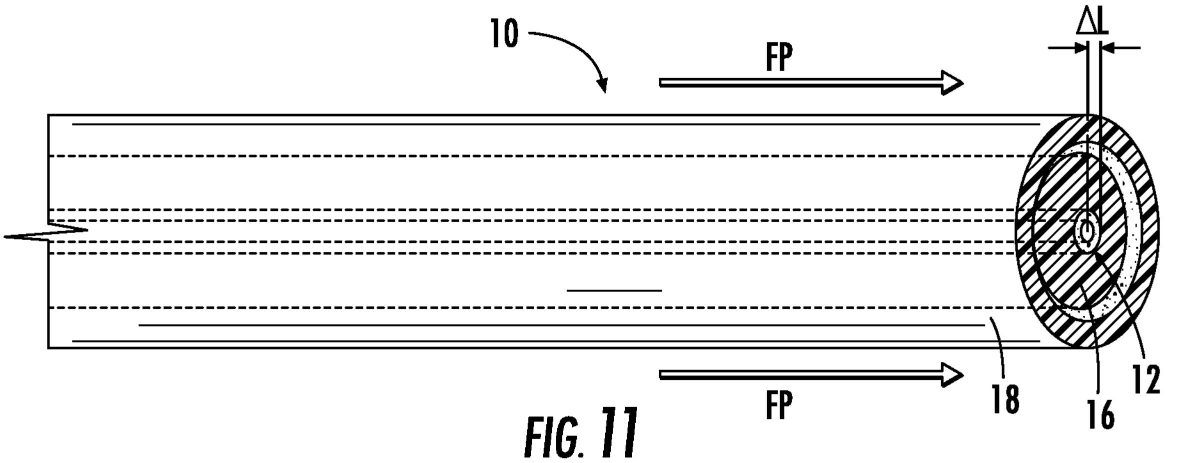

FIG. 11

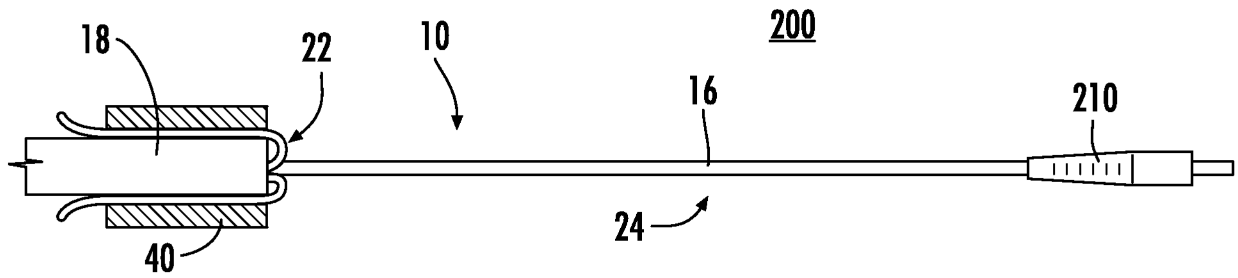

FIG. 12

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/062468

A. CLASSIFICATION OF SUBJECT MATTER
INV. 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)
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.
X	EP 1 094 347 A1 (LUCENT TECHNOLOGIES INC [US]) 25 April 2001 (2001-04-25)	1-10,23
Y	paragraph [0015] - paragraph [0023]; figure 1	11-22
X	US 2004/109650 A1 (KIM YOUNG JOON [US] ET AL) 10 June 2004 (2004-06-10)	1-10,23
Y	paragraphs [0052] - [0069] paragraphs [0102] - [0106] figure 2; table 1	11-22
X	US 4 374 608 A (ANDERSON GENE S) 22 February 1983 (1983-02-22)	1-10,23
Y	column 5, lines 1-20 column 5, line 62 - column 6, line 13; figure 3	11-22
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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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

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"P" document published prior to the international filing date but later than the priority date claimed

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 March 2010	16/03/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Fazio, Valentina

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/062468

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 0 545 622 A1 (BICC PLC [GB]) 9 June 1993 (1993-06-09) column 4, lines 1-38; figure 1	1-10,23 11-22
Y	US 5 199 095 A (IAPICCO ROGER [US]) 30 March 1993 (1993-03-30) column 4, line 36 - column 6, line 14; figures 1-7	11-22
Y	WO 2008/048935 A2 (3M INNOVATIVE PROPERTIES CO [US]; DESARD CHRISTOPHE [FR]; DILMEN TAHSI) 24 April 2008 (2008-04-24) figure 2C	11-22
Y	GB 2 339 481 A (SIEMENS AG [DE]) 26 January 2000 (2000-01-26) figure 2	11-22
Y	US 4 991 928 A (ZIMMER RAINER M [US]) 12 February 1991 (1991-02-12) figure 3	11-22

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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