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Abstract

CONNECTED OPTICAL CABLE

The present invention provides a connected optical cable capable of reinforcing a spliced portion of coated optical fibers to have adequate strength. The connected optical cable includes: a pair of optical fiber cables in which high-strength fibers are aligned in the longitudinal direction around coated optical fibers, the outer circumference of the coated optical fibers being covered by sheaths; and a connected portion in which the pair of optical fiber cables are connected, the coated optical fibers being extended from the sheaths, glass fibers exposed from the coating of the coated optical fibers being spliced to each other, and the connected portion being covered and formed into an integral unit, together with the high-strength fibers exposed from the sheaths, by a reinforcing tube placed over the optical fiber cables and caused to contract so that both ends of the reinforcing tube engage the sheaths of the respective optical fiber cables.

Claims

[Claim 1] A connected optical cable comprising:

a pair of optical fiber cables in which high-strength fibers are aligned in the longitudinal direction around coated optical fibers, the outer circumference of the coated optical fibers and the high-strength fibers being covered by sheaths; and

a connected portion in which the pair of optical fiber cables are connected, the coated optical fibers being extended from the sheaths, glass fibers exposed from the coating of the coated optical fibers being spliced to each other, and the connected portion being covered and formed into an integral unit, together with the high-strength fibers exposed from the sheaths, by a reinforcing tube placed to engage the respective sheaths of the optical fiber cables and caused to contract.

[Claim 2] The connected optical cable according to claim 1, wherein the high-strength fibers exposed from the sheaths are folded back in a direction opposite to the extension direction of the coated optical fibers, and the folded sections are covered by the reinforcing tube.

[Claim 3] The connected optical cable according to claim 1, wherein the high-strength fibers exposed from the sheaths are aligned in the extension direction of the coated optical fibers and covered by the reinforcing tube.

[Claim 4] The connected optical cable according to any of claims 1 to 3, further comprising

an inner tube for covering a section of the mutually connected glass fibers, both ends of the inner tube being placed to engage the respective coatings of the coated optical fibers and caused to contract.

[Claim 5] The connected optical cable according to any of claims 1 to 4, further comprising

a protective tube for covering the outer circumference of the reinforcing tube.

Dated this 16th day of April 2012


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FIG. 1 ORIGINAL

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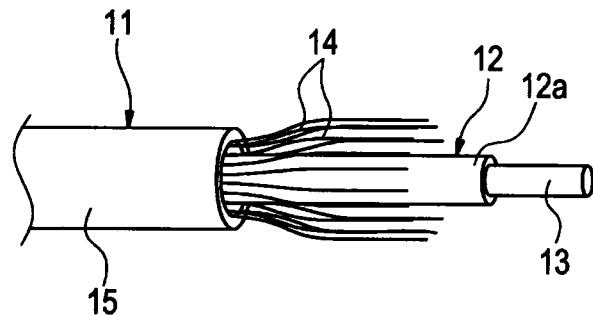
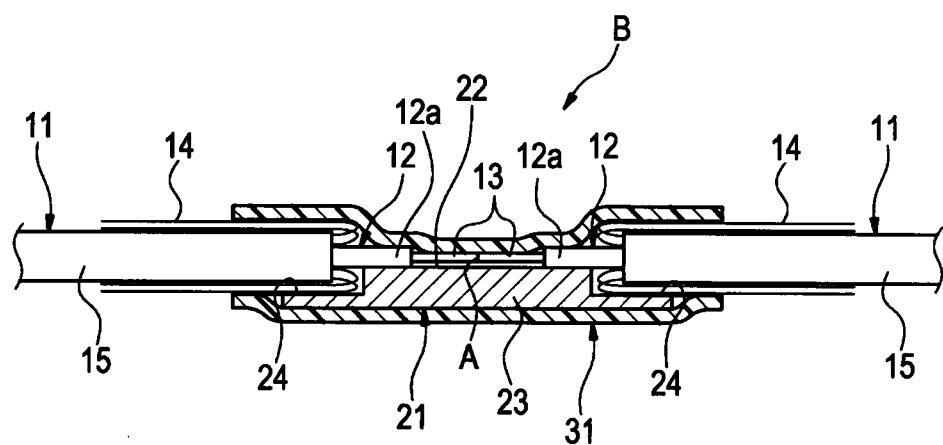


FIG. 2



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FIG. 3

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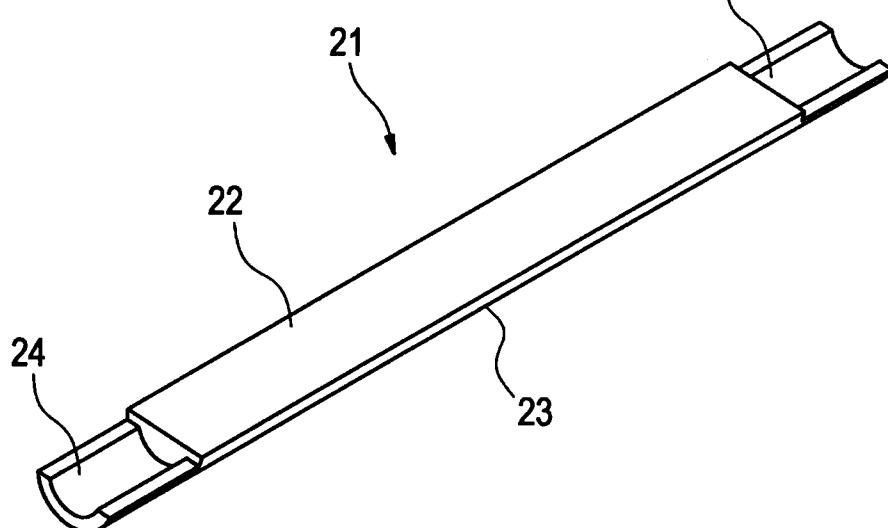
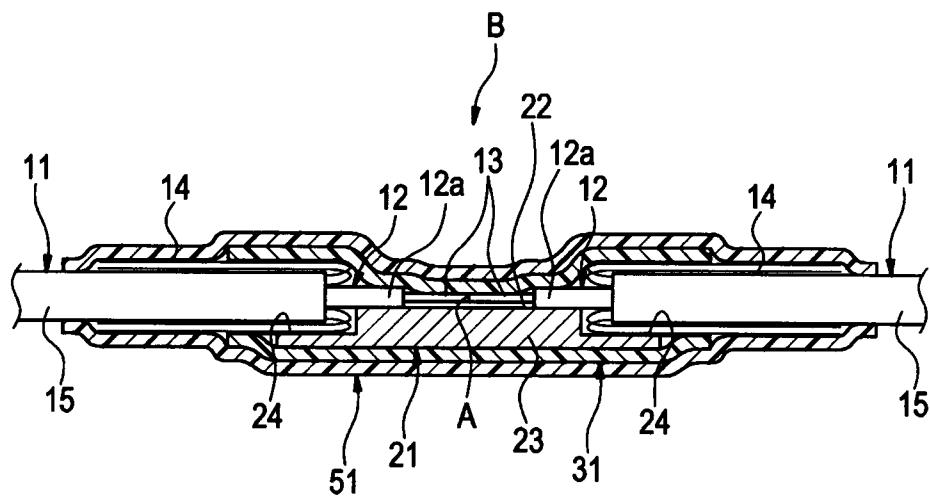


FIG. 4



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FIG. 5

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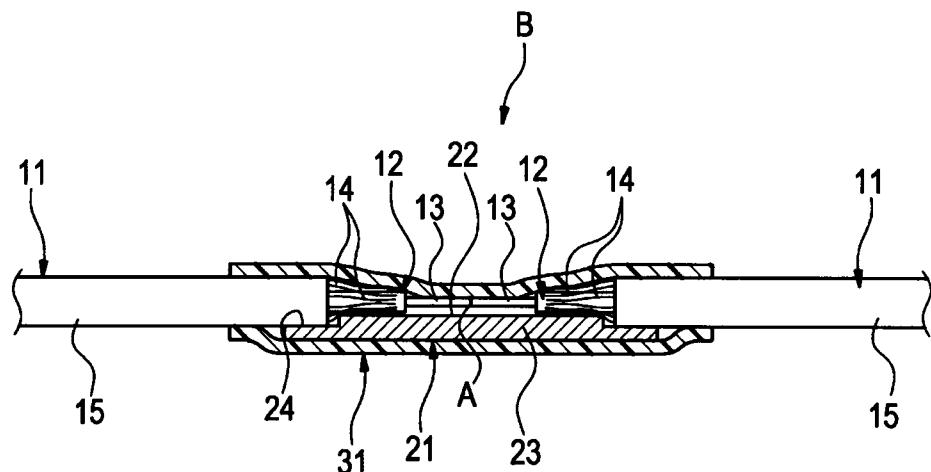
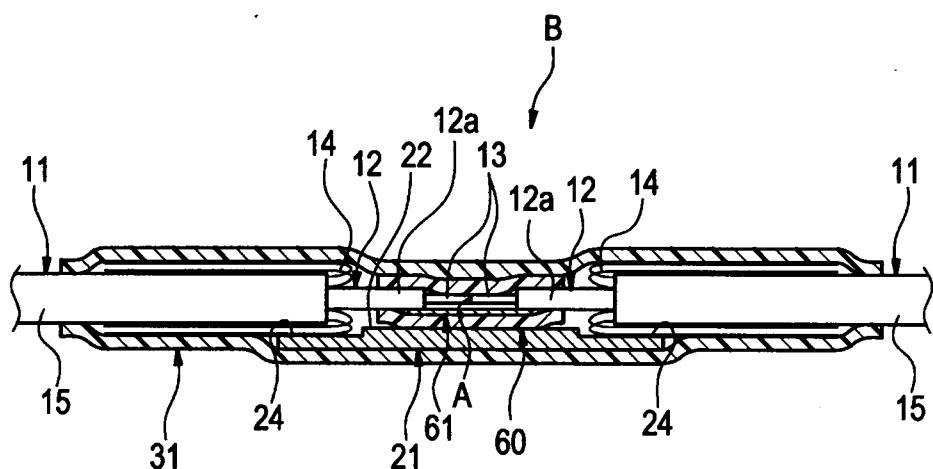


FIG. 6



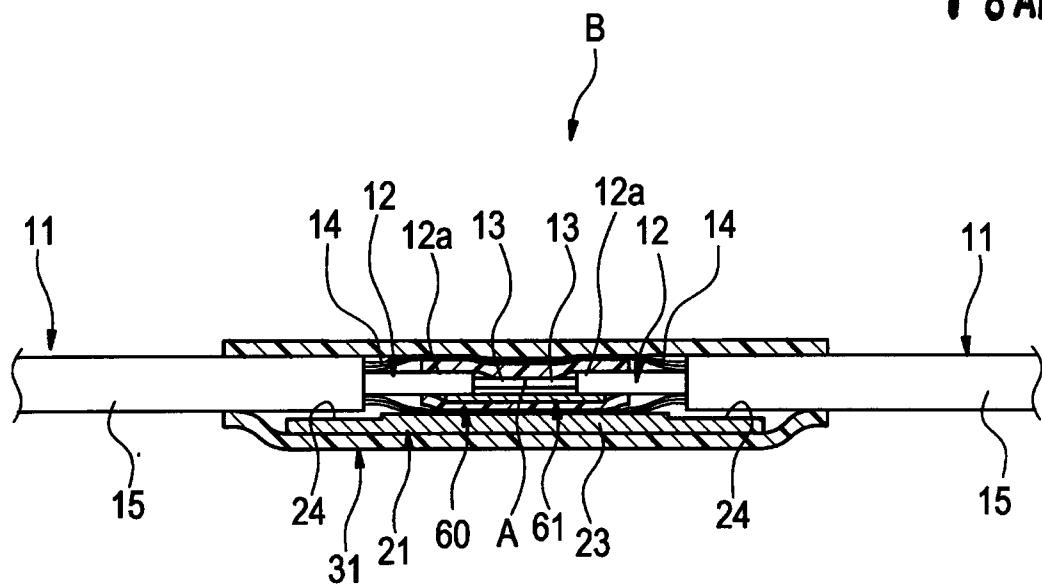
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FIG. 7

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[0011] Fig. 4 is a cross-sectional view of the connected portion in an embodiment (Modification 1) of the connected optical cable according to the present invention.

[0012] Fig. 5 is a cross-sectional view of the connected portion in an embodiment (Modification 2) of the connected optical cable according to the present invention.

[0013] Fig. 6 is a cross-sectional view of the connected portion in an embodiment (Modification 3) of the connected optical cable according to the present invention.

[0014] Fig. 7 is a cross-sectional view of the connected portion in an embodiment (Modification 4) of the connected optical cable according to the present invention.

Description of Embodiments

[0015] Embodiments of the present invention will be described hereinafter with reference to the drawings. The drawings are provided for illustration only, and not for the purpose of limiting the scope of the invention. In order to avoid repetition in the description, the identical labels indicate the same portions in the drawings. The size ratio in the drawings is not necessarily accurate.

[0016] Fig. 1 is a perspective view of an end part in an embodiment of an optical fiber cable (optical fiber cable 11) constituting a connected optical cable according to the present invention. The optical fiber cable 11 has a coated optical fiber 12, a high strength fiber 14, and a sheath 15. The coated optical fiber 12 is a fiber in which a glass fiber 13 including a core and cladding and having an outside diameter of about 0.125 mm is covered by a resin coating 12a. The outside diameter of the fiber is about 0.9 mm. The high-strength fiber 14 is made of Kevlar® (registered trademark) or another aramid fiber or the like, and is aligned in the longitudinal direction around the coated optical fiber 12. The sheath 15 is made of, for example, vinyl chloride (PVC), and is adapted to cover the circumference of the high- strength fiber 14. The outside diameter of the optical fiber cable 11 is about 2.0 to 3.0 mm.

[0017] Fig. 2 is a cross-sectional view of a connected portion B according to an embodiment of the connected optical cable of the present invention. The end parts of each of a pair of optical fiber cables 11 constituting the connected optical fiber are treated to form a terminal, whereby the coated optical fibers 12 are extended from the sheaths 15, and the glass fibers 13 are exposed. The high-strength fibers 14 are also extended from the