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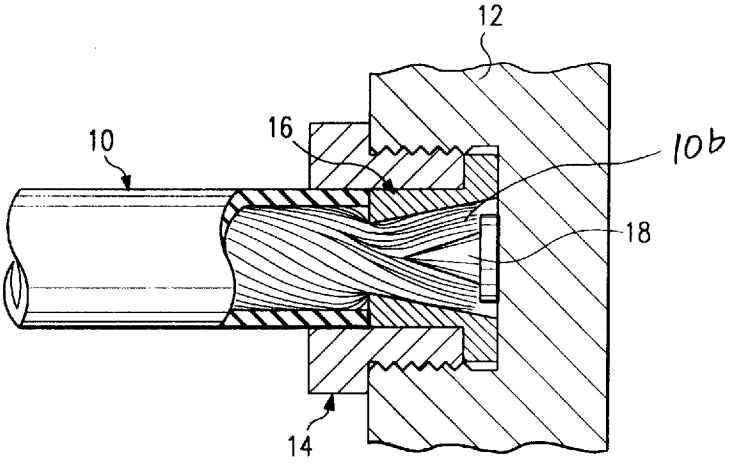
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(54) **CONNECTEUR POUR CABLE**
(54) **CABLE CONNECTOR ASSEMBLY**



(57) Connecteur de câble dans lequel un écrou de retenue logé dans un chambrage pratiqué dans le bloc de montage où il se trouve en engagement fileté reçoit un faisceau de fils. Un répartiteur disposé dans le chambrage assure la séparation des fils du faisceau et leur couplage par serrage de l'écrou de retenue logé dans le chambrage. Le connecteur assure une solide connexion facile à réaliser, ainsi qu'une conductivité électrique maximale.

(57) A cable connector assembly in which a threaded retainer nut receives a bundle of wires and extends in a counterbore of the mounting block in threaded engagement therewith. A splitter is disposed in the counterbore and extends in the bore of the retainer nut for splitting up the bundle of wires and spreading out and securing the wires when the retainer nut is tightened in the counterbore. The connector thus securely connects the cable to a mounting block in a relatively simple manner while insuring maximum electrical conduction.

Abstract of the Disclosure

A cable connector assembly in which a threaded retainer nut receives a bundle of wires and extends in a counterbore of the mounting block in threaded engagement therewith. A splitter is disposed in the counterbore and extends in the bore of the retainer nut for splitting up the bundle of wires and spreading out and securing the wires when the retainer nut is tightened in the counterbore. The connector thus securely connects the cable to a mounting block in a relatively simple manner while insuring maximum electrical conduction.

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CABLE CONNECTOR ASSEMBLY

Background of the Invention

The present invention relates to a cable connector assembly and, more particularly, to such an assembly for connecting a multitude of electrical signal transmitting cables to a single power source in a confined space.

Various techniques have evolved for connecting a series of cables to a single power source in a confined space. Electrical systems for vehicles, for example, require a multitude of cables for connecting the vehicle battery to the various electrical-operated accessories, including lights, power windows, power door locks, audio and security systems, etc.

Many of these type arrangements utilize an electrical conductive mounting block which is electrically connected to a plurality of the electrical accessories and which is connected to the car battery by a single cable. As a result, the need for a plurality of relatively long electrical cables, each extending from an accessory to the battery, is eliminated while the installation of the accessories is facilitated.

However, many of the arrangements that utilize a mounting block do not provide for a secure connection between the accessory cables and the mounting block. This results in less than optimum electrical conduction through the mounting block, or even a complete disconnect after a period of use. Although there have been attempts to achieve more secure and complete connections, many of these attempts are cumbersome, labor intensive and/or expensive.

Therefore, what is needed is a cable connector system which permits connections of the above type that are secure and insure maximum electrical conduction, yet are relatively inexpensive.

Summary of the Invention

The present invention, accordingly, provides a relatively inexpensive cable connector assembly which securely connects a cable to a mounting block in a relatively simple manner while insuring maximum electrical conduction. To this end, the assembly of the present invention includes a threaded retainer nut that extends in a counterbore of the mounting block in threaded engagement therewith. The cable is formed by a bundle of wire strands which

extend through the bore of the retainer nut. A splitter is disposed in the counterbore and extends in the bore of the retainer nut for splitting up the wire strands and spreading them out. The wire strands are secured between the splitter and the retainer nut when the retainer nut is tightened in the counterbore.

Thus, a major advantage is achieved with the assembly of the present invention since the assembly permits secure connections with increased electrical conduction, yet is relatively inexpensive and easy to use.

Brief Description of the Drawings

Fig. 1 is an exploded, partial elevational-partial sectional view of the connector assembly of the present invention.

Fig. 2 is a view similar to Fig. 1 but showing the assembly of Fig. 1 in an assembled condition.

Figs. 3 and 4 are views similar to Figs. 1 and 2, respectively but depict an alternate embodiment of the present invention.

Description of the Preferred Embodiment

Referring to Fig. 1 of the drawings, the reference numeral 10 refers, in general, to an electrical signal transmitting cable consisting of a bundle of wire strands 10a surrounded by a sleeve of insulative material 10b.

A mounting block 12 is provided which has a series of threaded counterbores formed therein, one of which is shown by the reference numeral 12a. The mounting block 12 is fabricated of an electrical conductive metal and functions to receive a plurality of input cables, including the cable 10, in its respective counterbores 12a. A single output cable (not shown) is provided to connect the mounting block to a single component. In connection with the electrical system of a vehicle for example, the single component would be a battery for supplying direct current, and the cables, including the cable 10, would be respectively connected to accessories for the vehicle, as described above.

The connector assembly of the present invention includes a cylindrical retainer nut 14 having a outer circular flange 14a extending from one end thereof and a bore 14b. The outer surface of the retainer nut 14 is threaded, as

shown by the reference numeral 14c, and is adapted to be connected to the threaded counterbore 12a of the mounting block 12.

A cylindrical guide member 16 is also provided which includes an outer circular flange 16a extending from one end thereof, and a bore 16b of a generally conical cross section. The outer diameter of the main body of the guide member 16 is slightly less than the diameter of the bore 14b of the retainer nut 14 so that the guide member fits within the retainer nut in a relatively close fit.

A splitter 18 is also provided which has an outer circular flange 18a at one end thereof. The splitter 18 is in the form of a solid cone, and the diameter of the flange 18a is less than that of the bore 16b of the guide member 16 to enable the splitter to extend within the guide member.

The cable 10 is mounted to the mounting block 12 in accordance with the following procedure. The guide member 16 is inserted in the retainer nut 14 with the flange 16a resting on the corresponding end of the retainer nut. A portion of the insulation 10b is stripped from the end portion of the bundle of wire strands 10a as shown in Fig. 1, and the latter end portion is inserted through the bore 16b of the guide member 16. The splitter 18 is placed in the counterbore 12a of the mounting block 12 with its base and the flange 18a resting on the bottom of the counterbore. The retainer nut 14 and the guide member 16 are advanced in a left-to-right direction as viewed in Fig. 1 towards the counterbore 12a. The end portions of the wire strands 10a thus engage the splitter 18 and the splitter functions to split up the wire strands and spread them out around the outer surface of the splitter. The wire strands 10a thus extend between the outer surface of the splitter 18 and the inner wall of the guide member 16 defining the bore 16b in a relatively tight fit as shown in Fig. 2. When the threaded outer surface 14c of the retainer nut 14 engages the threaded counterbore 12a, the retainer nut is rotated relative to the guide member 16 which is held against rotation by the wire strands 10a. This advances the retainer nut 14, and therefore the guide member 16, further into the counterbore 12a to further spread the wire strands 10a around the outer surface of the splitter 18.

The retainer nut 14 is rotated further until a tight fit is achieved and the assembly is in its fully assembled condition shown in Fig. 2. In this position, the wire strands 10a are spread around the circumference of the splitter 18 and are well secured between the outer surface of the splitter and the inner wall of the guide member 16 defining the bore 16b. Of course, the wire strands 10a can be released from the mounting block 12 by simply reversing the above procedure.

The assembly of the present invention thus enjoys the advantages of providing secure connections and increased electrical conduction, yet is relatively inexpensive and easy to use.

The embodiment of Figs. 3 and 4 is similar to the embodiment of Figs. 1 and 2 and contains some identical components which are given the same reference numerals. According to the embodiment of Figs. 3 and 4, the splitter 18 is fixed in the counterbore 12a with the flange 18a of the splitter extending in a corresponding recess formed in the base, or bottom, of the counterbore. The splitter 18a can be secured in the counterbore 12a in any known manner, and, alternatively, can be machined integral with the mounting block 12.

A cylindrical retainer nut 20 is provided which has a circular flange 20a extending from one end thereof. A continuous bore is formed through the retainer nut 20 which has a cylindrical portion 20b and a conical portion 20c. The outer surface of the retainer nut 20 is threaded, as shown by the reference numeral 20d, and is adapted to be connected to the threaded counterbore 12a of the mounting block 12.

The cable 10 is connected to the mounting block 12 in a manner similar to that disclosed above in connection with the embodiment of Figs. 1 and 2. More particularly, according to the embodiment of Figs. 3 and 4, a portion of the insulation 10b is stripped from the end portion of the bundle of wire strands 10a as shown in Fig. 1, and the latter end portion is initially inserted into and through the cylindrical bore portion 20b of the retainer nut 20. The wire strands 10a are advanced further relative to the retainer nut 20 until the end portions of the strands pass through the bore portion 20c of the retainer nut 20. The retainer nut 20 is advanced towards the counterbore 12, causing

the end portions of the wire strands 10 to engage the splitter 18 thus splitting up the wire strands and spreading them out around the conical outer surface of the splitter 18. The wire strands 10a thus extend between outer surface of the splitter and the inner wall of the retainer nut 20 defining the bore portion 20c in a relatively tight fit. When the threaded outer surface of the retainer nut 20 engages the threaded counterbore 12a, the retainer nut is rotated relative to the guide member 16 to advance the retainer nut 20 further into the counterbore 12a to further spread the wire strands 10a around the splitter 18.

The retainer nut 20 is rotated further until a tight fit is achieved and the assembly is in its fully assembled condition shown in Fig. 4. In this position, the wire strands 10a are spread around the outer surface of the splitter 18 and are well secured between the outer surface of the splitter and the inner wall of the retainer nut 20 defining the bore portion 20c. Of course, the wire strands 10a can be released from the mounting block 12 by simply reversing the above procedure.

Thus, the embodiment of Figs. 3 and 4 enjoys substantially all of the advantages of the embodiment of Figs. 1 and 2 yet requires fewer parts.

It is understood that variations may be made in the foregoing without departing from the scope of the invention. For example, the splitter arrangement of the embodiment of Figs. 3 and 4 can be used in the embodiment of Figs. 1 and 2, and visa versa. Still other modifications, changes and substitutions are intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the scope of the invention.

Claims

WHAT IS CLAIMED IS:

1. An assembly for retaining a bundle of wires in a threaded counterbore in a mounting block, the assembly comprising a threaded retainer nut having a bore extending in the counterbore in threaded engagement therewith, a guide member extending in the bore of the retainer nut and having a bore for receiving the wire bundle, and a splitter disposed in the counterbore and extending in the bore of the guide member to split up the bundle of wires and to spread out the wires when the retainer nut is tightened in the counterbore.

2. The assembly of claim 1 wherein the wires are secured between the outer surface of the splitter and the inner wall of the guide member defining the bore.

3. The assembly of claim 1 wherein a portion of the splitter extends in a recess located at the base of the counterbore.

4. The assembly of claim 1 wherein the retainer nut has a flange formed on one end thereof which engages the mounting block.

5. The assembly of claim 1 wherein the guide member has a flange formed on one end thereof which engages the retainer nut.

6. A method of attaching a bundle of wires in a threaded counterbore of a mounting block, comprising the steps of inserting a guide member in the bore of a retainer nut, inserting the wire bundle in the bore of the guide member, inserting a conical splitter in the counterbore, advancing the retainer nut and the guide member relative to the counterbore until the wire bundle extends around the outer surface of the splitter and until the threads on the retainer nut engage the threads defining the counterbore, and then rotating the

retainer nut relative to the mounting block and to the guide member to further advance the wire bundle over the outer surface of the splitter and to tighten the wires between the splitter and the inner wall of the guide member defining the bore.

7. An assembly for retaining a bundle of wires in a threaded counterbore in a mounting block, the assembly comprising a threaded retainer nut having a bore for receiving the wire bundle and extending in the counterbore in threaded engagement therewith, and a splitter disposed in the counterbore and extending in the bore of the retainer nut for splitting up the bundle of wires and spreading out the wires when the retainer nut is tightened in the counterbore.

8. The assembly of claim 7 wherein the wires are secured between the outer surface of the splitter and the inner wall of the retainer nut defining the bore.

9. The assembly of claim 7 wherein a portion of the splitter extends in a recess located at the base of the counterbore.

10. The assembly of claim 7 wherein the retainer nut has a flange formed on one end thereof which engages the mounting block.

11. A method of attaching a bundle of wires in a threaded counterbore of a mounting block, comprising the steps of inserting the wires through a bore of an externally threaded retainer nut, inserting a conical splitter in the counterbore, advancing the retainer nut relative to the counterbore until the wire bundle extends around the outer surface of the splitter and until the threads on the retainer nut engage the threads defining the counterbore, and then rotating the retainer nut relative to the mounting block to further advance the wire bundle over the outer surface of the splitter and to tighten the wires between the splitter and the inner wall of the retainer nut defining the bore.

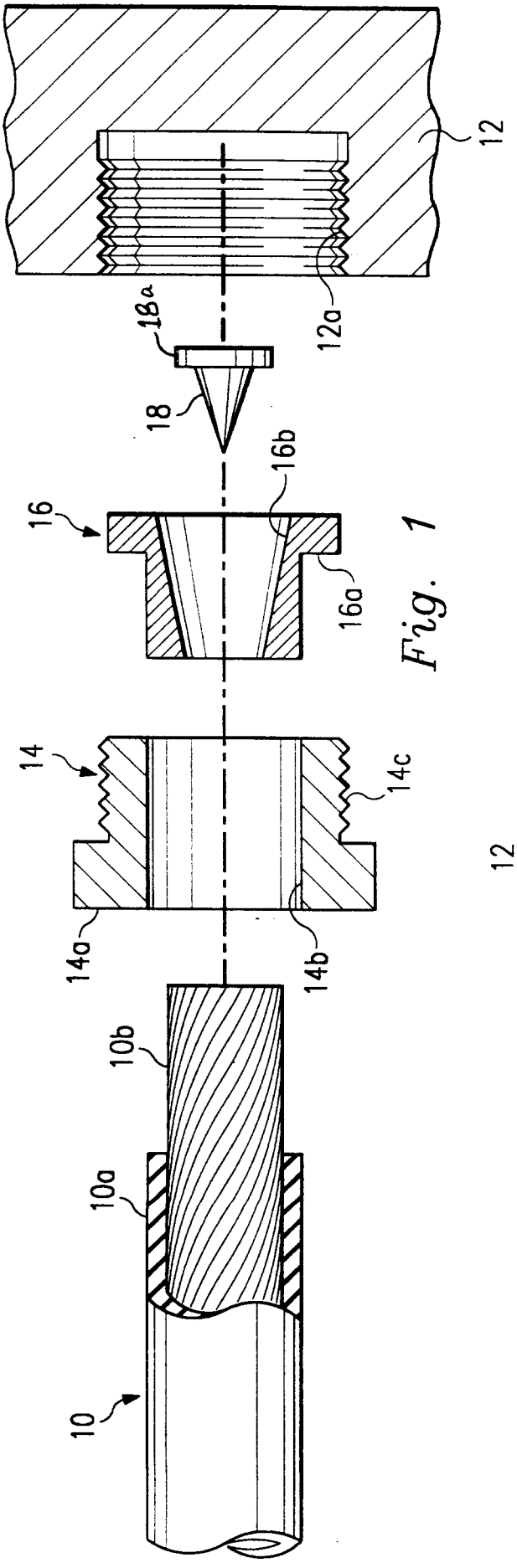

12
18a
12a
18
16b
16
16a
14
14c
14a
14b
10b
10a
10

Fig. 1

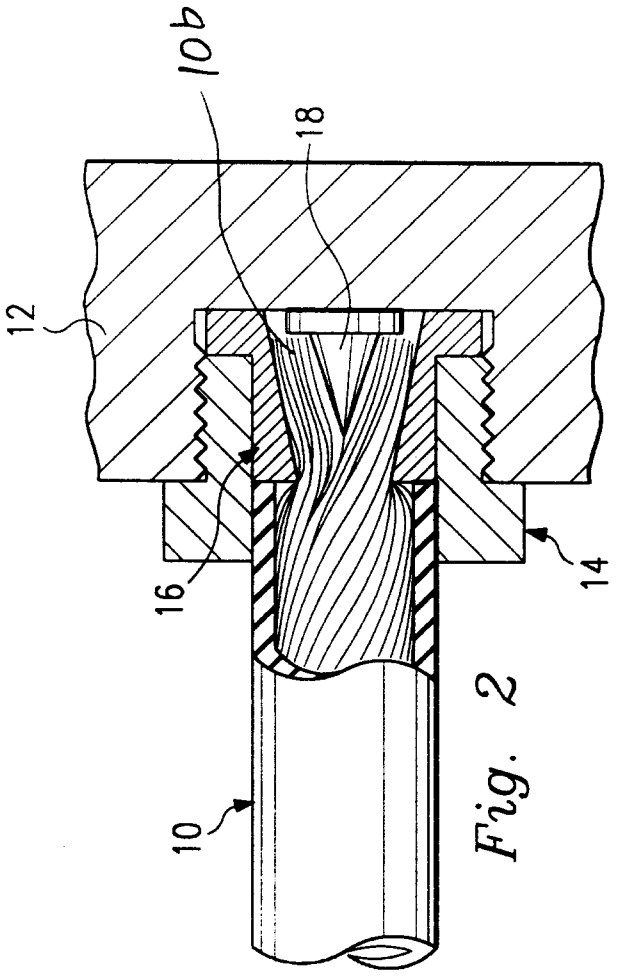

10b
18
12
16
14
10

Fig. 2

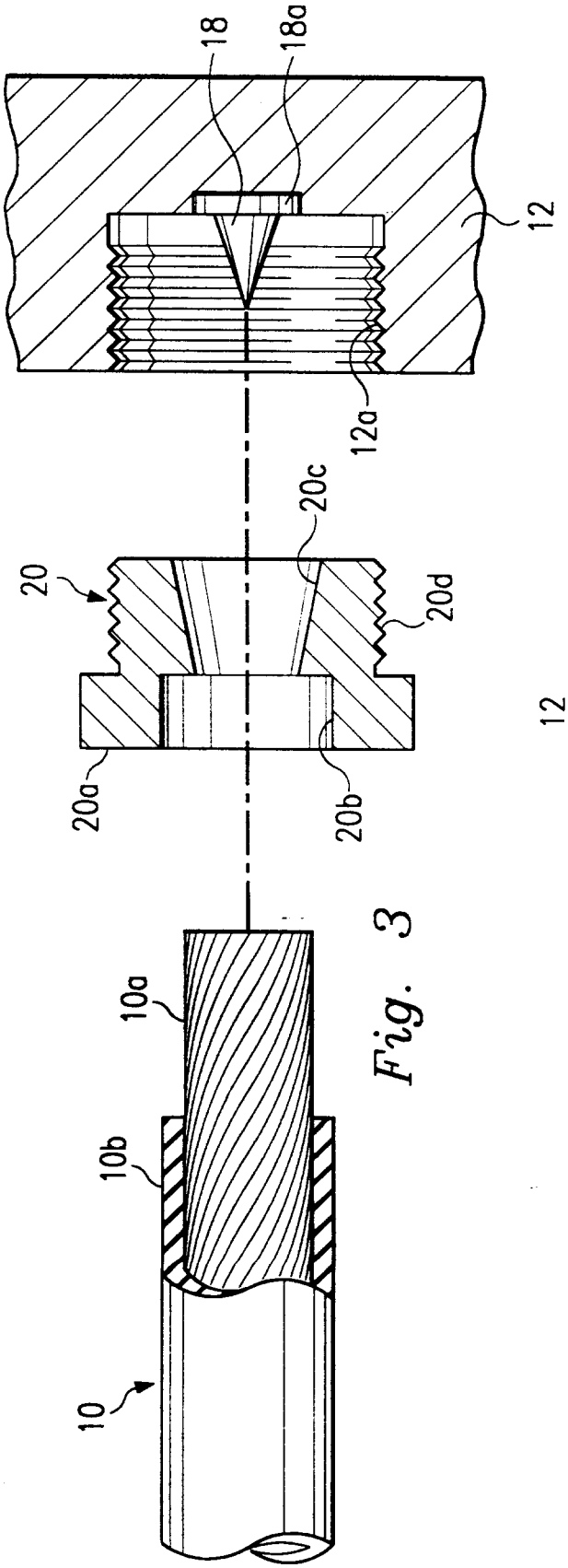


Fig. 3

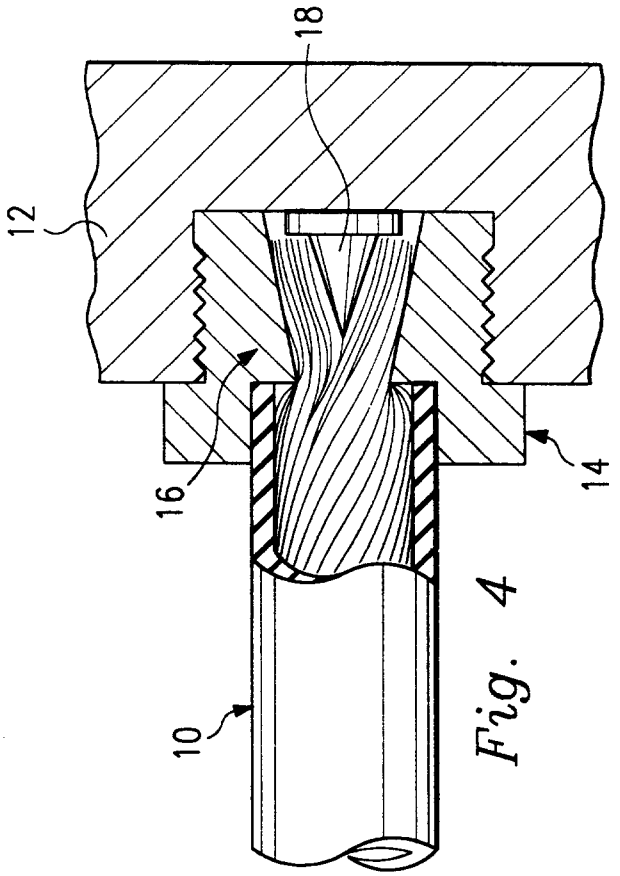
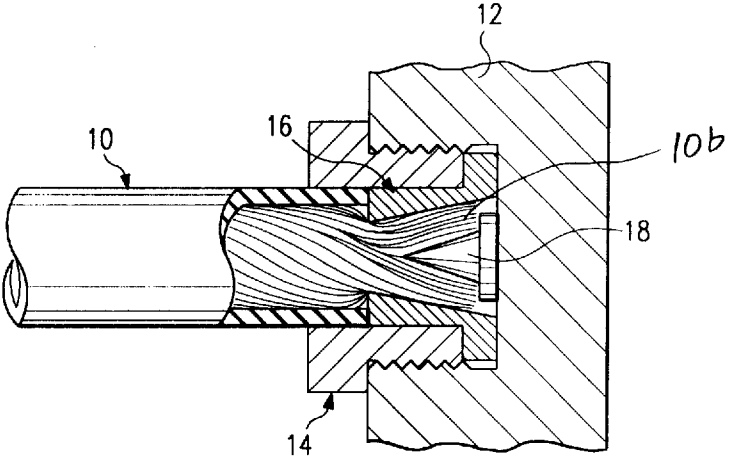


Fig. 4


12
10
16
10b
18
14