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(54) **Shielded cable connector assembly**

Abgeschirmte Kabelsteckverbinderanordnung

Assemblage de connecteur pour un câble blindé

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Description

[0001] This invention relates to a connector assembly for mounting on a shielded cable.

[0002] In certain applications, such as in the aerospace industry, there are stringent requirements on the robustness, reliability, and shielding effectiveness of cable connectors. A typical cable outlet of a connector for demanding applications in the aerospace industry is shown in Figure 1. The outlet of Figure 1 comprises a body 4' extending from a cable receiving end 6' to a mating end 8', the body comprising an outer shell 10' and a coupling nut 12' at the mating end 8' for secure mechanical coupling to the body of the connector (not shown). A shielded cable 3' comprising a plurality of conductors 5' are surrounded by a shielding braid 7' which is enclosed by an insulating jacket 9'. Electrical terminals 14' of the connector are crimpable to ends of the conducting wires 5'. A collar 16' is mountable over a cable receiving end portion of the outer shell 10' for clamping the shielding braid 7' thereto. Assembly of the cable outlet of Figure 1 is effected by first preparing the end of the cable 3', and passing the conducting wires 5' into the cavity of the body 4'. The terminals 14' can then be crimped to conducting strands of the conducting wires 5', the terminals subsequently being inserted into cavities of an insulative housing of the connector (not shown). The cable outlet body can then be securely attached to the connector by means of the coupling nut 12'. The subsequent step is to mount the shielding braids 7' over the cable receiving end 6' of the outlet body. The collar 16' is then slipped over the shielding braid and cable receiving end of the body, and securely attached thereto by a threaded portion 18' engaging the body for securely clamping the shielding braid thereto. The latter provides both mechanical strain relief means for the cable, and an effective shielding continuity between the cable shielding and the connector.

[0003] Although this known connector is robust and reliable, it is relatively expensive to produce, particularly because of the assembly costs. A major disadvantage in the assembly arises from the need to mount the outer shell 10' over the cable 3' prior to connection of the terminals 14' to the conducting wires 5'. This assembly procedure requires hand assembly of the terminals to the conducting wires 5'. Another problem may arise from stretching the shielding braid over the end of the connector outer shell, as air spaces in the braid enlarge, and are relatively exposed to the environment, thereby reducing shielding effectiveness and reliability.

[0004] US-A-4921449 discloses a connector for connection to a shielded cable, the connector having a terminal section with terminals and a cable section for clamping and electrical connection to the shielding of the cable, the cable section comprising a support having a body portion mountable around the cable such that the shielding thereof can be clamped thereto, in which the support comprises at least two separate parts, that

enable mounting to the cable without feeding the cable through the support.

[0005] It would be desirable to provide a robust, reliable and effective shielded connector that is nevertheless cost-effective to produce, and in particular cost-effective to assemble.

[0006] An object of this invention is to provide a robust, reliable connector for shielded cable that is cost-effective to produce, and in particular to assemble.

[0007] It is a further object of this invention to provide an easy to assemble connector for a shielded cable, that has an effective strain relief means and effective electrical shielding interconnection between the cable and the connector.

[0008] Objects of this invention have been achieved by providing a connector with the features of claim 1. The connector is suitable for connection to a shielded cable, the connector comprising a terminal section for assembly of terminals therein, and a cable section for clamping and electrical connection to shielding of the cable, the cable section comprising a support having a body portion mountable around the cable such that shielding thereof can be clamped thereto. The support comprises at least two separate parts that enable mounting to the cable without feeding the cable through the support. The body portion extends from a terminal section end proximate the terminal section to a cable receiving end remote from the terminal section. The cable section further comprises a shield clamp having shells extending from a pivot end to a terminal section end, the clamping shell's pivot ends being pivotally engageable in a member of the support proximate the cable receiving end of the body portion for pivotally mounting around the support body portion.

[0009] Advantageously, the means for contacting the shield can be mounted to the cable after termination of the cable to contacts, thereby reducing assembly costs.

[0010] Advantageously, not only is good electrical connection ensured between the shielding of the cable and the connector by means of the clamping shells, but as the clamping shells are separate parts that can be mounted around the cable after assembly of the terminal section, a cost-effective assembly procedure is enabled.

[0011] Further advantageous aspects of the invention will be apparent from the claims and following description.

[0012] Embodiments of this invention will now be described by way of example with reference to the figures, whereby;

Figure 2 is a partial cross-sectional view of a connector assembly mounted to a shielded cable, according to this invention;

Figure 3 is a side view of a terminal receiving section of the connector assembly in a partially disassembled state;

Figure 4 is a similar view to that of Figure 3 but with

the terminals mounted to the connector;

Figure 5 is a view showing a subsequent step in the assembly procedure with respect to Figure 4 where shielding braid supports are about to be mounted around the cable;

Figure 6 is a similar view to that of Figure 5 showing the shielding supports mounted;

Figure 7 is a view similar to that of Figure 6 where the shielding braid is folded back over the support;

Figure 8 shows a subsequent step to that of Figure 7 whereby clamping portions are being mounted to the shielding support;

Figure 9 shows a retention ring about to be mounted over the clamping portions in a subsequent assembly step to that of Figure 8;

Figure 10 illustrates in cross-section of part of another embodiment of this invention where the cable outlet is bent through 90°;

Figure 11 is a partial cross-sectional view of yet another embodiment of this invention having a "bayonet" type of retention ring;

Figure 12 is a side view of another embodiment according to this invention, in a partially disassembled state;

Figure 13 is a view similar to that of Figure 12 in a subsequent assembly step;

Figure 14 is a partial cross-sectional view through the embodiment of Figures 12 and 13 fully assembled; and

Figure 15 is a simplified cross-sectional view through lines 15-15 of Figure 14.

[0013] Referring to Figure 2, a shielded cable connector 2 comprises a terminal section 4 and a cable section 6. The terminal section 4 comprises an outer housing 8 made of a conducting material (such as metal) or a insulating material plated with conductive material for shielding, and a locking ring 10 rotatably mounted on the outer housing 8 for screw or bayonet type connection to a complementary locking portion of a mating connector (not shown). Within the outer housing 8 is mounted an insulative housing with cavities extending there-through for receiving terminals 12 (see Figure 3). The terminals 12 are crimpable to conducting strands of individual wires 14 of a cable 16 (see Figures 2 and 3). The cable 16 further has a conductive braid 18 surrounding the plurality of wires 14 for shielding thereof. The terminal portion 4 of the connector extends between a mating end 20 and a cable receiving end 22. At the cable receiving end 22 is a threaded portion 24 for engagement with a retention ring 30.

[0014] The cable section 6 comprises a shield support 25, a shield clamp 27 and the retention ring 30. The shield support 25 comprises a pair of support members 26 that form a generally cylindrical structure having a cavity 32 extending therethrough adapted for receiving the outer diameter of the cable 16 with shielding braid, the support further having an annular shoulder 34 sepa-

rated via an end wall 29 from a main cylindrical body portion 33 by an annular slot 36 for receiving a pivot support end 38 of a pair of clamping members 28 of the shield clamp 27. At a forward end of the cylindrical portion 33 is a conical abutment surface 40 facing rearwardly. The clamping members 28 extend from the pivot end 38 to a terminal section end 42 that has an outward retention shoulder 44 facing rearwardly and a plurality of axially directed projections 46 that engage with complementary projections 48 of the terminal section cable receiving end 22 for preventing relative rotation of the clamping members 28 and terminal section. The outward retention shoulder 44 engages with a complementary shoulder 45 of the retention ring 30 for securely locking the clamping members 28 to the terminal section 4, whereby the retention ring 30 has a threaded inner surface for engaging the thread 34 of the terminal section.

[0015] Referring to Figure 11, another embodiment of a locking ring 300 comprises a complementary shoulder 450 in the shape of a cylindrical projection, or a plurality of discrete projections disposed around the circumference that engage against a retention shoulder 440 of the clamping shells 280. A terminal section end 420 of the clamping shells 280 has axial grooves 421 that allow passage of the projections 450. The clamping shells can thus be quickly mounted to the connector and retention ring 300, by axial insertion of the clamping shells into the retention ring such that the projections 450 slide through the grooves 421, subsequently rotating the retention ring such that the projections 450 ride along the retention shoulder 440 of the clamping shells. The retention shoulder is slightly tapered to effect an axial tightening of the clamping shells against the connector. Dimples 422 along the retention shoulder 440 provide a seating for retaining the cylindrical projections in their angular end position with respect to the clamping shells 280. A rapid attachment of the clamping shells to the connector assembly is thus achieved with this embodiment.

[0016] Referring again to Figure 2, the clamping members 28 have a complementary conical abutment surface 50 to the conical abutment surface 40 of the support members 26 and extending rearwardly therefrom a cylindrical clamping surface for clamping the shielding braid against the cylindrical portion 33 of the support member 26.

[0017] Referring now to Figures 3-9, assembly of the connector will now be described. Referring first to Figure 3, terminals 12 can be initially connected to conducting wires 14 of the cable prior to mounting to any of the connector parts. The latter enables the terminals 12 to be crimped to the conducting wires during preparation of the cable in a semi-automatic, or fully automated manner at a harness manufacturing sight. The terminals 12 can then be inserted into terminal receiving cavities (not shown) of the terminal section 4 as shown in Figure 4. An end portion 54 of the shielding braid 18 is maintained

in surplus as shown in Figure 4 and the support members 26 (identical halves in this embodiment) are then brought together about the shielding proximate the terminal section 4 as shown in Figures 5 and 6. The end portion 54 of the braid is then folded back over the cylindrical portion 33 of the support members 26 as shown in Figure 7. Referring now to Figure 8, the clamping members 28 (identical halves in this embodiment) are then brought together over the support members 26, and the pivot ends 38 are engaged in the annular slots 36 of the support members, whereby the terminal section end 42 of the clamping members are outwardly tilted. The clamping members can then be rotated towards each other about their pivot ends 38, whereby the lever arm enables tight clamping of the shielding braid between the clamping members and the support members. Positioning of the clamping halves 28 with respect to the support 25 can be assisted by cooperation of projections 31 of the clamping halves, that engage in cavities 35 extending through the end wall 29 of the support 25. Engagement of the tapered surfaces 40,50 as shown in Figure 2, ensures correct axial positioning of the clamping members 28 with respect to the support members 26, and tight pinching of the shielding braid therebetween for good shielding interconnection. The tapered shoulders 40,50 and slot 36 also provide axial retention of the clamping members 28 with respect to the support members 26. The retention ring 30 is then moved over the clamping members 28 and threaded to the terminal section 18 whereby the shoulders 44 of the clamping members are engaged by a complementary shoulder of the retention ring 30 for tight clamping to the terminal section 4. The interengaging teeth 46,48 prevent rotation of the cable section with respect to the terminal section.

[0018] Referring to Figure 10, another embodiment is provided with a locking ring 300' and clamping shells 280' that extend through a 90° bend, which is advantageous for certain applications, due to space requirements. The bend protects the bend in the cable, rather than having a straight outlet and then bending the cable, if a 90° outlet is required. Other outlet angles can of course also be provided. In this embodiment, the clamping shells 280' are also provided as half-shells mountable pivotally against a shield support 250' similar to the shield support 25 described in the first embodiment.

[0019] Referring to Figures 12-15, another embodiment of a shielded cable connector 502 is shown comprising a terminal section 504 and a cable section 506. This embodiment is similar in many respects with the previously described embodiments, with the major differences being described below. The shield support 525 is also provided into half-shells that fit around the cable 16 and receive the end of the shielding braid 54 folded over a terminal section end of the support, overlaying the body portion 533. Instead of clamping the shielding braid against the body portion 533 by means of the pair of outer clamping members 528, a clamping collar 560

is provided. The clamping collar is for example a supple metal band that is positioned around the support member 525, tightened therearound and securely attached by means of a crimp or deformed tabs. Collars of this type are conventional products.

[0020] As shown in Figure 13, the clamping shells 528 can then be pivotally mounted at the cable receiving end 529 of the support 525 and pivoted into the final position. In order to provisionally latch or secure the clamping members 528 in their mounted position, the support member 525 is provided with resilient studs 562 at the terminal section end that engage in an interference fit with corresponding recesses 564 provided on the clamping shell 528. The latter facilitates handling of the partial assembly, whereby the locking ring 30 can then be slipped over the clamping shells 528 to lock the cable section 506 to the terminal section 504. The provision of the clamping collar enables shielding of different thickness to be effectively clamped, whereas in the previous embodiment the range of thicknesses of the shielding braid to be clamped is determined by the gap between the clamping shell and support member.

[0021] As can be seen in Figure 13, it is also possible to provide pivot studs 566 that engage in slots in the clamping shells 528 for pivot mounting thereof. This, would for example, be an alternative for the annular groove in the support member provided in the other embodiments.

[0022] Advantageously therefore, terminals can be connected to wires of the cable prior to assembly to parts of the connector, whilst nevertheless enabling mounting of a robust and effective shielding interconnection between the cable and the connector. [Furthermore, the pivoting of the clamping members ensure effective clamping of the cable.]

Claims

1. A connector for connection to a shielded cable, the connector comprising a terminal section (4) for assembly of terminals (12) therein, and a cable section (6) for clamping and electrical connection to the shielding (18) of the cable, the cable section comprising a support (25,250',525) having a body portion (33,533) mountable around the cable such that the shielding thereof can be clamped thereto, the support comprising at least two separate parts (26,526) that enable mounting to the cable without feeding the cable through the support **characterized in that** the body portion extends from a terminal section end proximate the terminal section (4) to a cable receiving end remote from the terminal section, and **in that** the cable section further comprises a shield clamp (27) having shells (28,280,280',528) extending from a pivot end (38) to a terminal section end (42), the clamping shell's pivot ends (38) pivotally engageable in a member

(36,566) of the support (25,525) proximate the cable receiving end of the body portion (33,533) for pivotally mounting around the support body portion.

2. The connector of claim 1 **characterized in that** the clamping shells and support are dimensioned so as to clamp the cable shielding therebetween.
3. The cable connector of any of claims 1 or 2 **characterized in that** the cable section further comprises a clamping collar (560) for clamping the cable shielding (18) around the support (525).
4. The connector of any of claims 1, 2 or 3 **characterized in that** the support (25) has an oblique abutment surface (40) facing outwardly and directed away from the terminal section (4), the abutment surface cooperable with a complementary abutment surface of the clamping shells (28).
5. The connector of any one of the preceding claims 1-4 **characterized in that** there are a pair of identical shells forming a generally axi-symmetric shield clamp (27).
6. The connector of any one of the preceding claims **characterized in that** there are a pair of identical support members (26) forming a generally axi-symmetric support (25).
7. The connector of any one of the preceding claims **characterized in that** the clamping shells (28,280) have a retention shoulder (44) proximate the terminal section end (42,420) and engageable by a shoulder (45,450) of a locking ring (30,300,300') for secure attachment to the terminal section.
8. The connector of claim 7 **characterized in that** the clamping shells (28) are provided with axial teeth (34) interengageable with axial teeth (48) of a cable section end of the terminal section (4) for preventing relative rotation between the cable and terminal sections.
9. The connector of any one of the preceding claims **characterized in that** the clamping shells (28) are provided with axially extending projections (31) at their pivot ends (38) for engagement in one or more discrete cavities (35) extending through an end wall (29) of the support (25), to locate the clamping shells, in the sense of rotation about the cable, with respect to the support.
10. The connector of claim 7 **characterized in that** the retention shoulder (440) is engageable by a discrete projection (450) that forms the locking ring shoulder, the discrete projection insertable through an axial groove (421) of the terminal section end

(420), and engageable behind the retention shoulder (440) upon rotation of the locking ring relative to the clamping shells.

- 5 11. The connector of claim 10 **characterized in that** the retention shoulder (440) is tapered and comprises dimples (422) for seating the projection (450) and preventing unlocking rotation thereof.
- 10 12. The connector of any one of the preceding claims **characterized in that** the clamping shells (280') are bent through an angle for directing the cable outlet at a different angle to the mating direction of the connector.

Patentansprüche

- 20 1. Verbinder für eine Verbindung mit einem abgeschirmten Kabel, wobei der Verbinder aufweist: einen Klemmenabschnitt (4) für die Anordnung der Anschlußklemmen (12) darin; und einen Kabelabschnitt (6) für das Festklemmen an und die elektrische Verbindung mit der Abschirmung (18) des Kabels, wobei der Kabelabschnitt eine Halterung (25, 250', 525) mit einem Gehäuseabschnitt (33, 533) aufweist, der um das Kabel herum so montierbar ist, daß dessen Abschirmung daran festgeklemt werden kann, wobei die Halterung mindestens zwei separate Teile (26, 526) aufweist, die die Montage am Kabel ohne Zuführen des Kabels durch die Halterung ermöglichen, **dadurch gekennzeichnet, daß** sich der Gehäuseabschnitt von einem Klemmenabschnittsende in unmittelbarer Nähe des Klemmenabschnittes (4) zu einem Kabelaufnahmeende, das vom Klemmenabschnitt entfernt ist, erstreckt; und daß der Kabelabschnitt außerdem eine Abschirmklemme (27) mit Gehäusen (28, 280, 280', 528) aufweist, die sich von einem Drehende (38) aus zu einem Klemmenabschnittsende (42) erstrecken, wobei die Drehenden (38) der Klemmgehäuse drehbar in einem Element (36, 566) der Halterung (25, 525) in unmittelbarer Nähe des Kabelaufnahmeendes des Gehäuseabschnittes (33, 533) für ein drehbares Montieren um den Halterungsgehäuseabschnitt herum in Eingriff kommen können.
- 25 2. Verbinder nach Anspruch 1, **dadurch gekennzeichnet, daß** die Klemmgehäuse und die Halterung so dimensioniert sind, daß die Kabelabschirmung dazwischen festgeklemt wird.
- 30 3. Kabelverbinder nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, daß** der Kabelabschnitt außerdem einen Klemmring (560) für das Festklemmen der Kabelabschirmung (18) um die Halterung (525) herum aufweist.
- 35 45 50 55

4. Verbinder nach einem der Ansprüche 1, 2 oder 3, **dadurch gekennzeichnet, daß** die Halterung (25) eine schräge Widerlagerfläche (40) aufweist, die nach außen hin liegt und vom Klemmenabschnitt (4) weggerichtet ist, wobei die Widerlagerfläche mit einer komplementären Widerlagerfläche der Klemmgehäuse (28) zusammenwirken kann. 5
5. Verbinder nach einem der vorhergehenden Ansprüche 1 bis 4, **dadurch gekennzeichnet, daß** ein Paar identische Gehäuse vorhanden sind, die eine im allgemeinen achsensymmetrische Abschirmklemme (27) bilden. 10
6. Verbinder nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** ein Paar identische Halterungselemente (26) vorhanden sind, die eine im allgemeinen achsensymmetrische Halterung (25) bilden. 15
7. Verbinder nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Klemmgehäuse (28, 280) einen Arretiervorsprung (44) in unmittelbarer Nähe des Klemmenabschnitts (42, 420) aufweisen und mit einem Vorsprung (45, 450) eines Sperringes (30, 300, 300') für eine sichere Befestigung am Klemmenabschnitt in Eingriff kommen können. 20
8. Verbinder nach Anspruch 7, **dadurch gekennzeichnet, daß** die Klemmgehäuse (28) mit axialen Zähnen (34) versehen sind, die mit axialen Zähnen (48) eines Kabelabschnitts (4) in Eingriff kommen können, um eine relative Drehung zwischen dem Kabel- und dem Klemmenabschnitt zu verhindern. 25
9. Verbinder nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Klemmgehäuse (28) mit sich axial erstreckenden Vorsprüngen (31) an ihren Drehenden (38) für einen Eingriff in einen oder mehrere einzelne Hohlräume (35) versehen sind, die sich durch eine Stirnwand (29) der Halterung (25) erstrecken, um die Klemmgehäuse im Drehungssinn um das Kabel herum mit Bezugnahme auf die Halterung anzuordnen. 30
10. Verbinder nach Anspruch 7, **dadurch gekennzeichnet, daß** der Arretiervorsprung (440) mit einem einzelnen Vorsprung (450), der den Sperringsvorsprung bildet, in Eingriff gebracht werden kann, wobei der einzelne Vorsprung durch eine axiale Nut (421) des Klemmenabschnitts (420) eingesetzt und hinter den Arretiervorsprung (440) bei einer Drehung des Sperringes relativ zu den Klemmgehäusen in Eingriff gebracht werden kann. 35
11. Verbinder nach Anspruch 10, **dadurch gekennzeichnet, daß** der Arretiervorsprung (440) konisch ist und Vertiefungen (422) für das Aufnehmen des Vorsprungs (450) und dafür aufweist, daß dessen Entriegelungsdrehung verhindert wird. 40
12. Verbinder nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Klemmgehäuse (280') um einen Winkel für das Richten des Kabelaustrittes unter einem abweichenden Winkel zur Eingriffsrichtung des Verbinders gebogen sind. 45

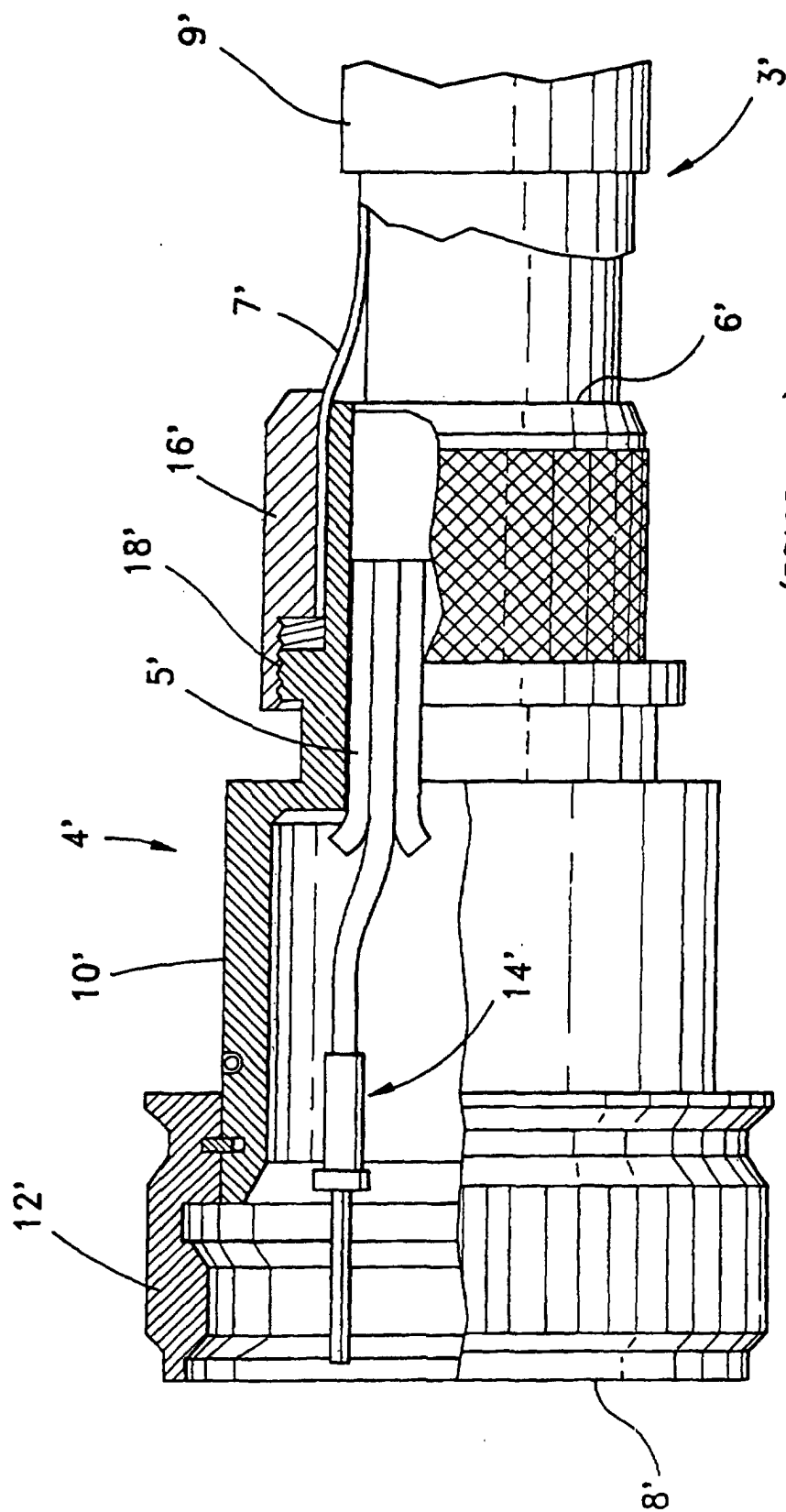
Revendications

- Connecteur destiné à être connecté à un câble blindé, le connecteur comprenant une section de connexion (4) pour l'assemblage de bornes (12) et une section de câble (6) pour assurer le serrage et la connexion électrique au blindage (18) du câble, la section de câble comprenant un support (25, 250', 525) comportant une partie de corps (33, 533) pouvant être montée autour du câble, de sorte que le blindage correspondant peut y être serré, le support comprenant au moins deux parties séparées (26, 526), permettant le montage sur le câble sans passer le câble à travers le support, **caractérisé en ce que** la partie de corps s'étend d'une extrémité de la section de connexion proche de la section de connexion (4) vers une extrémité de réception du câble éloignée de la section de connexion, et **en ce que** la section de câble comprend en outre une bride de serrage du blindage (27) comportant des coques (28, 280, 280', 528) s'étendant d'une extrémité de pivotement (38) vers une extrémité de la section de connexion (42), les extrémités de pivotement de la coque de serrage (38) pouvant s'engager par pivotement dans un élément (36, 566) du support (25, 525) proche de l'extrémité de réception du câble de la partie de corps (33, 533) en vue d'un montage par pivotement autour de la partie de corps du support. 50
- Connecteur selon la revendication 1, **caractérisé en ce que** les coques de serrage et le support sont dimensionnés de sorte à serrer le blindage du câble entre eux. 55
- Connecteur de câble selon l'une quelconque des revendications 1 ou 2, **caractérisé en ce que** la section de câble comprend en outre un collier de serrage (560) pour serrer le blindage du câble (18) autour du support (525).
- Connecteur selon l'une quelconque des revendications 1, 2 ou 3, **caractérisé en ce que** le support (25) comporte une surface de butée oblique (40) orientée vers l'extérieur et dirigée à l'écart de la section de connexion (4), la surface de butée pouvant

coopérer avec une surface de butée complémentaire des coques de serrage (28).

5. Connecteur selon l'une quelconque des revendications 1 à 4, **caractérisé en ce qu'il** comporte une 5
paire de coques identiques constituant un serrage du blindage généralement axisymétrique (27).
6. Connecteur selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comporte une paire d'éléments de support identiques (26) 10
constituant un support généralement axisymétrique (25).
7. Connecteur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les coques de serrage (28, 280) comportent un épaulement de retenue (44) proche de l'extrémité de la 15
section de connexion (42, 420) et pouvant s'engager dans un épaulement (45, 450) d'une bague de retenue (30, 300, 300') en vue d'une fixation sûre de la section de connexion. 20
8. Connecteur selon la revendication 7, **caractérisé en ce que** les coques de serrage (28) comportent 25
des dents axiales (34) pouvant s'engager dans des dents axiales (48) d'une extrémité de la section de câble de la section de connexion (4) pour empêcher une rotation relative entre les sections de câble et de connexion. 30
9. Connecteur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les coques de serrage (28) comportent des saillies à extension axiale (31) au niveau de leurs extrémités de 35
pivotement (38), destinées à s'engager dans une ou plusieurs cavités séparées (35) s'étendant à travers une paroi d'extrémité (29 du support (25) pour positionner les coques de serrage, en termes de rotation autour du câble, par rapport au support. 40
10. Connecteur selon la revendication 7, **caractérisé en ce que** l'épaulement de retenue (440) peut être engagé dans une saillie séparée (450) formant 45
l'épaulement de la bague de verrouillage, la saillie séparée pouvant être insérée à travers une rainure axiale (421) de l'extrémité de la section de connexion (420) et pouvant s'engager derrière l'épaulement de retenue (440) lors de la rotation de la bague de verrouillage par rapport aux coques de serrage. 50
11. Connecteur selon la revendication 10, **caractérisé en ce que** l'épaulement de retenue (440) est effilé et comprend des évidements (422) pour loger la 55
saillie (450) et empêcher une rotation de déverrouillage de celle-ci.

12. Connecteur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les coques de serrage (280') sont courbées à un angle pour diriger la sortie du câble à un angle différent par rapport à la direction d'accouplement du connecteur.



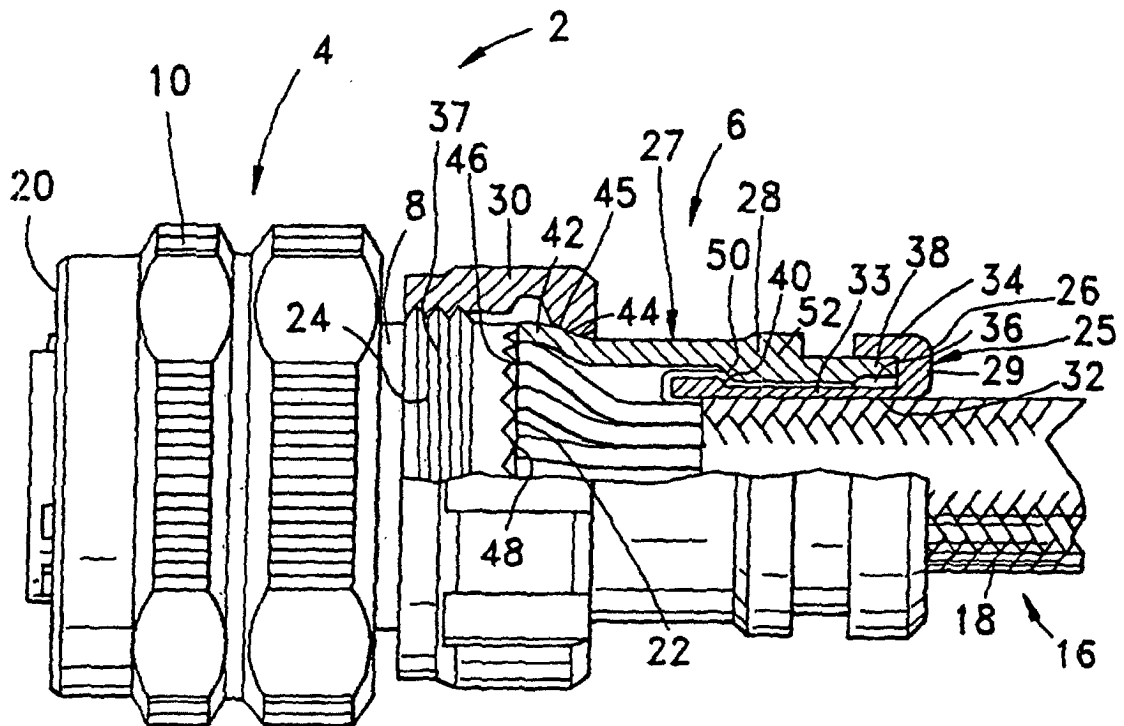


Fig. 2

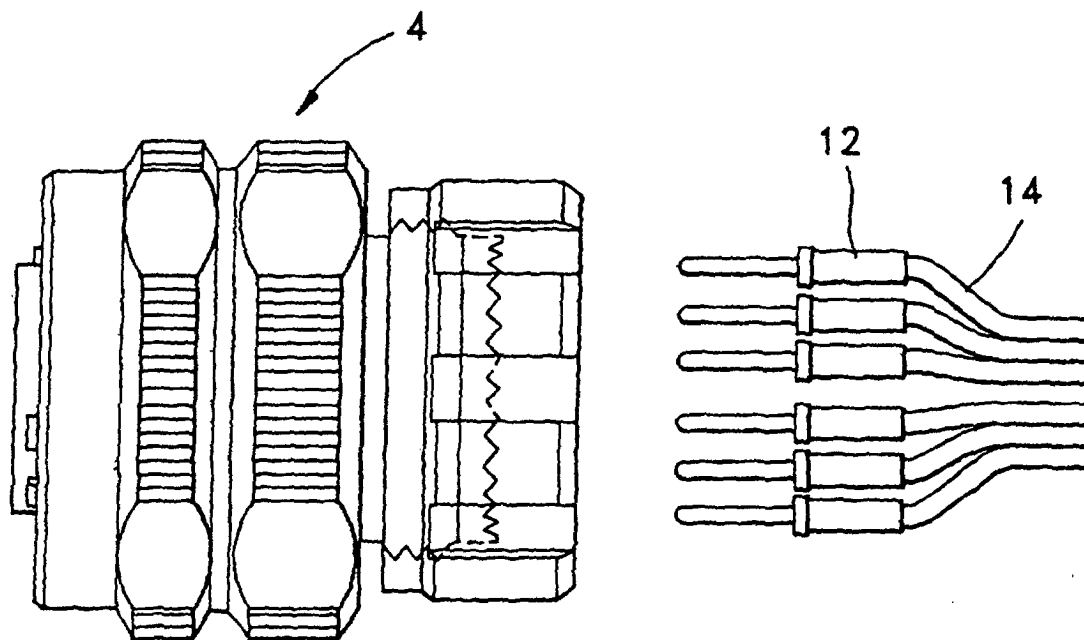
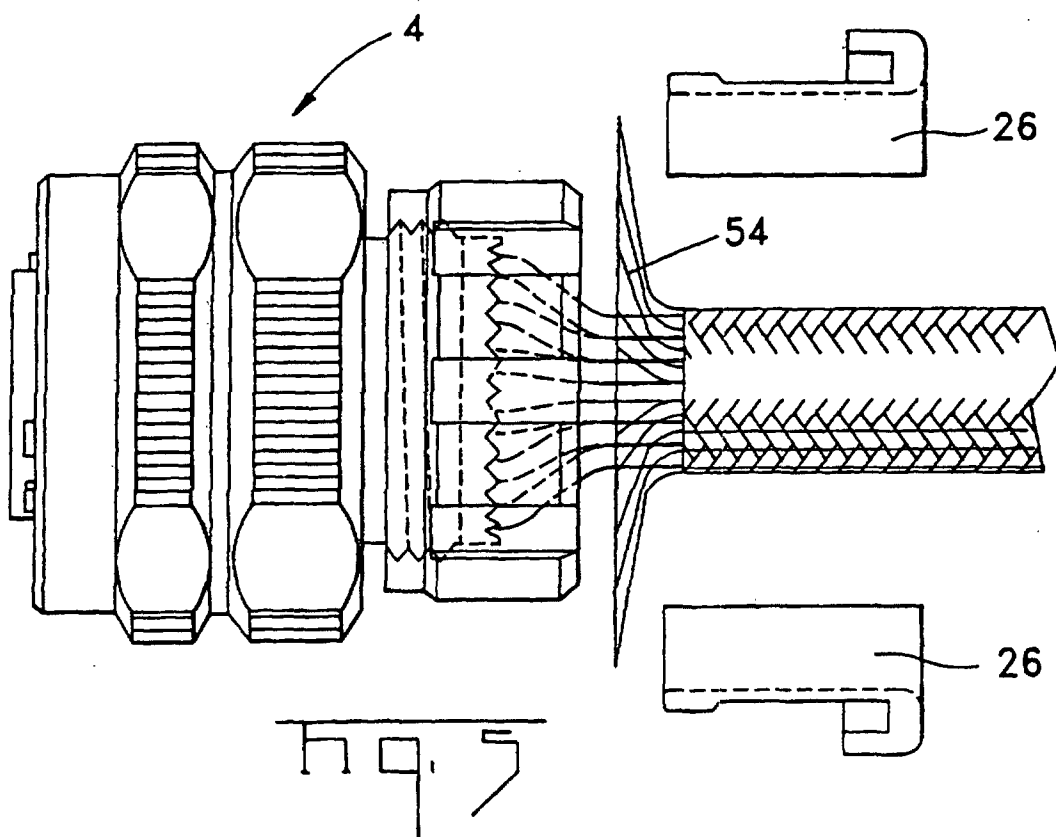
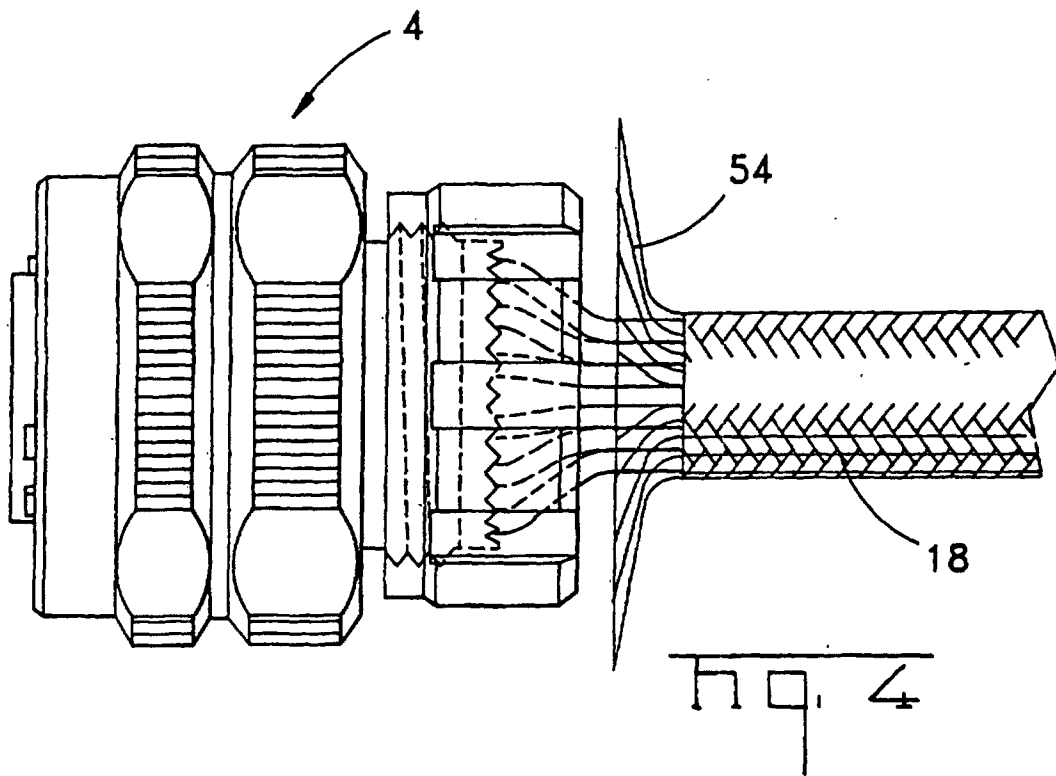


Fig. 3



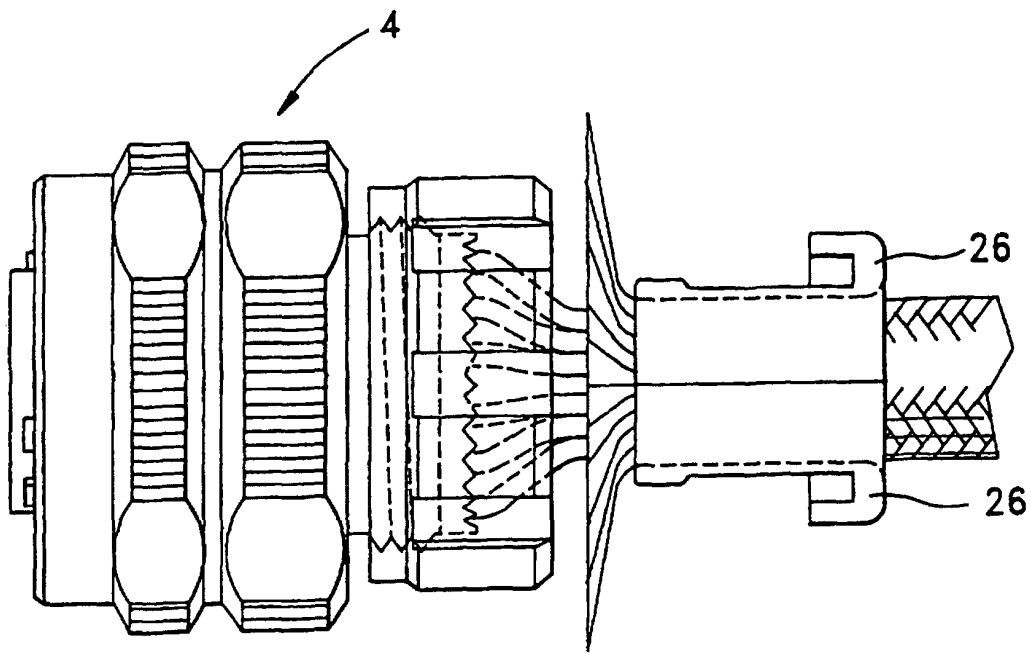


Fig. 6

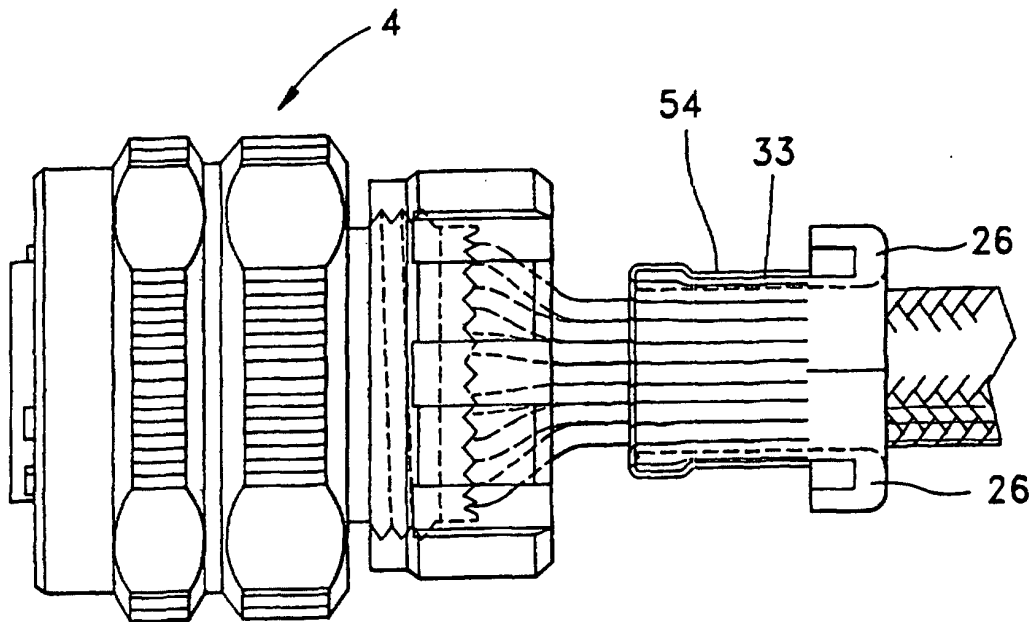


Fig. 7

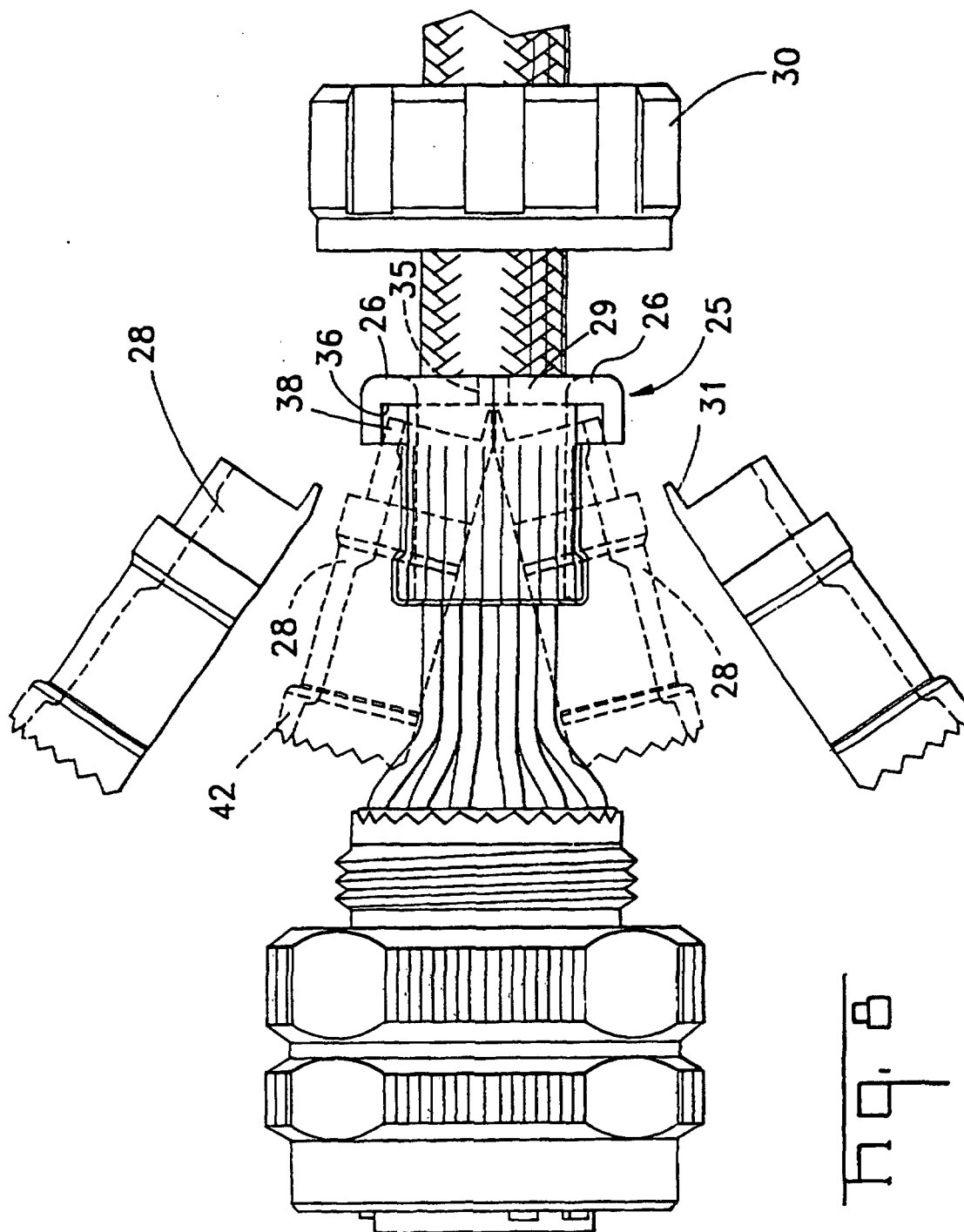
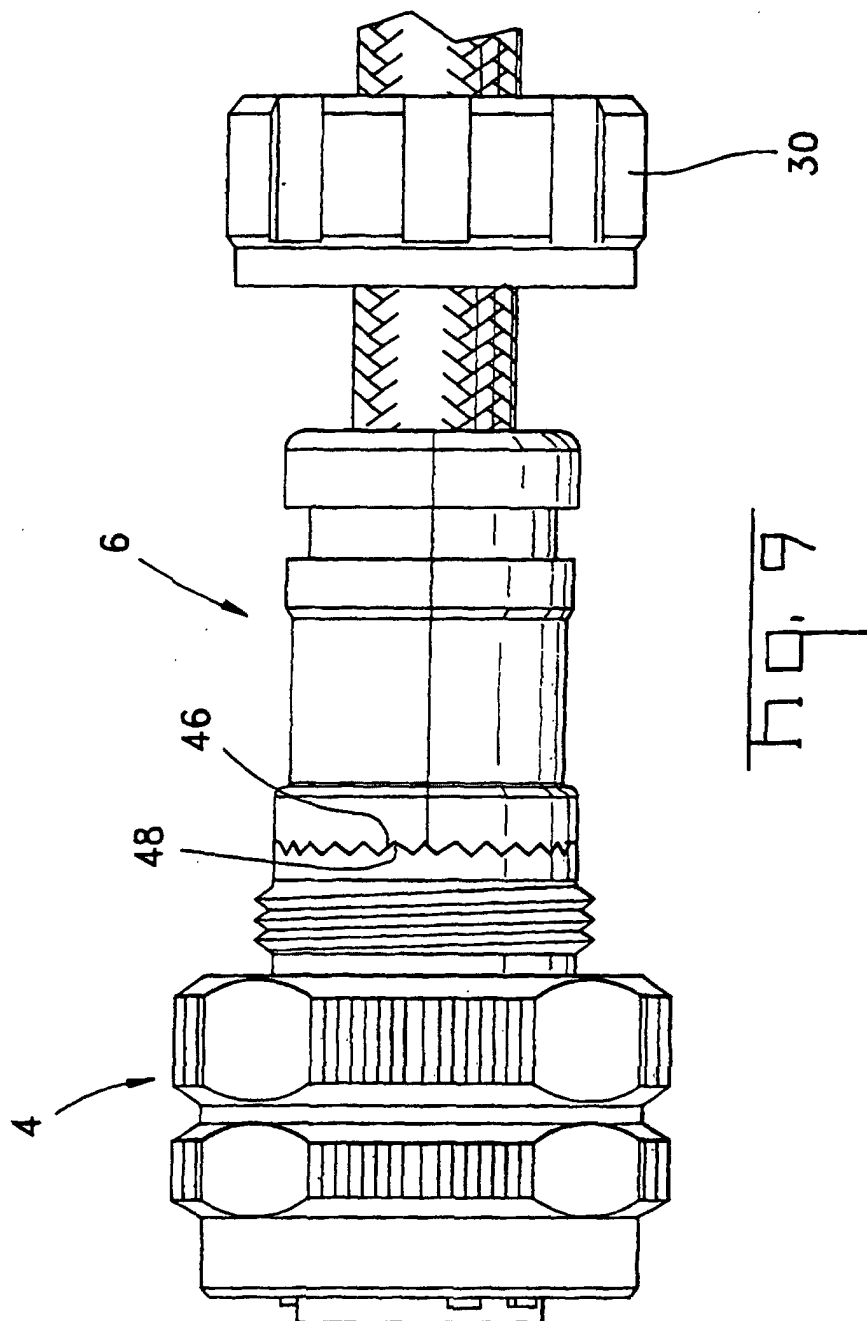
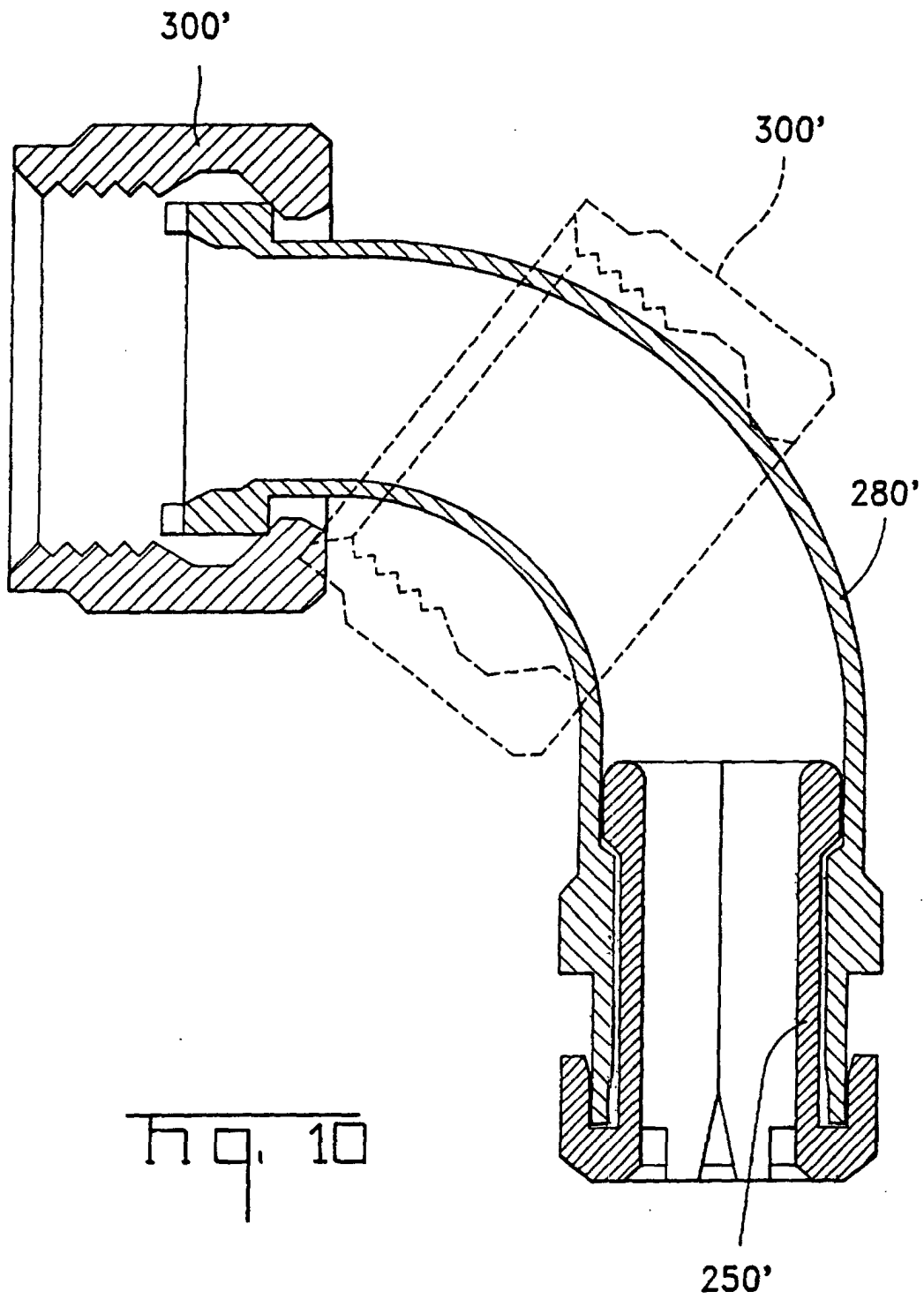
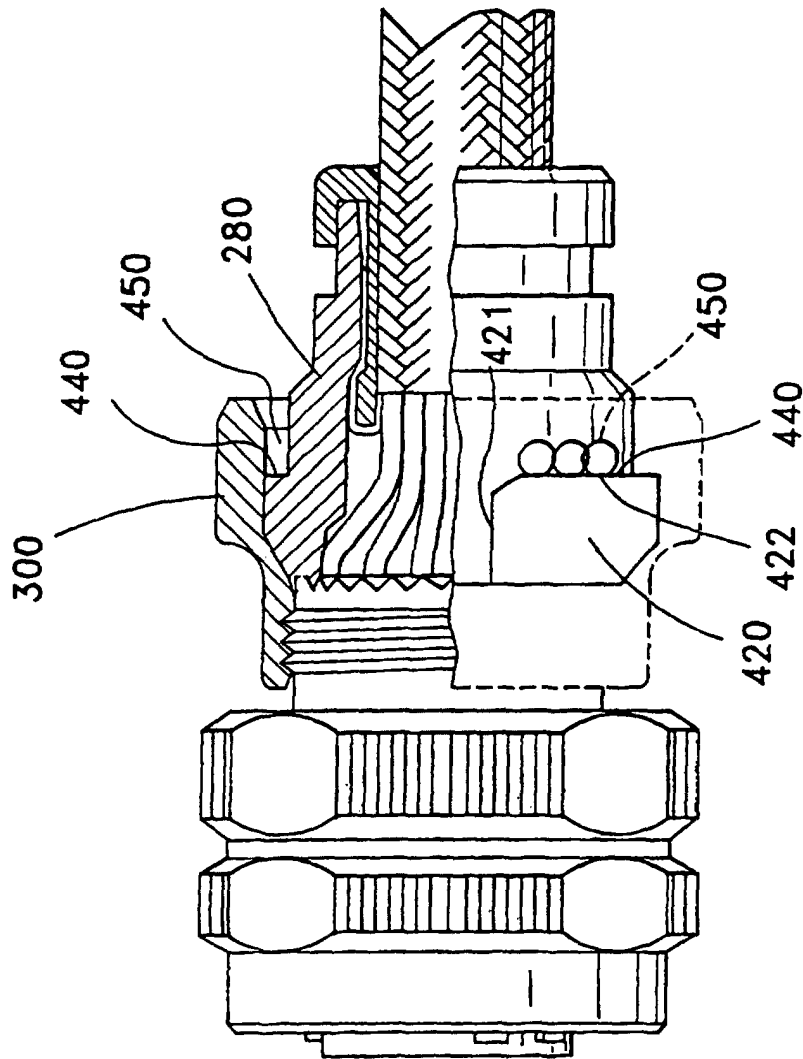


Fig. 8







79.11

