



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**12.04.2000 Bulletin 2000/15**

(51) Int Cl.7: **H01R 9/05**

(21) Application number: **99650090.6**

(22) Date of filing: **29.09.1999**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

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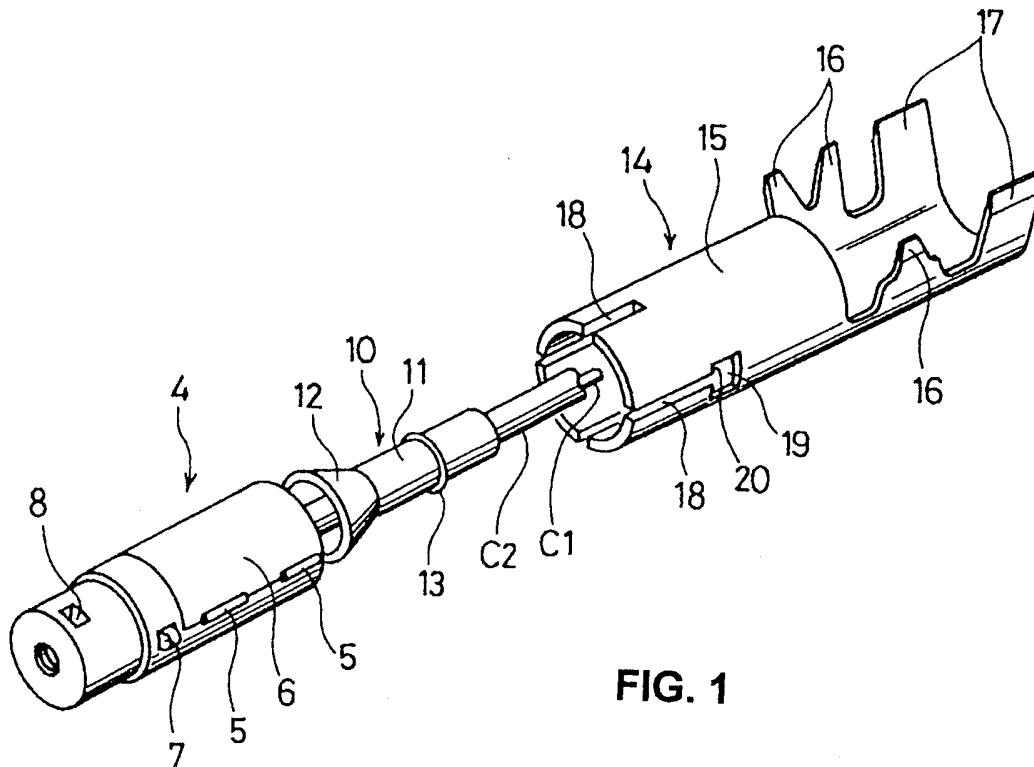
(30) Priority: **05.10.1998 JP 29625198**

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(54) **Electrical connector with metallic jacket**

(57) An electrical connector with a metallic jacket comprises a contact element (1) to be connected to a cable (C), a tubular support (4) for supporting the contact element (1), a metallic jacket (14) fitted over the tubular support (4) and having at least one slit (18) ex-

tending rearwardly from the front opening, a stopper projection (7) provided on the tubular support (4), and a stopper portion (19) provided in the metallic jacket (14) at the rear end of the slit (18) for engagement with the stopper projection (7).



**FIG. 1**

## Description

**[0001]** The present invention relates to electrical connectors with a metallic jacket.

**[0002]** Fig. 4 shows conventional coaxial electrical connector which comprises an insulating tubular support 52 and an inner sheath 51 supported by the tubular support 52. A mouth 53 is provided at a front end of the tubular support 52 for receiving a pin-like male contact element of a mating connector for connection. A pair of semi-cylindrical members 55 hinged at 54 is provided on the rear section of the tubular support 52. By opening the hinged semi-cylindrical members 55 the female contact element is placed at a predetermined position and by closing them it is held in place. A stopper projection 56 is provided on the tubular support 52 in front of the hinge 54.

**[0003]** A metallic outer conductive shell or jacket 57 is able to fit over the tubular support 52, when the shielded wires are connected to the outer conductive shell 57 via the metallic sleeve. A plurality of slits 58 extend rearwardly from a front opening of the outer conductive shell 57 so that the outer conductive shell 57 can flex outwardly to assure contact with the outer conductor of a mating connector. A stopper hole 59 is provided at a middle of the outer conductive shell 57 for engagement with the stopper projection 56 of the tubular support 52 to prevent separation of the tubular support 52. In this embodiment, one or a pair of the stopper holes 59 are provided in line with one or a pair of the opposed slits 58. A pair of crimping pieces 60 and 61 are provided on the outer conductive shell 57 at the rear portion to hold the shield wire and the outer sheath, respectively.

**[0004]** However, the stopper hole 59 of the outer conductive shell 57 is not always aligned with the slit 58 so that it is always necessary to check if the stopper projection 56 and the stopper hole 59 are aligned before assembling. The stopper projection 56 can advance easily up to the end of the slits 58 because the outer conductive shell 57 is easily flexed owing to the slits 58, but hardly advance from the end of the slits 58 to the stopper hole 59.

**[0005]** Accordingly, it is an object of the invention to provide an electrical connector with a metallic shell enabling to assemble it easily.

**[0006]** The above object is achieved by the invention claimed in claim 1.

**[0007]** Embodiments of the invention will now be described by way of example with reference to accompanying drawings, in which:

Fig. 1 is a perspective view of an electrical connector being assembled according to an embodiment of the invention;

Fig. 2 is a sectional view the completed electrical connector;

Figs. 3(A)-(C) are perspective views of different slits; and

Fig. 4 is a perspective view of a conventional electrical connector.

**[0008]** Fig. 1 shows an electrical connector being assembled according to an embodiment of the invention and Fig. 2 shows in section the assembled electrical connector. A coaxial cable C has a central conductor C1, an insulating inner sheath C2, shield wires C3, and an insulating outer sheath C4. In Fig. 1, the shield wires C3 and the outer sheath C4 are omitted. The central conductor C1 projecting from the inner sheath C2 is connected to a contact element 1. In this embodiment, the contact element 1 is of the female type and has a contact section 2 at a front end for receiving a male contact element. The contact section 2 is made flexible and has a tapered portion 3 for guiding the male contact element.

**[0009]** The contact element 1 and the inner sheath C2 are supported by a tubular support 4 of a dielectric material. The tubular support 4 has a pair of semi-cylindrical rear sections 6 which are joined together with a hinge 5. After the contact element 1 is placed at a predetermined position in the opened semi-cylindrical rear sections 6, the rear sections 6 are closed and locked to support the contact element 1 and the inner sheath C2.

**[0010]** A pair of stopper projections 7 are provided on the tubular support 4 at diagonal positions. As best shown in Fig. 2, the stopper projection 7 has a front vertical stopper face 7B and a rear sloped guiding face 7A. A check window 8 is provided in the tubular support 4 at a position corresponding to the tapered portion 3 of the contact element 1 to not only permit checking if the contact element 1 is placed at the regular position but also enlarge the space where the tapered portion 3 can expand to facilitate insertion of the male contact element. A mouth 9 at the front end of the tubular support 4 is also tapered to facilitate insertion of the male contact element.

**[0011]** A metallic sleeve 10 is provided to connect the shield wires C3. It has a tubular section 11 and a conical section 12. A circular projection 13 is provided on the tubular section 11. It may be one or a series of projections provided on a circumference. The inside diameter of the tubular section 11 is set at such a value that the metallic sleeve 10 can slide on the inner sheath C2 of the cable. The outer conductive shell or jacket 14 has a tubular section 15 and a rear crimping pieces 16 and 17 to hold the shield wires and the outer sheath, respectively. A plurality of slits 18 extend rearwardly from the front opening of the tubular section 15. A pair of stopper holes 19 communicate with the two diagonally positioned slits 18.

**[0012]** How to assemble the electrical connector will be described below.

(1) A predetermined length of the insulating outer

sheath C4 is removed from the coaxial cable C to expose the shield wires C3.

(2) The metallic sleeve 10 is inserted into a space between the shield wires C3 and the inner sheath C2 until only the conical portion 12 is exposed. A part of the shield wires C3 is raised by the circular projection 13 of the tubular section 11 so that the tubular section 11 is not moved in the axial direction.

(3) Then, the central conductor C1 of the cable is connected to the contact element 1.

(4) The semi-cylindrical rear sections 6 of the tubular support 4 are opened, and the contact element 1 is placed at a predetermined position. Then, the rear sections 6 are closed and locked to hold the contact element 1 and the inner sheath C2, thereby providing the structure as shown in Fig. 1.

(5) Then, the tubular support 4 is inserted into the outer conductor shell 14 such that the stopper projection 7 is aligned with the slit 18 which communicates with the stopper hole 19. The stopper projection 7 is guided by the slit 18 to the stopper hole 19 where the stopper face 7B of the stopper projection 7 engages a shoulder 20 of the stopper hole 19. This completes assembling of the tubular support 4 and the outer conductor shell 14.

(6) Then, the crimping pieces 16 and 17 of the outer conductive shell 14 are deformed to hold the shield wires C3 and the outer sheath 17, thereby providing a structure as shown in Fig. 2.

**[0013]** Alternatively, the stopper hole may be an indentation which is wider than the slit to provide shoulders for engagement with the stopper projection. The stopper projection may be omitted by making the hinge work as a stopper projection. In this case, the stopper hole is modified so as to adapt to it.

**[0014]** Various types of the slit are conceivable. In Fig. 3(A), the width of a slit 18A communicating with the stopper hole 19 is greater than the width of a slit 18 so that the slits 18 and 18A are distinguished easily while the stopper projection is guided easily. In Fig. 3(B), the inside edges 18B of the slit 18A are tapered. In Fig. 3(C), the corners 18C of the slit 18A are tapered. These slits have the same advantages as the slit of Fig. 3(A).

**[0015]** Since the stopper hole communicates with the slit, the stopper projection is guided to the stopper hole once the stopper projection is aligned with the slit, eliminating the need to search for the stopper hole before assembling. Thus, not only the engagement is made firm but also the operation is made easy.

## Claims

1. An electrical connector with a metallic jacket, comprising:
  - a contact element to be connected to a cable;
  - a tubular support for supporting said contact element;
  - a metallic jacket fitted over said tubular support and having at least one slit extending rearwardly from a front opening of said metallic jacket;
  - a stopper projection provided on said tubular support; and
  - a stopper portion communicating with said slit and having a shoulder for engagement with said stopper projection to lock said metallic jacket to said tubular support.
2. An electrical connector with a metallic jacket according to claim 1, wherein said tubular support is made of a dielectric material while said metallic jacket is an outer conductive shell.
3. An electrical connector with a metallic jacket according to claim 1, wherein there are provided four slits and said stopper portion communicates with at least one of said four slits.
4. An electrical connector with a metallic jacket according to claim 1 or 3, wherein said slit communicating with said stopper portion is wider than said slit not communicating with said stopper portion.
5. An electrical connector with a metallic jacket according to claim 1, 3, or 4, wherein said slit communicating with said stopper portion is tapered at inside edges or opening corners.
6. An electrical connector with a metallic jacket according to claim 1 or 2, wherein said tubular support has a pair of semi-cylindrical rear sections joined with a hinge for opening/closing movement, said hinge also replacing said stopper projection.

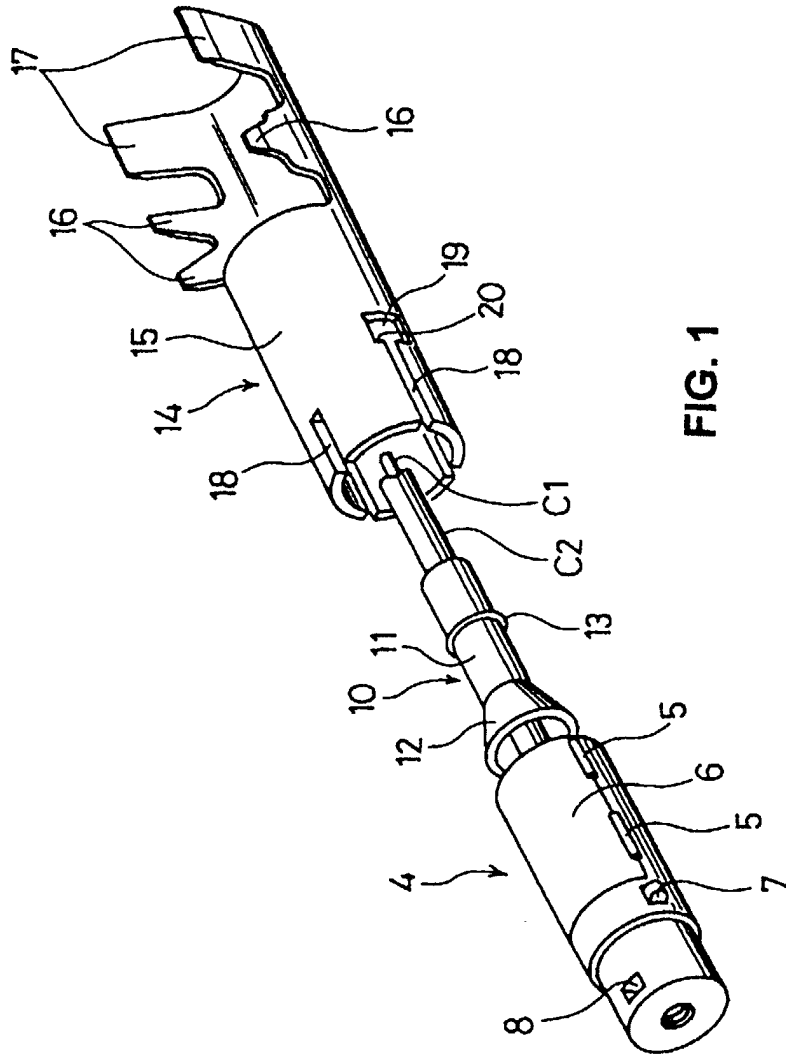


FIG. 1

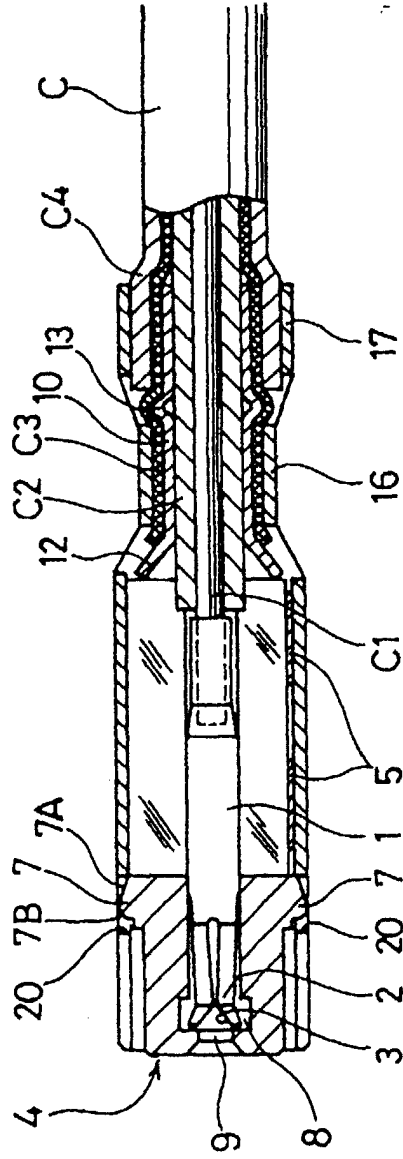


FIG. 2

FIG. 3(A)

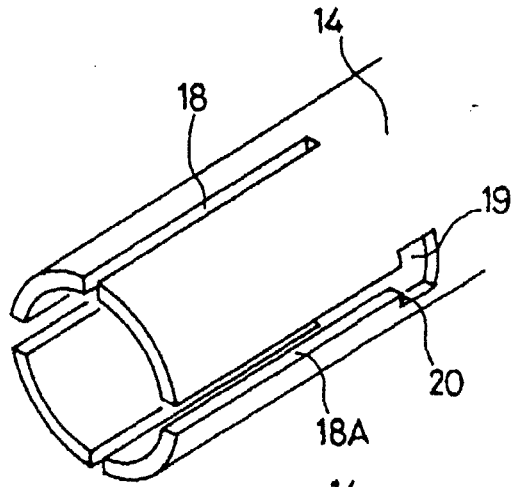


FIG. 3(B)

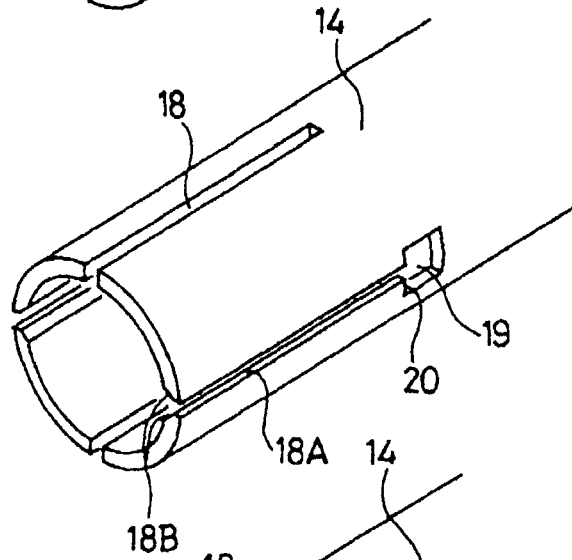
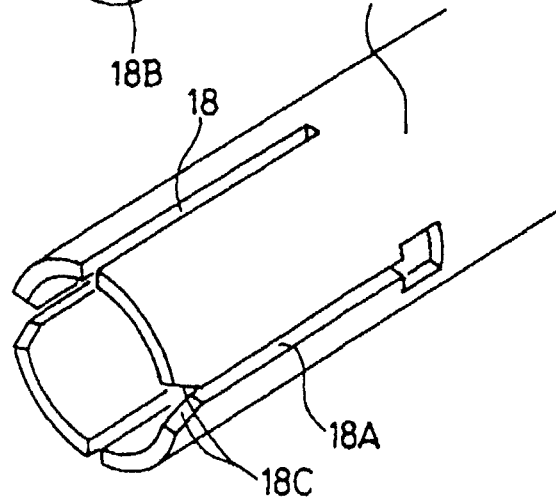


FIG. 3(C)



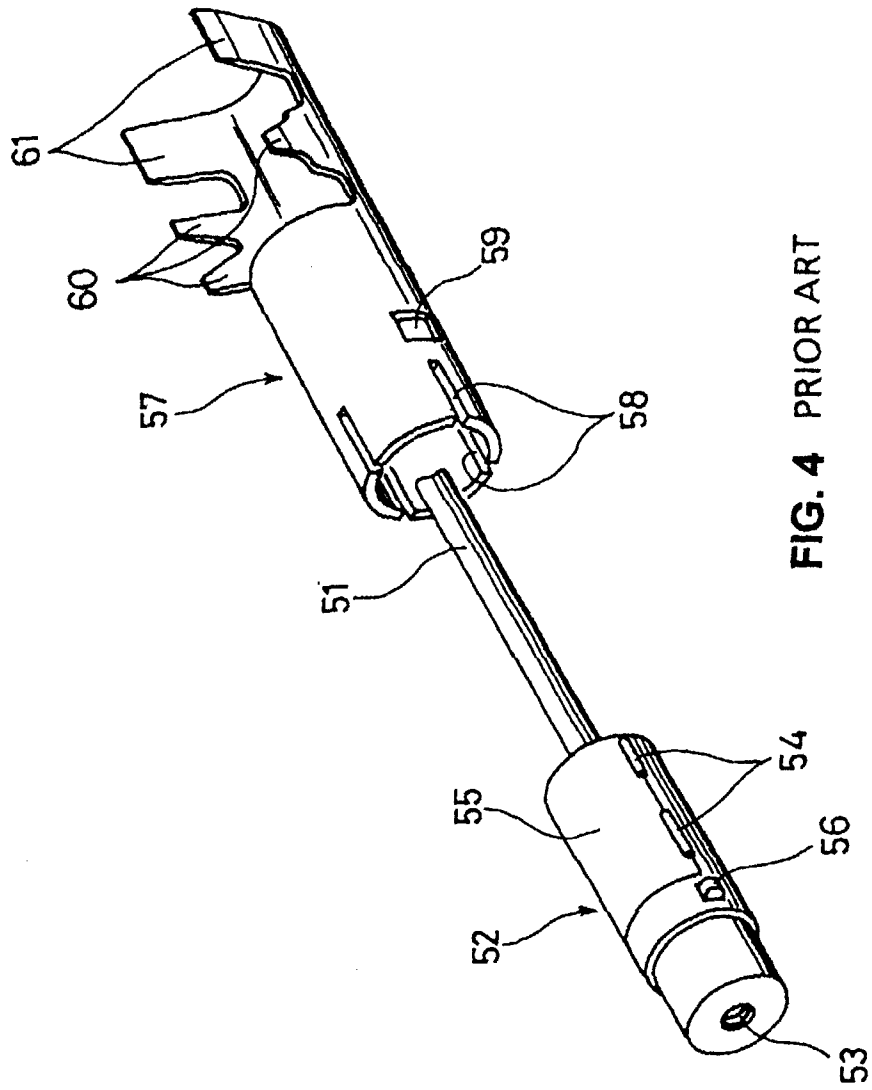


FIG. 4 PRIOR ART