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(54) Electrical contact element.

(57) An electrical contact element comprises a connecting part for an electrical conductor with an insulating sheath. The connecting part is provided with an inlet slot at its free end. The width of the inlet slot is at least equal to the diameter of the electrical conductor but smaller than the diameter of the insulating sheath.

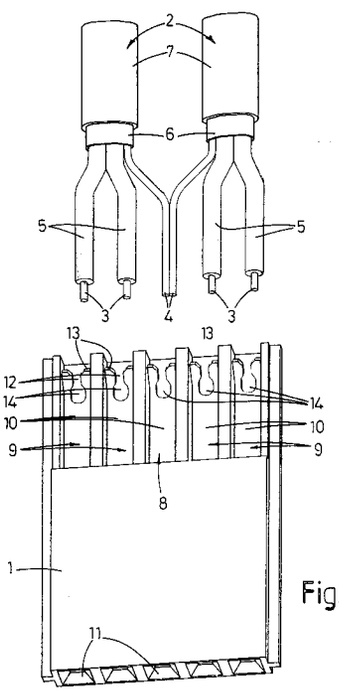

Fig.1

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The invention relates to an electrical contact element, comprising a connecting part for an electrical conductor with an insulating sheath, in particular a contact element of the type for use with conductors of shielded cables.

EP-A-0 536 849 discloses a connector with contact elements, wherein the characteristics of the plastic material of the insulating sheath of the electrical conductors is advantageously used for removing the insulating sheath of the electrical conductors. As this material is relatively soft, the insulating sheath can easily be shoved on the electrical conductor, whereby the free end of the conductor is exposed. In the known connector a stop for the insulating sheath is mounted in the connector, said stop holding the insulating sheath when the conductor is shoved into the connector, whereby the conductor is exposed on the connecting part of the corresponding contact element. Although by this embodiment of the connector the conductors of the cable to be connected are exposed in a simple manner, the construction of the connector should meet high requirements as the stop must be located at an accurately predetermined position with respect to the connecting part, while the conductors with the insulating sheath should be led to the connecting part and the stop in an accurate manner.

The invention aims to provide an electrical contact element which is made in a simple manner and when used in for example connectors for shielded cables does not call for further requirements for the connector for removing the insulating sheath of the conductor to be connected.

To this end the electrical contact element of the invention is characterized in that the connecting part is provided with an inlet slot at its free end, wherein the width of the inlet slot is at least equal to the diameter of the electrical conductor but smaller than the diameter of the insulating sheath.

In this manner the connecting part of the contact element itself is advantageously used as stop for the insulating sheath, said stop being automatically located at the correct position with respect to the electrical conductor.

The invention will be further explained hereinafter by reference to the drawings, in which two embodiments of the electrical contact element of the invention are shown.

Fig. 1 shows a module of a connector which is provided with electrical contacts according to a first embodiment of the invention.

Fig. 2 shows the module of Fig. 1, wherein the electrical conductors of two shielded cables are placed on the connecting parts of the contacts.

Fig. 3-5 show a module of a connector which is provided with a second embodiment of the electrical contact element of the invention in different phases during connecting a shielded cable.

In Fig. 1 a module 1 of a connector not further shown, is shown in a perspective view, wherein further two shielded cables 2 are shown. The module is part of an assembled housing of the connector which is further described in a patent application of applicant of the same date. For a further description of the assembled housing reference is made to this patent application.

In this case the shielded cables are made as a cable with a differential pair of signal conductors 3 and a ground or drain conductor 4. The signal conductors 3 are provided with an insulating sheath 5 which consists of a relatively soft plastic material. The signal conductors 3 together with the ground conductor 4 are enclosed by a metallized foil 6 working as a shielding which in turn is enclosed by an outer jacket 7 of insulating material.

In the module 1 a central ground contact element 8 and at both sides thereof two signal contact elements 9 are mounted, said contact elements 8, 9 being made identically. The contact elements 8, 9 are mainly enclosed by the insulating material of the module 1 and only a connecting part 10 for the conductors 3, 4 can be seen in Fig. 1 and 2. At the end opposite of the connecting part 10 the contact elements 8, 9 are provided with spring elements in a usual manner, said spring elements being accessible through openings 11 for contact pins known per se.

An inlet slot 12 is provided in the free end of each connecting part 10, said inlet slot 12 joining the free end edge 13 of the connecting part 10 through a conically widening portion. The width of the inlet slot 12 is at least equal to the diameter of the conductors 3, 4 but smaller than the diameter of the insulating sheath 5. Thereby, it is obtained that the connecting part 10 itself operates as stop for the insulating sheath 5 when the cable 2 is moved from the position shown in Fig. 1 into the position of Fig. 2. The connecting part 10 stops the insulating sheath 5 so that the signal conductors 3 are exposed on the connecting part 10. For an optimal operation the end of the connecting part 10 is bent upwardly along at least a part of the length of the inlet slot 12 so that this part extends obliquely upwardly with respect to the remaining connecting part 10.

For applications wherein the central ground contact 8 should receive two ground conductors 4, the inlet slot 12 joins an opening 14 at the side opposite of the end edge 13, the width of the opening 14 being at least twice the diameter of the ground conductor 4. Despite this larger opening the connecting part 10 at the location of the inlet slot 12 remains operating as stop for the insulating sheath 5 so that the contact element described is suitable for different applications.

Fig. 3-5 show a module 15 to which a twinaxial cable 16 can be connected. The twinaxial cable includes two signal conductors 3 with insulating sheath 5 and a ground conductor 4. The module 15 has two signal contact elements 17 mainly made in the same manner as the signal contact element 9. In this case, however, the connecting parts 10 are made without the openings 14. The signal contact elements 17 are located in a dielectrical intermediate piece 18 which is surrounded by an outer conductor 19. This outer conductor 19 has a connecting part 20 for connecting the ground conductor 4. As shown in Fig. 3 and 4, the connecting part 10 operates as a stop for the insulating sheath 5, so that by shifting the signal conductors 3 into the contact elements 17, these signal conductors are automatically exposed. After soldering or welding the signal conductors 3 to the connecting part 10, a cover lip 21 is bent into the position shown in Fig. 5, so that the connecting parts 10 are fully enclosed.

The invention is not restricted to the embodiments shown which can be varied in a number of ways within the scope of the invention.

Claims

1. Electrical contact element, comprising a connecting part for an electrical conductor with an insulating sheath, **characterized** in that the connecting part is provided with an inlet slot at its free end, wherein the width of the inlet slot is at least equal to the diameter of the electrical conductor but smaller than the diameter of the insulating sheath.

2. Contact element according to claim 1, **characterized** in that said inlet slot debouches in the end edge of the free end of the connecting part.

3. Contact element according to claim 1 or 2, **characterized** in that the inlet slot widens conically into said end edge.

4. Contact element according to anyone of the preceding claims, **characterized** in that said free end of the connecting part extends obliquely upwardly along at least a part of the length of the inlet slot with respect to the remaining connecting part.

5. Contact element according to anyone of the preceding claims, **characterized** in that the inlet slot at the side opposite of said end edge joins an opening having a width of at least twice the diameter of the electrical conductor.

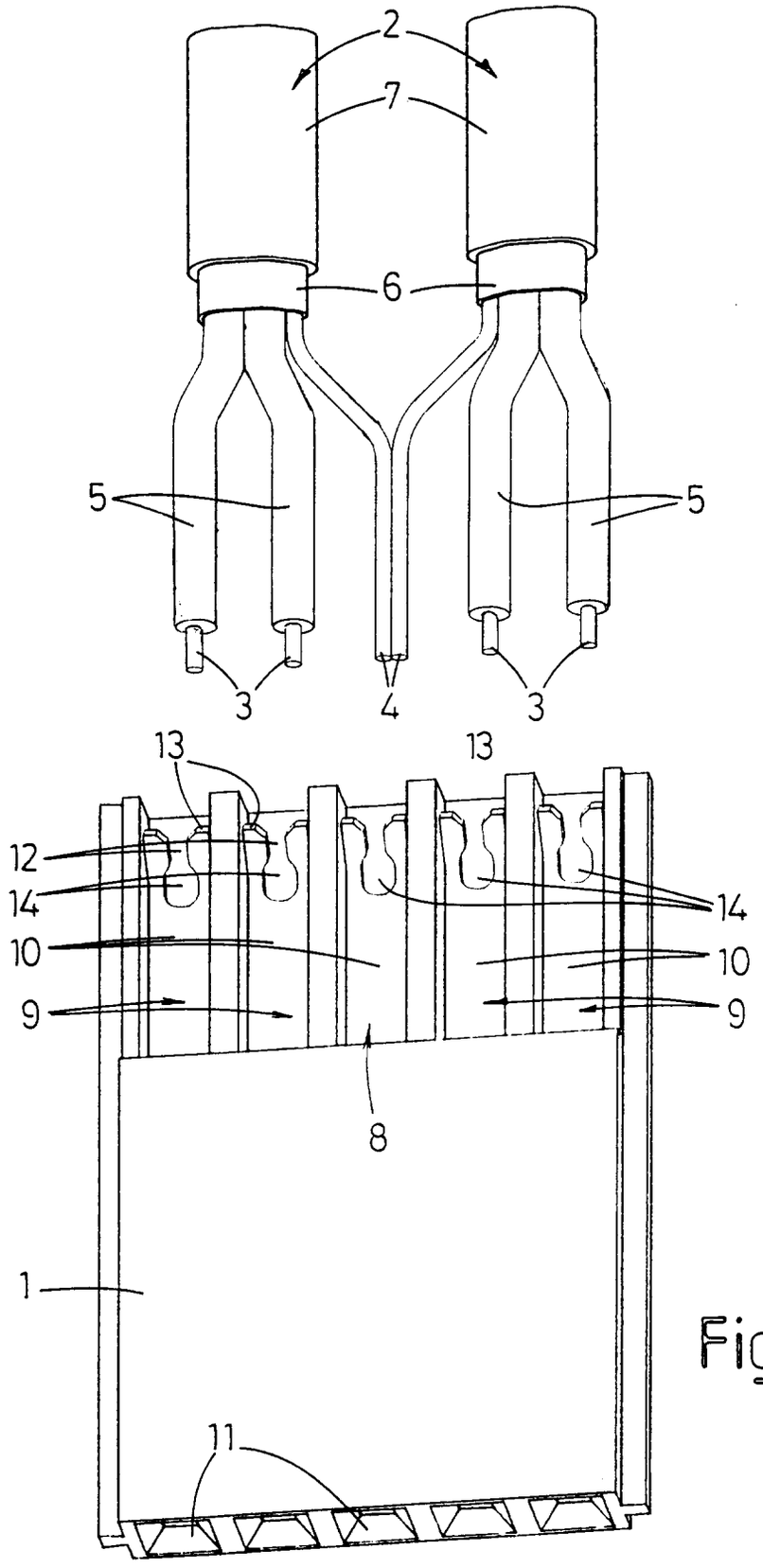

Fig.1

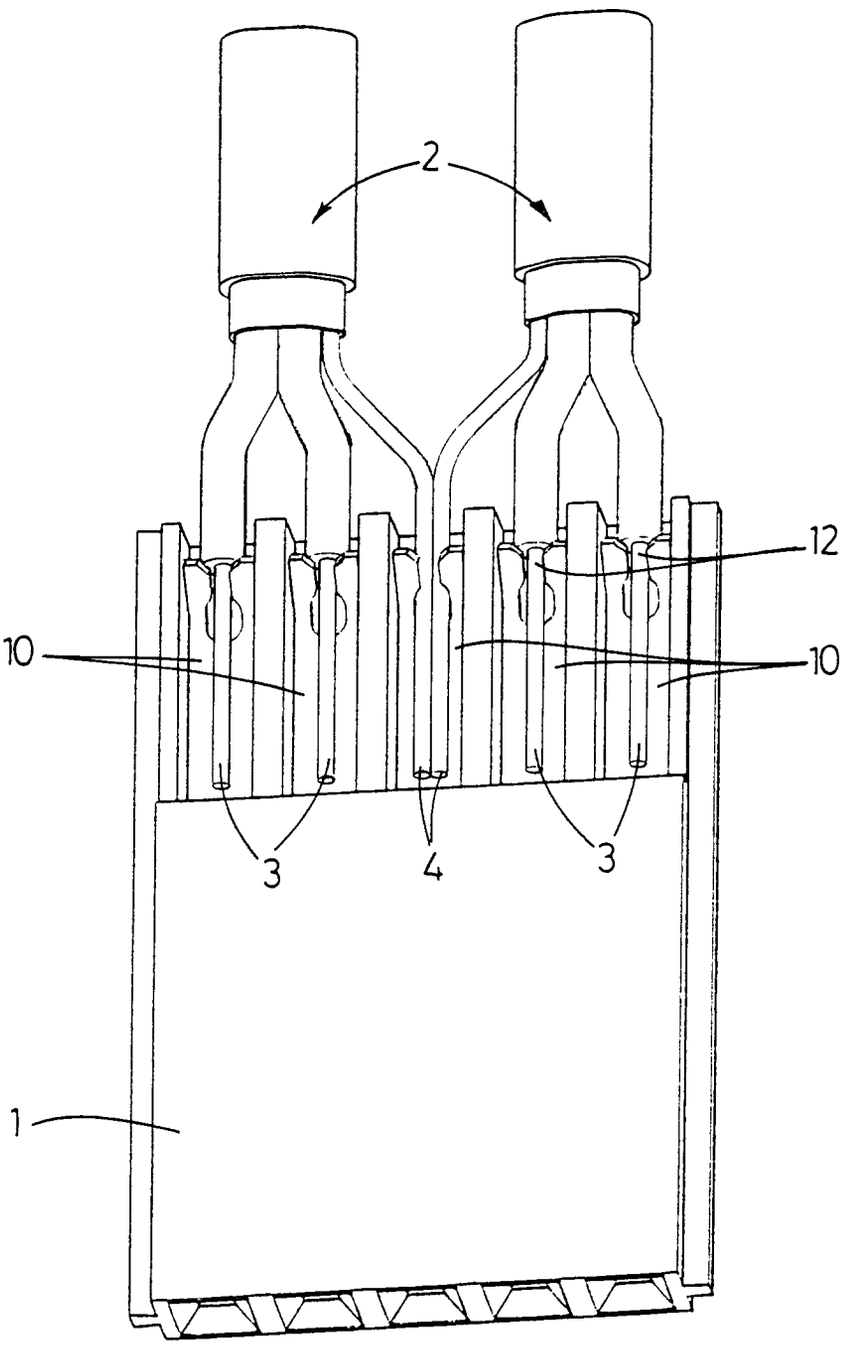

Fig.2

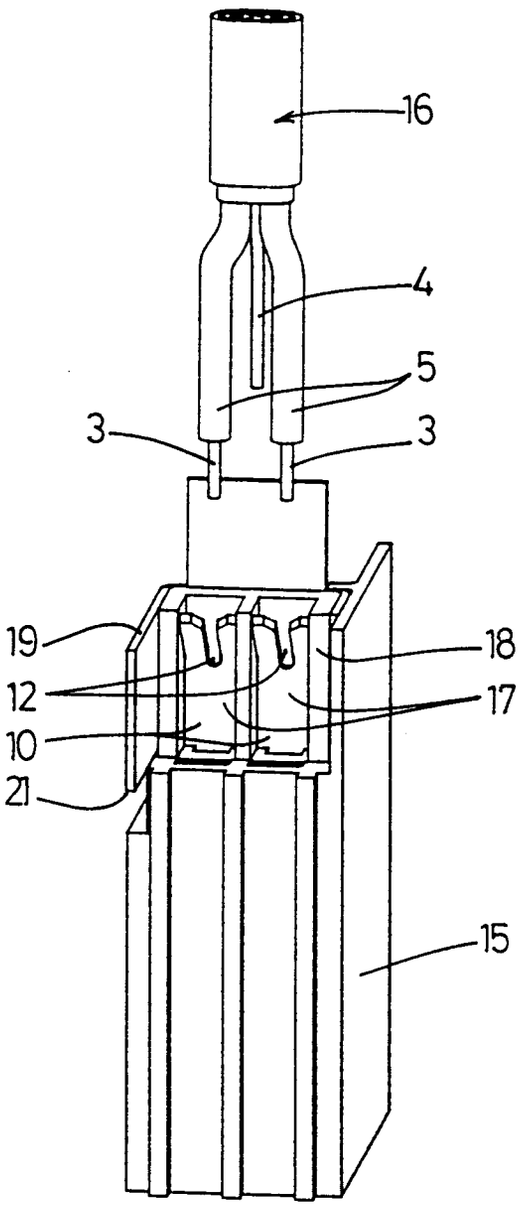

Fig.3

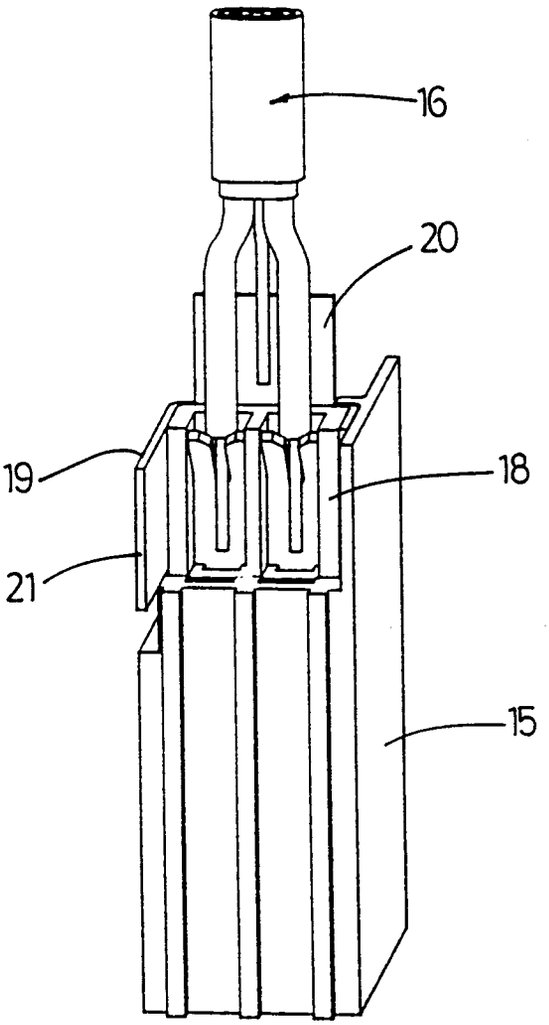

Fig.4

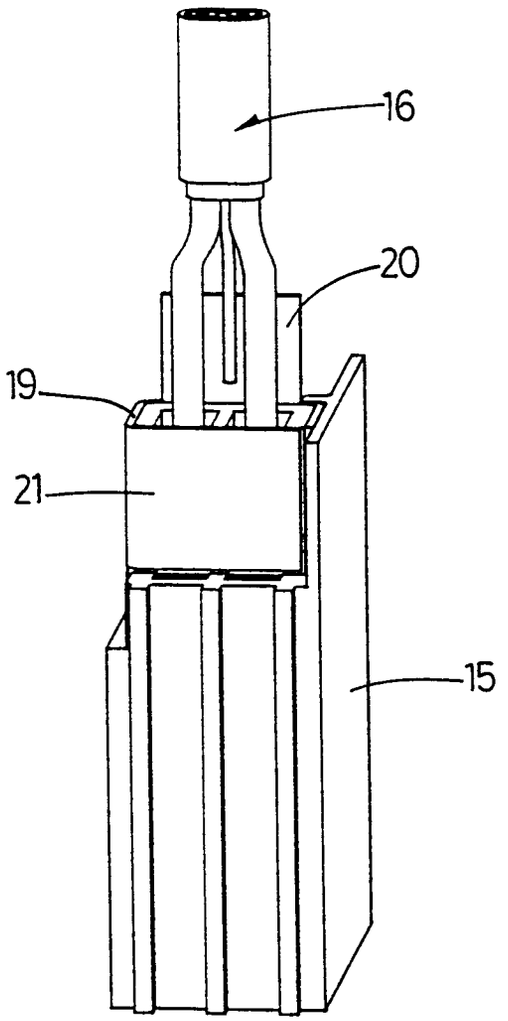

Fig.5

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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 3165

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-2 664 553 (H. EPSTEIN) * column 2, line 36 - line 41; figure 4 *	1,2	H01R4/02
X	GB-A-377 160 (THOMSON-HOUSTON COMPANY LIMITED) * the whole document *	1,2	
X	US-A-2 263 539 (VERNON C. GRUSH) * the whole document *	1	
A	DE-A-24 44 892 (SIEMENS AG) * page 4, last paragraph - page 5; figures 1-5 *	1-3	
A	DE-B-10 02 435 (SIEMENS & HALSKE) * column 3, last paragraph - column 4, line 26; figures 3,4 *	1,2	
D,A	EP-A-0 536 849 (FRAMATOME CONNECTORS) * abstract; figure 1 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 December 1994	TAPPEINER, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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E : earlier patent document, but published on, or after the filing date
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