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⑦① Applicant: **CONEX UNION B.V., P.O. Box 451,
NL-7500 AL Enschede (NL)**

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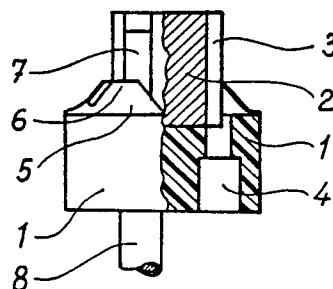
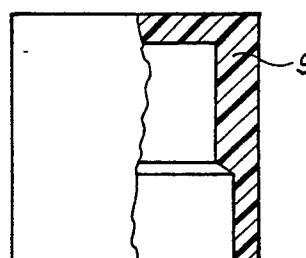
⑦② Inventor: **Herder, Charles F., Varviksingel 198,
NL-7512 ES Enschede (NL)**

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⑦④ Representative: **van der Beek, George Frans et al,
Nederlandsch Octrooibureau Johan de Wittlaan 15 P.O.
Box 29720, NL-2502 LS Den Haag (NL)**

⑤④ **Connector for electric wires.**

⑤⑦ Connector for two or more parallel electrical wire ends (7), consisting of a body (1) of electrically insulating material, a cap (9) of electrically insulating material, which is permanently connected with the body (1), said body (1) being provided with a number of insert openings (4) for the wire ends (7), and contact member (2) with recesses (3) aligned with the insert openings (4) and a spring member (5) with lips (6) for holding the wire ends (7).



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Connector for electric wires.

The invention relates to a connector for two or more parallel electrical wire ends, consisting of a cylindrical or polyhedral body of electrically insulating material with a number of insert openings for the wire ends through the body, which openings
5 being arranged in a ring, a spring member of elastic metal with a corresponding number of lips, a contact member connected with the body of insulating material, against which the wire ends can be pressed by the lips and a cap of electrically insulating material.

Such a connector is known from German "Offenlegungsschrift"
10 2.509.512.

Connectors for electric wires are used in very large quantities. These connectors must be simple of construction, cheap, easy to use, provide a very good electric insulation even in moist surroundings and a very good electric contact between the wire ends.

15 The known connector consists of a body of electric insulating material with a sleeve-shaped metal contact member, whereby the wire ends are pressed against the innerside of the sleeve by means of a rather complicated spring member. The lips of the spring member are loop-shaped. After inserting the wire ends in the connector
20 the cap is mounted on the body, which cap is provided with a thickened stem, pressing the lips against the wire ends through the loops. This means that after inserting the wire ends the connector must still be closed by the cap. Further the wire ends are lying against the smooth innerface of the sleeve, which means that their position
25 is not well determined. It is possible that the wire end does not lie between the belonging lip and the innerface of the sleeve.

Moreover, the loop-shaped lips do not prevent withdrawal of the wire ends.

The present invention aims to provide a connector which avoids
30 all these drawbacks.

According to the present invention this is obtained in that the contact member extends beyond one of the end faces of the body of electrically insulating material, in that the outer surface of the contact member is provided with a number of longitudinally extending

recesses for the wire ends, substantially aligned with the insert openings in the body, and in that the spring member consists of a round or polygonal elastic metal disc, its lips being directed towards the outer face and the free end of the contact member, which disc is
5 held between said body and the cap, which cap is connected permanently with said body.

For using this connector only the wire ends needs to be inserted in the openings. Undesired return movement is prevented, since the rather sharp ends of the lips hold the wire ends and will press the wire ends
10 more powerful against the recess if one tries to draw back the wire end. If return movement is necessary for changing the connection the wire end can be removed by oscillating the wire end about its axis and simultaneously pulling the wire.

The whole connector is closed already before inserting the wire
15 ends.

Further features and advantages of the invention will appear from the following description referring to the drawing, in which:

Fig. 1 is a perspective view of a first embodiment of the connector according to the invention, without cover cap;

20 Fig. 2 is a top view of the connector of fig. 1, also without cap;

Fig. 3 is a longitudinal section of this connector with spaced cap;

Fig. 4 is a view of a contact member for the connector according to a second embodiment of the invention; and

Fig. 5 is a side view of the contact member according to fig. 4.

25 The connector according to the invention consist of a cylindrical or polythedral body of electrically insulating material, for instance synthetic resin.

An oblong contact member 2 of copper or another electrically conducting material is with one end connected to said body 1. This
30 contact member 2 is in cross-section hexagonal. In each face a half-round recess 3 is present, which is aligned with one of the insert openings 4 in the body 1. These insert openings are arranged in a ring and extend through the body 1.

Against an end face of the body 1 a round or hexagonal disc 3 of
35 spring steel is arranged with upwardly and inwardly directed lips 6.

When the stripped end 7 of an electrical wire 8 is inserted upwardly through the insert opening 4 in the connector, the end 7 pushes the lip 6 outwardly somewhat. The wire 8 cannot return. This also applies for the other wires, between which an electrical connection must be made. When a certain recess 3 needs not contain a wire end 7, the free end of the lip 6 lies at least partly within the recess 3.

The connectors are delivered provided already with a cover cap 9, also of electrically insulating material. This cap 9 is permanently connected with the outer periphery of the body 1 by screwing, clamping, glueing, welding or the like.

This cap 9 insulates the metal parts of the connector, but serves also for holding the spring member 5 against an endface of the body 1.

When for some reason it is desired to make the contact member of an electrically non-conducting material, for instance at low-voltage current, the body and the contact member can be one piece of electrically insulating material. In that case only the spring member 5 provides for the electrical contact.

At an electrically conducting contact member it is not necessary to make the contact member 2 of solid copper or the like. It is also possible to make the contact member as a hollow sleeve, In that case it is possible to start from a cylindrical or multi-lateral sleeve, which is provided with recesses by pressing or drawing. However, it is preferred to start from a plane sheet of metal and to form a kind of cup 2' with corrugated sidewall, see fig. 4 and 5. The valleys of the corrugations extend in a line with insert openings 4 and form the recesses 3'.

This cup 3' is connected to a projection of the body 1. It is not necessary to connect it positively, since also the cap 9 can hold it.

C L A I M S

1. Connector for two or more parallel electrical wire ends, consisting of a cylindrical or polythedral body of electrically insulating material with a number of insert openings for the wire ends through the body, which openings being arranged in a ring, a
5 spring member of elastic metal with a corresponding number of lips, a contact member connected with the body of insulating material, against which the wire ends can be pressed by the lips and a cap of electrically insulating material, c h a r a c t e r i z e d in that the contact member (2,2') extends beyond one of the end faces
10 of the body (1) of electrically insulating material, in that the outer surface of the contact member (2,2') is provided with a number of longitudinally extending recesses (3,3') for the wire ends (7), substantially aligned with the insert openings (4) in the body (1), and in that the spring member consists of a round or polygonal elastic
15 metal disc (5), its lips (6) being directed towards the outer face and the free end of the contact member (2) which disc (5) is held between said body (1) and the cap (9), which cap (9) is connected permanently with said body (1).

2. Connector according to claim 1, whereby the contact member
20 consists of copper sheet or a sheet of other electrically conducting material, c h a r a c t e r i z e d in that the contact member (2') is cup-shaped, with a corrugated sidewall for forming the recesses (3') for the wire ends (7).

3. Connector according to claim 1 or 2, c h a r a c t e r i -
25 z e d in that the cap (9) of insulating material with its free edge fits around the outer periphery of the body (1) of insulating material and is connected therewith by screwing, clamping, glueing or welding.

fig-1

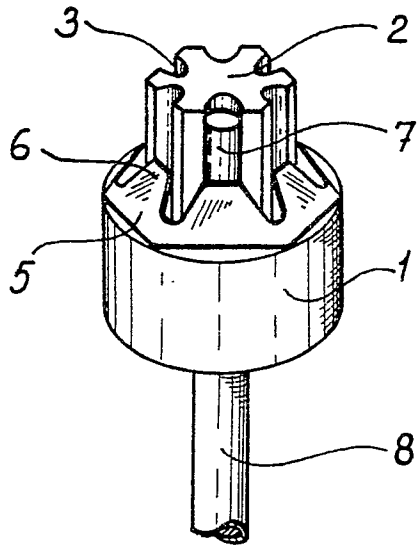


fig-2

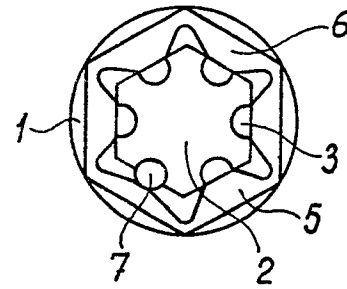


fig-3

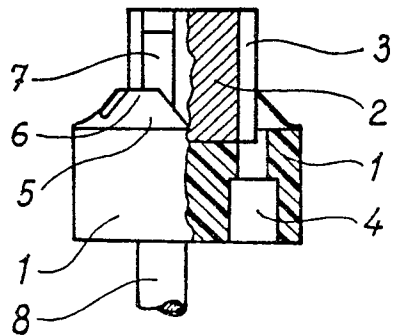
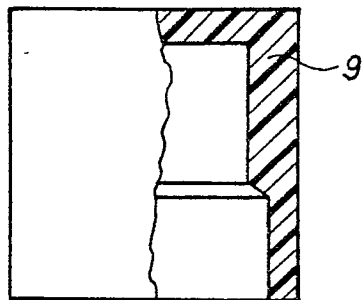


fig-4

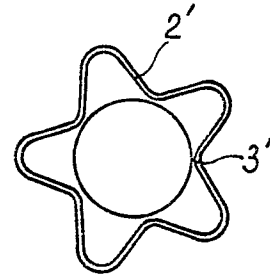
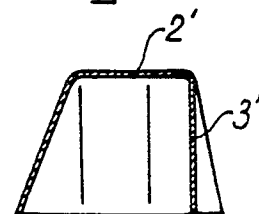


fig-5





European Patent
Office

EUROPEAN SEARCH REPORT

0029267

Application number

EP 80 20 1050

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	DE - A - 2 143 404 (SIEMENS) * pages 6-8; figures * ---	1	H 01 R 4/22
D	DE - A - 2 509 512 (MÖSTL) * page 2, last 3 paragraphs; figures * ---	1	
A	DE - A - 2 514 791 (KLEINHUIS) * page 10, last paragraph to page 12; figures 7-9 * ---	1,3	
A	NL - C - 5451 (J.F. SCHLEPER) * page 2, lines 9-40; figures * ---	2,3	TECHNICAL FIELDS SEARCHED (Int. Cl. ³) H 01 R 4/22 4/48
A	DE - B - 1 052 493 (BUCHANAN) * figures * ---	1	
A	NL - A - 45 070 (THABUR) * page 2, lines 12-120; figures * ---	1	
A	US - A - 2 122 252 (HAYES) * figures * ---	1	CATEGORY OF CITED DOCUMENTS X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
A	US - A - 3 945 711 (WAGO) * figures * ---	1	
A	US - A - 3 729 612 (BROWN BOVERI) * figures * -----	1	
The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search The Hague		Date of completion of the search 15.01.1981	Examiner RAMBOER