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(54) **Crimping electrical contact and electrical connector comprising one or several of said electrical contacts**

(57) A crimping electrical contact is described, which comprises a first hermaphroditic crimping part of an elec-

trical cable and a second male or female contact part; the crimp part has a pin that interlocks in elastic tabs of the second part.

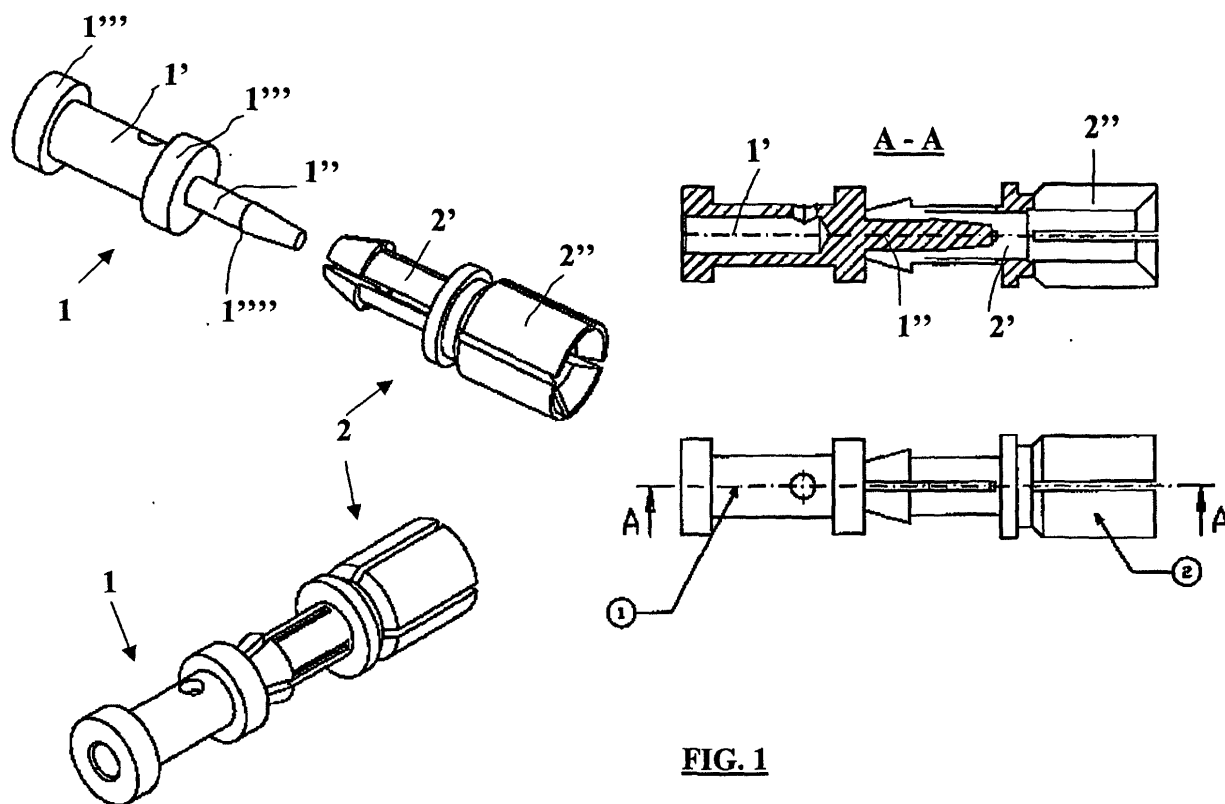


FIG. 1

Description

[0001] The present invention relates to a crimping electrical contact and to an electrical connector comprising one or several of said electrical contacts.

[0002] The crimping electrical contacts of known type have the drawback of requiring, in addition to a pincer capable of crimping, that is gripping the contact around the electrical conductor without the aid of solder, also suitable tools adapted to aiding insertion and above all, enabling extraction in the event of incorrect insertion or electrical problem.

[0003] In addition, the corrective operation of insertion or extraction requires the interruption of the connection formed between the male and female contacts of the electrical connector and dismantling of the insulating containers containing said contacts.

[0004] Accordingly, the purpose of the present invention is that of eliminating all of the aforementioned drawbacks (resolving the aforesaid problems) and of providing a crimping electrical contact comprised of the splitting of a contact (regardless of whether it is male or female) into two parts, one of which remains common. Accordingly, the contact can be defined as being "hermaphroditic".

[0005] In fact, the peculiarity of the contact consists in the fact of being able to crimp an end part of same and inserting it using simple manual pressure into another part already inserted in an appropriate insulating container, thus forming the actual and proper contact. This makes it possible, inter alia, to connect male and female connectors with each other and successively to put them in operation with such insertion.

[0006] The object of the present invention is a crimping electrical contact comprising: a first hermaphroditic crimping part for holding an electrical cable; a second male or female contact part; means for coupling the first part with said second part.

[0007] A further object of the present invention is an electrical connector comprising one or more of said electrical contacts.

[0008] A particular object of the present invention is a crimping electrical contact and an electrical connector comprising one or several of said electrical contacts as described in detail in the claims, which form an integral part of the present description.

[0009] The purpose and benefits of the present invention will become more apparent from the detailed description that follows of an exemplary embodiment of same with reference to the appended drawings - provided by way of non-limiting explanation - wherein:

Fig. 1 represents a crimping electrical contact according to the invention in various views, in axonometric projection with divided and intact parts, in intact side view and in cross section;

Fig. 2 represents the electrical contact according to the invention, as inserted in series into an electrical connector in different views, in axonometric projec-

tion, in a top view, in side view in cross-section, in the variant with female contact.

Fig. 3 represents the same views as Fig. 2, in the versions having male contact.

[0010] The same reference numbers and letters in the figures identify the same elements.

[0011] The electrical contact of Fig. 1 comprises two metal parts. The first of these, indicated with the number 1, suitably mechanically dimensioned, crimps suitable cables of various cross-sections by means of suitable pincers, while the second one indicated with the number 2, is capable of contact with the counterpart of the connection with opposite configuration: male contacts female or vice versa. Fig. 1 represents the female version.

[0012] The first crimping part 1 comprises a recess 1' which holds the terminal of the electrical cable that is crimped by pressing on the pliable central part by means of pincers. Advantageously, reinforcing collars 1'' are provided on the two sides of the recess, which serve in facilitating the correct insertion of the electrical contact in the relative housing of the insulating container (see Fig. 2 and 3).

[0013] The part 1 comprises, in the direction opposite to the recess 1', a pin 1" for the insertion of the second part. The pin is equipped with a suitable radial projection 1'''.

[0014] The second contact part 2 comprises elastic tabs 2' for receiving the pin 1" so that the later interlocks on application of pressure and is held by the elastic tabs that oppose the projection 1'''.

[0015] The part 2 comprises, in the direction opposite to the elastic tabs, a female connector 2" (as shown in the figure) or male connector.

[0016] Figs. 2 and 3 represent the utilization of the electrical contact according to the invention in an insulating container comprising a female and male electrical connector, respectively.

[0017] The electrical connector 3 made of plastic material comprises a series of openings for receiving a number of electrical contacts in series. The central part of the openings of the connector comprise a suitable constriction 3', in which the elastic tabs of the part 2 of the electrical contacts are inserted and held.

[0018] The part 1, in which a respective electrical cable has been preventively crimped - not shown in the figure - is pressure connected in the elastic tabs of the part 2, pre-inserted into the connector.

[0019] A male connector (as shown in Fig. 3) can then be inserted directly in to a corresponding female connector (as shown in Fig. 2) providing a complete electrical connection, engaging the part 2" of the male in the corresponding part 2" of the female.

[0020] The crimping electrical contact according to the present invention does not require the use of any type of tool that enables the insertion or the removal of same into [or out of] the contact counterpart; in fact, it is sufficient to manually apply a minimum force (on average 0.1

kg), in order to insert and secure the crimping part 1 into the contact part 2, while applying a traction force on average 7/10 times the minimum force, the part can be manually disengaged without the use of tools and without damaging the crimped electrical cable.

[0021] An overall contact resistance is assured not greater than 6 mΩ, under average working conditions at temperatures varying from -20 °C to + 85 °C.

[0022] The part 1' of the contact to be crimped is advantageously dimensioned in the planning and manufacturing stage, accepts different wire diameters; it is therefore understood to be an innovative universal contact in form and dimensions in its function.

[0023] Variant embodiments of the non-limiting example are possible without otherwise departing from the scope of protection of the present invention, all of the embodiments comprising equivalents for the specialist in the art.

[0024] The insulating housing container of the electrical contact can be of any external form both for a single contact and for multiple contacts, with contacts arranged in series or in any other arrangement.

[0025] It is possible to realize the crimp part 1 equipped with elastic tabs and the contact part 2 equipped with an insertion pin.

[0026] The advantages deriving from the application of the present invention are obvious.

[0027] In fact, the peculiarity of the contact consists in the fact of being able to crimp an end part of same and inserting it using simple manual pressure into another part already inserted in an appropriate insulating container, thus forming the actual and proper contact. This makes it possible, inter alia, to connect male and female connectors with each other and successively implementing them with such insertion.

[0028] In the event of necessary technical service for trouble or incorrect insertion, using manual traction on the cable, the part of the contact crimped to same is freed from the connector of the contact part and thus without the necessity of any tools and this can be repeated several times, without compromising the reliability of the contact.

[0029] On the basis of the description hereinbefore, the person skilled in the art can realize the object of the invention without introducing other constructive details.

Claims

1. Crimping electrical contact, **characterized in that** it comprises:

a first crimping hermaphroditic part (1) for holding an electrical cable;
a second male or female contact part (2);
a locking means (1'', 2') of said first part in said second part.

2. Crimping electrical contact according to Claim 1, **characterized in that** said first crimping part (1) comprises:

a recess (1') for receiving an end of electrical cable, equipped with a pliable part for crimping of said end;
reinforcement collars (1''') on the sides of said recess for the correct insertion of said first part into an electrical connection slot.

3. Crimping electrical contact according to Claim 1 or 2, **characterized in that** said anchoring means (1'', 2') comprise:

a pin (1'') equipped with a radial protuberance (1''');
elastic tabs (2') for receiving said pin (1''), which locks on application of pressure and is held by said elastic tabs which oppose said protuberance (1''').

4. Crimping electrical contact according to Claim 3, **characterized in that** said pin is comprised in said first crimping part and said elastic tabs are compressed in said second contact part.

5. Crimping electrical contact according to Claim 3, **characterized in that** said pin is compressed in said second crimping contact part and said elastic tabs are comprised in said second contact part.

6. Electrical connector, **characterized in that** it comprises one or more electrical contacts according to any one of Claims 1 to 5.

7. Electrical connector according to Claim 6, **characterized in that** it comprises a male part, from which said male contact parts of the second part (2) emerge, and a female part comprising said female contact parts of said second part (2), the male part and said electrical connector being inserted directly into the female part.

8. Electrical male connector, **characterized in that** it comprises one or more electrical contacts according to any one of Claims 1 to 5, comprising said second male contact part (2),

9. Electrical female connector, **characterized in that** it comprises one or more electrical contacts according to any one of Claims 1 to 5, comprising said second female contact part (2).

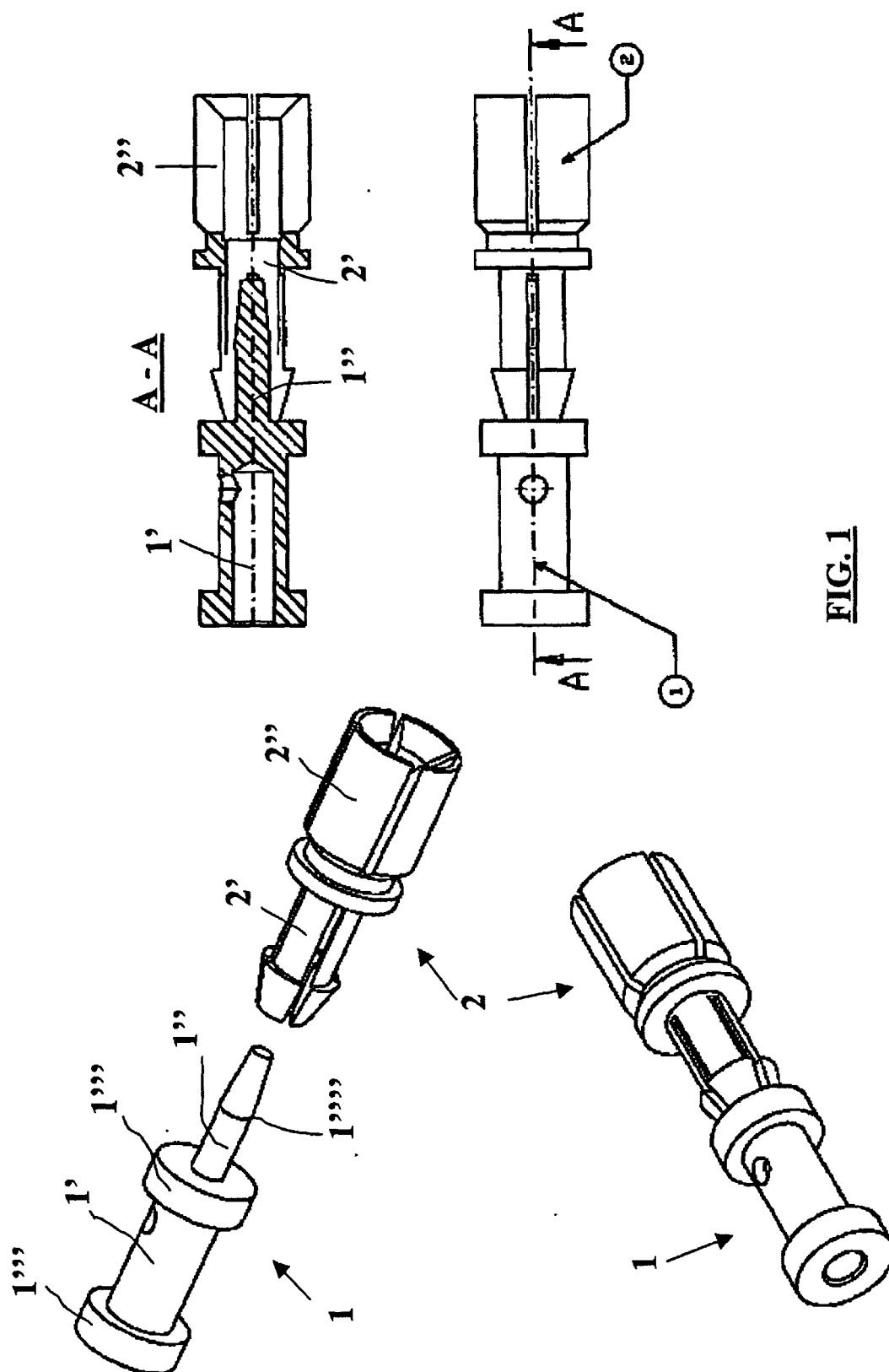


FIG. 1

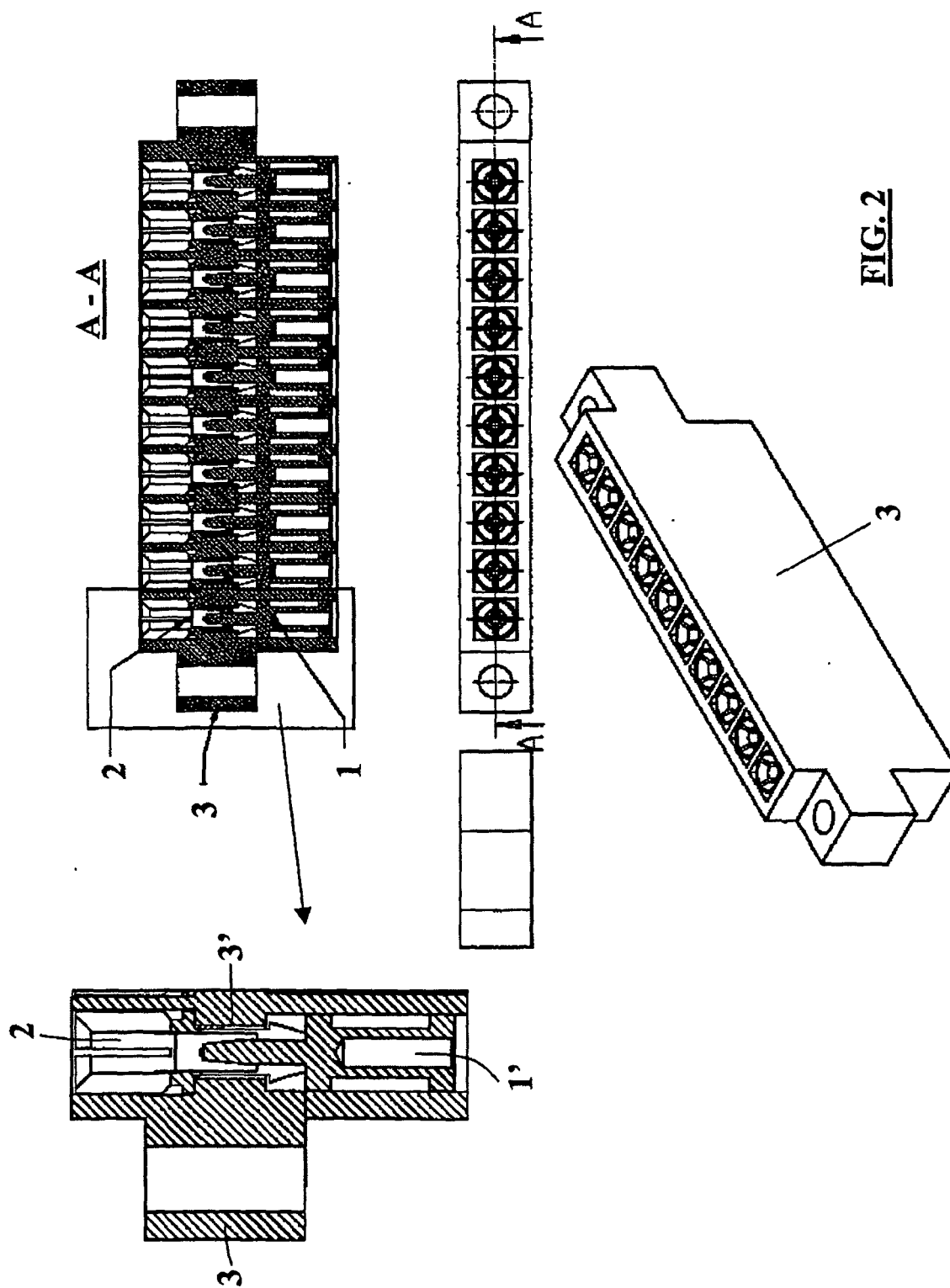


FIG. 2

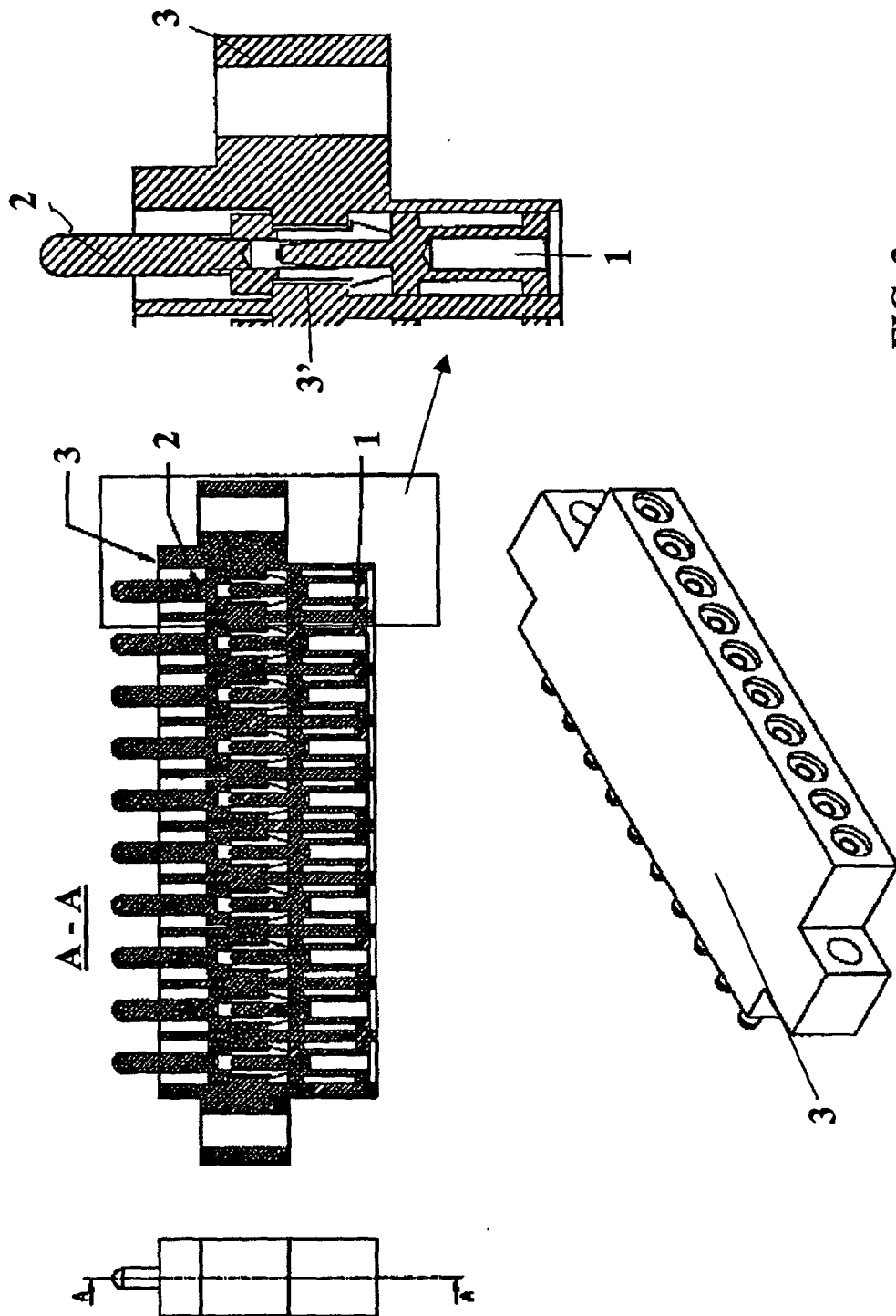


FIG. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5592

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.7)
X	FR 2 573 927 A (APPAREILLAGE AUXIL ELECTRICITE) 30 May 1986 (1986-05-30) * page 2, line 28 - page 3, line 30 * * page 5, line 22 - line 27; figure 1a *	1,2,9 3-5	H01R13/28 H01R4/20
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H01R
The present search report has been drawn up for all claims			
Place of search Berlin		Date of completion of the search 24 March 2005	Examiner Stirn, J-P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 42 5592

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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24-03-2005

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