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- (71) Applicants  
Societe Verlant &  
Beurain,  
80390 Fressenneville,  
France.
- (72) Inventors  
Andre Beurain
- (74) Agents  
Stevens, Hewlett &  
Perkins,  
5 Quality Court,  
Chancery Lane,  
London, WC2A 1HZ.

(54) A joint assembly for electric lines

(57) A joint assembly comprises a metallic portion 10 which can be crimped or shrunk and is designed to accommodate the stripped ends of two lines to be joined (24, 24', Figure 2 not shown), and on which are positioned and retained sleeves 12 and 12' which fit over the insulating material of the lines to be joined, these sleeves being so designed that they are able to slide along the metallic portion 10 so as to cover the latter after the joint has been made and said metallic portion 10 has been crimped or shrunk. An insulating ring (18) having a shoulder (20) and latching means may be provided for holding the sleeves in position after the connecting operation has been carried out. Retention of the sleeves may be achieved by force-fitting them on rings 16, 16' thus preventing their loss prior to use. The metallic portion 10 may be filled with grease to render it air-tight.

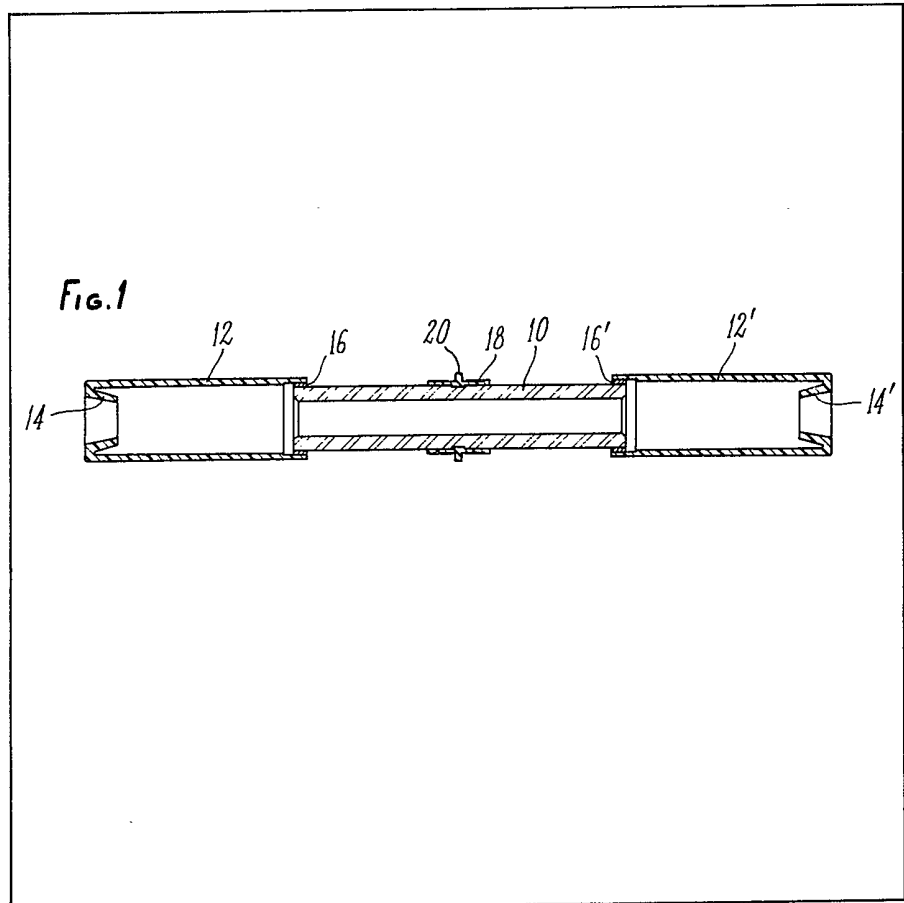


FIG. 1

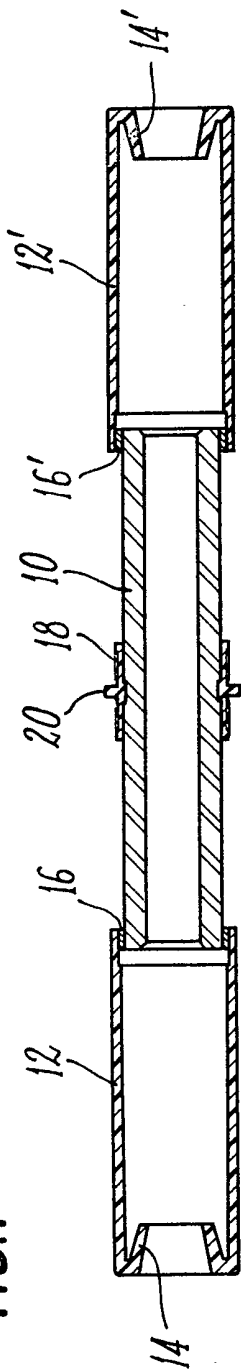


FIG. 2

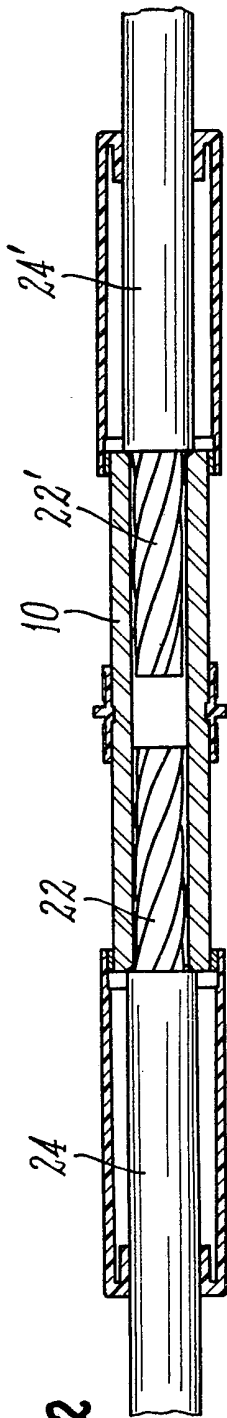


FIG. 3

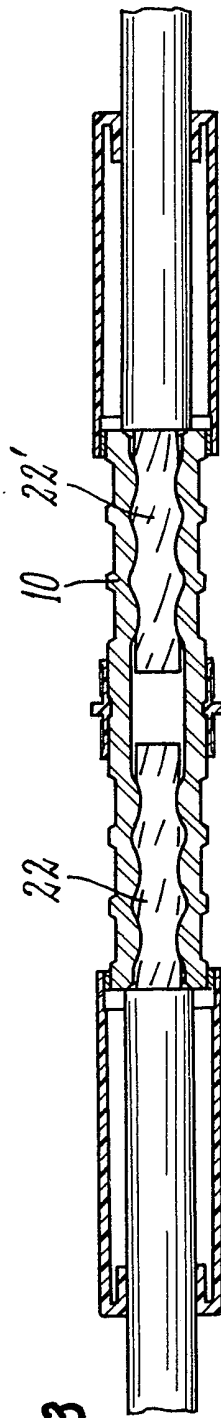
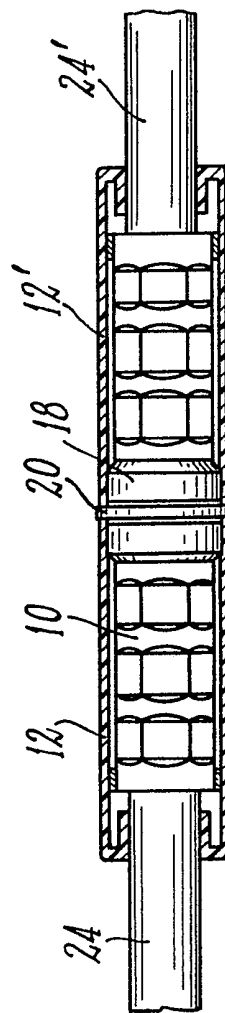


FIG. 4



## SPECIFICATION

**A joint assembly for electric lines**

5 This invention relates to joint assemblies for electric lines, which joint assemblies are designed to be crimped or shrunk on to the interconnected lines, and in particular to a protective sleeve for such a joint.

10 It is known that low-tension electric lines are generally formed by a plurality of insulated spiral-wound cables which are known under the name of pre-assembled spiral-wound cables or strands. Starting with these spiral-wound distribution cables, various joints are made, the insulation of which has to be made good. This reconstitution of the insulating material must be independent of the joint when it takes the form of a heat-shrinkable sleeve, or it must form an integral part of the joint when it is constituted by a sleeve moulded on to the joint.

20 The present arrangements thus suffer from the drawback that they involve delicate and lengthy reconstitution of the insulating material either by moulding on a sleeve of plastics material (nylon, for example), or by shrinking on a heat-shrinkable sleeve.

According to the invention there is provided a joint assembly for electric lines, said joint assembly comprising a metallic portion which can be crimped and is designed to accommodate the stripped ends of the lines to be joined, and on which are positioned and retained sleeves which fit over the insulating material of the lines to be joined, these sleeves being so designed that they are able to slide along said metallic portion so as to cover the latter after the joint has been made and said metallic portion has been crimped, means being provided to hold the sleeves in position after the connection operation has been carried out.

40 The user is thus furnished with a metallic joint on which are positioned and held sleeves necessary for reconstituting the insulating material, these sleeves being able to slide along the metallic portion so as to cover the latter after the lines have been connected and the joint has been crimped or shrunk. Means are provided for holding the sleeves on the joint after they have been brought into place.

In an embodiment of the invention, said sleeves are rendered captive by securing them by a force-fit on semi-rigid rings, positioned at each end of the metallic portion.

In a further embodiment of the invention, a central ring of plastics material is provided at the centre of the metallic portion, on which ring said sleeves are positioned when they are caused to slide along the metallic portion.

In order that the invention may be better understood, an embodiment thereof will now be described by way of example only and with reference to the accompanying drawings in which:-

60 *Figure 1* is an elevational view of and vertical section through one embodiment of a joint assembly in accordance with the invention, provided with its two-part protective sleeve;

65 *Figure 2* illustrates a joint made from the joint

assembly of *Figure 1* in the first stage of use; *Figure 3* illustrates the joint of *Figure 2* after crimping;

70 *Figure 4* illustrates the joint after the elements of the protective sleeve have been placed in position, this joint being illustrated in elevation and partial section.

Referring to *Figure 1*, the joint assembly comprises a metallic cylindrical portion 10 adapted to be crimped on to the spiral wound electric cables that are to be interconnected. Mounted at each end of this metallic portion 10 by means of a force-fit are semi-rigid rings 16 and 16' which may be made of polyvinyl chloride, for example. Positioned on these rings 16 and 16' are cylindrical sleeves 12 and 12' which are held by a force-fit on rings 16 and 16' so that they cannot become lost. The diameter of the sleeves is selected such that they are able to slide along the metallic portion 10 without difficulty. At its end remote from the metallic portion 10, each of the sleeves 12 and 12' comprises an opening 14 and 14' respectively of frusto-conical form, so as to surround in a right manner and without play the insulating material of the cables to be connected, as shown in *Figure 2* to 4. Finally, the metallic portion 10 of the joint is provided, midway along its length, with a central ring 18 having a shoulder 20. This ring 18 can be made of plastics material, such as polyvinyl chloride. The ring comprises latching means (for example notches) for holding the sleeves 12 and 12' in position, these sleeves being provided with corresponding notches.

This joint assembly operates in the following manner:

100 The joint assembly, provided with its protective sleeves 12 and 12' is supplied to the user in the condition illustrated in *Figure 1*, and he strips the conductors of the spiral-wound electric cables to be connected, along the length indicated on the sleeves. The stripped conductors 22 and 22' are then introduced through the sleeves 12 and 12', i.e. into the metallic portion 10 of the joint assembly, until the leading portion of the insulating material 24 and 24', respectively, of each of the cables abuts the end-face of the metallic portion (*Figure 2*).

110 The metallic portion 10 of the joint assembly is then crimped or shrunk on to the stripped ends 22 and 22' of the cables, this operation being carried out with the aid of standard tools (*Figure 3*).

115 All that now remains to be done is to protect and insulate the joint. This operation is carried out by causing the protective sleeves 12 and 12' to slide along the metallic portion 10 of the joint assembly until they cover the insulating ring 18 abutting the shoulder 20 formed at the centre of this sleeve, the latching means of the ring holding the sleeves in position. The metallic portion 10 is of course filled with grease to render it air-tight.

125 Among the advantages provided by the invention, the following, in particular, may be mentioned:

the metallic portion 10 of the joint assembly meets the standard at present in force and particularly those of the French Electricity Authority;

130 the elements 12 and 12' which form the protective sleeve remain permanently on the metallic portion

10; they cannot get lost, and the fitter has no alternative but to position the stripped ends 22 and 22' of the cables to be connected, by way of these sleeves;

- 5 shrinkage forces are not applied to the metallic portion 10 of the joint assembly; the sleeves do not therefore have to undergo any constraint, which is not the case with pre-insulated joints;  
good insulation behaviour is ensured by the fact  
10 that each end 14 and 14' of the sleeves is adapted to suit the diameter of the conductor that it is to receive.

#### CLAIMS

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1. A joint assembly for electric lines, said joint assembly comprising a metallic portion which can be crimped and is designed to accommodate the stripped ends of the lines to be joined, and on which  
20 are positioned and retained sleeves which fit over the insulating material of the lines to be joined, these sleeves being so designed that they are able to slide along said metallic portion so as to cover the latter after the joint has been made and said metallic  
25 portion has been crimped, means being provided to hold the sleeves in position after the connecting operation has been carried out.

2. A joint assembly according to claim 1 wherein the sleeves are rendered captive by securing them  
30 by a force-fit on semi-rigid rings positioned at each end of the metallic portion.

3. A joint assembly according to either one of claims 1 or 2 wherein the metallic portion has, at its middle, a central ring provided with a shoulder  
35 forming a stop against which are positioned the two sleeves when they are caused to slide along the metallic portion during fitting of the assembly.

4. A joint assembly according to any one of the preceding claims wherein the ends of the sleeves,  
40 designed to receive the stripped ends of the cable to be joined, are frusto-conical and adapted to the diameter of the lines to be joined.

5. A joint assembly according to claims 2 and 3 wherein the sleeves, the rings and the central ring  
45 are made of plastics material, in particular polyvinyl chloride.

6. A joint assembly according to claim 3 wherein the means for maintaining the sleeves in position after the joint has been made consists of latching  
50 means provided on said central ring and co-operating with other latching means provided at the end of each of said sleeves.

7. A joint assembly for electric lines substantially as hereinbefore described with reference to the  
55 accompanying drawings.