June 1, 1948. H. BIRKBY 2,442,337

JOINT FOR CO-AXIAL CONDUCTOR ELECTRIC CABLES

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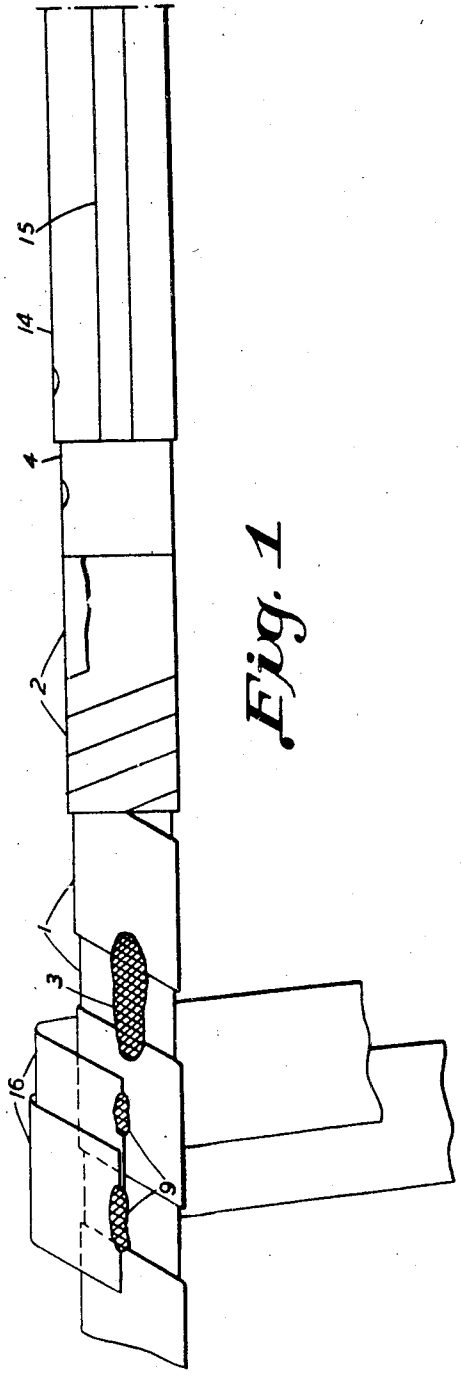


Fig. 1

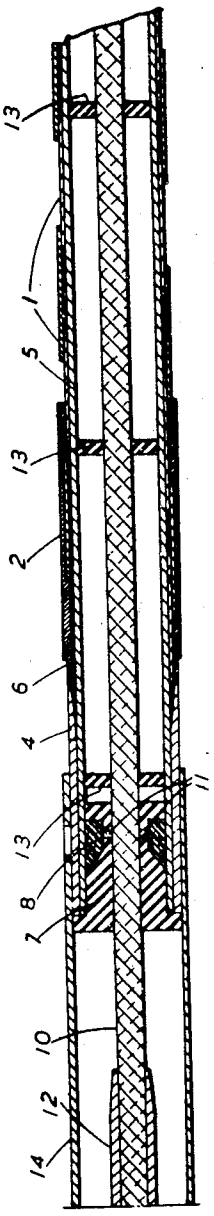


Fig. 2

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JOINT FOR COAXIAL CONDUCTOR ELECTRIC CABLES

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3 Claims. (Cl. 174—22)

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This invention relates to joints for coaxial conductor electric cables and has for its object to provide an improved joint which is of comparatively simple form and which will, however, be of satisfactory mechanical strength and will prevent the passage of water past the joint in the event that a cable length suffers damage.

According to the present invention we provide a joint for a coaxial conductor cable in which insulating spacing members between coaxial inner and outer portions of the joint are used, which spacing members are provided with channels filled with a plastic insulating substance which adheres to the said inner and outer portions and so seals the joint.

The invention will be better understood from the following description taken in conjunction with the accompanying drawing.

Fig 1 is a side elevational view of a portion of coaxial cable including a joint according to the present invention, parts thereof being broken away to facilitate understanding of certain structural features, and

Fig. 2 is a longitudinal sectional view of a cable similar to that shown in Fig. 1.

The lengths of coaxial cable to be joined are illustrated as of the type in which an inner conductor 10 is held in spaced relation with a coaxial outer conductor by means of spacing insulating discs 13. The outer conductor 5 comprises a metal tape formed into a tube as described in U. S. Patent No. 2,126,290, granted August 9, 1938, and spaced away from the inner conductor by insulating washers 13. The cable is provided with outer helical screening tapes 1.

To prepare the two lengths of cable for jointing the outer screening tapes 1 of each length are bound near the end with an adhesive paper binder 2 and are then spot soldered as shown at 3 to the outer conductor 5 of the cable. The screening tapes 1 are then cut off just beyond the binder 2. A metal collar 4 is sweated on to the outer conductor 5, one end of the collar having a tapered internal diameter to fit over the portion 6 of the screening tapes 1 that is beyond the binder 2. The outer conductor 5 is then cut off flush with the collar 4.

To make the joint, an insulating annular member 7 provided with a cavity containing a plastic cement 8 is inserted over each inner conductor 10 so as to fit within the outer conductor 5. In each annular member the cavity containing the cement 8 is connected to the inner bore of the annular member by radial openings 11. The plastic cement 8 is composed of a material

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easily melted and thus caused to flow through the radial openings 11 to adhere to the inner conductor 10 and also caused to adhere to the outer conductor 5. It is preferred to use a mixture of shellac and tricresyl phosphate which will be caused to flow by the subsequent operations incidental to the making of the joint. The annular members 7 are formed with end flanges as shown to butt against the ends of the outer conductors 5 and collars 4.

The centrally located conductors are then cut to butt each other at the joint and are joined by sweating a split copper ferrule 12 around them at the place of abutment. A split copper ferrule 14 having its edges made to overlap at 15 is placed so that its ends overlap the collars 4 and is then sweated to them and the overlapping edges of the ferrule 14 are sweated together. Screening tapes 16 are then attached by soldering as indicated at 9 at one end to the original screening tapes 1, and are then wrapped over the whole joint in the same lap as the screening tapes 1 and attached by soldering to the original screening tapes 1 at the other end of the joint. Only a portion of these tapes is shown in the drawing.

It is clear that various minor modifications may be made in the above described structure and the method of constructing same. For example, the outer ferrule 14 may be seamless and sweated on to the collars 4, or it may be internally screw threaded and the collars 4 externally screw threaded. It is also clear that the joint according to the invention may be formed between lengths of coaxial electric conductor cable of other types than that referred to above.

The same ratio of internal diameter of outer conductor to external diameter of inner conductor is not preserved throughout the joint above described, but the length of the joint and the departure from the ratio is so small that the transmission characteristics of the completed cable are not appreciably affected.

What is claimed is:

1. An end-piece for a coaxial cable that comprises a flanged cylindrical member formed of electrically insulative material and having a portion thereof adapted to being received within the open end of the external conductor of a coaxial cable, said member having an axially located opening adapted to receive the internal conductor of the coaxial cable and having radially extending channels communicating with said axially located opening and terminating in a peripheral groove formed in the portion of said

member which is adapted to being received in the open end of the external conductor of the coaxial cable, and a plastic mass within said radially extending channels and peripheral groove, capable of contacting and adhering to the central conductor and the external conductor of the coaxial cable to form a fluid-tight closure.

2. An end-piece for a coaxial cable that comprises a flanged plug adapted to being fitted within the open end of the external conductor of a coaxial cable and having an opening through which the internal conductor of the cable may extend, said plug having a peripheral groove formed therein in the portion to be disposed within the external conductor and having radially extending channels communicating with the groove, and a plastic mass within said channels and groove capable of contacting and adhering to the conductors of the cable to provide a fluid-tight closure.

3. In combination with a coaxial cable having a tubular external conductor and an internal conductor positioned axially within the external conductor, a closure plug that comprises a cylindrical member formed of electrically insulative material having a portion fitting within the open end of the external conductor and provided with a flange abutting against the end of said conductor, said plug having an axially extending opening through which the internal conductor projects and which communicates through radial channels with a peripheral groove formed in the portion of said plug within the end of the external conductor, and a plastic mass disposed within said channels and groove contacting and adhering to the internal and external conductor to effect fluid-tight closure of the cable end.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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