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J. B. DIXON ET AL

2,193,450

WIRE JOINING MEANS

Filed Nov. 17, 1937

FIG. 1

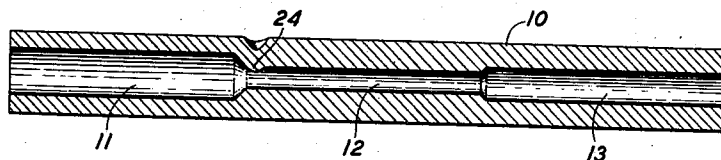


FIG. 2

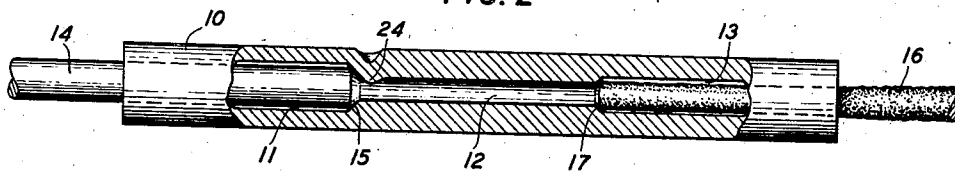


FIG. 3

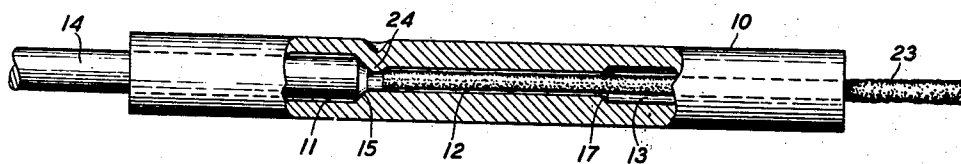
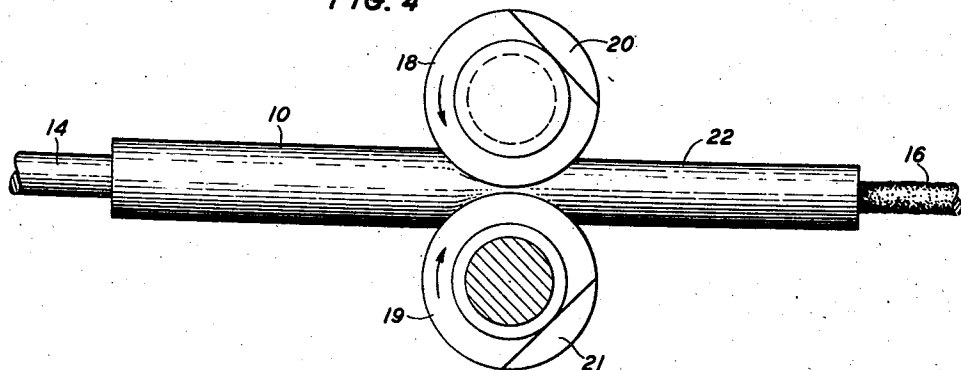


FIG. 4



INVENTORS: J. B. DIXON
C. S. GORDON
BY J. MacDonald
ATTORNEY

UNITED STATES PATENT OFFICE

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WIRE JOINING MEANS

John B. Dixon, Rumson, and Chester S. Gordon,
Boonton, N. J., assignors to Bell Telephone
Laboratories, Incorporated, New York, N. Y., a
corporation of New York

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3 Claims. (Cl. 16—108)

This invention relates to connectors for telephone conductors and the like.

The object of this invention is to produce a joint between wires of varying size by means of a metallic sleeve which will be gas-tight and as strong and as durable as the wire itself.

Another object of the invention is to produce a joint which will be impervious to moisture and gases and will not corrode.

A further object of the invention is the production of a joint in wires and the like which will have a low resistance and will maintain such resistance constant.

In the joining of electrical conductors and the like, and in particular conductors which are used on open and exposed lines, it is essential that not only a joint be made which will be at least as strong as the conductors themselves, but also one in which the weather or the presence of corrosive gases will have little or no effect thereon. It is also desirable to reduce to a minimum the mass concentrated at the joint.

In order to overcome certain difficulties that have been heretofore experienced in the joining of open wires of varying size and those that have been reduced in size by corrosion and the like to new wires, we have devised a method which contemplates the use of a metallic sleeve having connecting coaxial bores of different diameters.

In accordance with the preferred form of this invention, a metallic sleeve is provided which has three connecting coaxial bores of different diameters and is to be used for the connecting of new line wires to existing wires which may or may not be corroded. The new line wire is inserted in the bore of the largest diameter and the corroded wire is inserted in the other end of the sleeve. If the corroded wire will enter the smaller bore, it is positioned therein; otherwise it is positioned in the larger of the two bores. After the wires are positioned in the sleeve, dependent upon the degree of corrosion present, the sleeve is forced into intimate contact with the wires by any suitable means, for instance, the device shown in the patent to W. S. Hayford 1,863,048, issued June 14, 1932.

Referring now to the drawing,

Fig. 1 is a longitudinal sectional view of applicants' sleeve illustrating the bores of different diameter;

Fig. 2 is a longitudinal view similar to Fig. 1, but partly in section, with a new wire inserted in the large bore and a corroded wire inserted in the intermediate-sized bore;

Fig. 3 is a view similar to Fig. 2, but with a

wire having a greater degree of corrosion inserted in the bore of the smallest diameter; and

Fig. 4 illustrates one method of forcing the sleeve into intimate contact with the wires.

Referring to Fig. 1 the metallic sleeve 10 is provided with three connecting coaxial bores 11, 12 and 13, of different diameters. As shown in Fig. 2, the new wire 14 is fitted into the larger bore 11, where it abuts against the shoulder 15 which is formed by the reduced diameter of the smallest bore 12. The wire 16 is fitted into the intermediate-sized bore 13 and, due to the fact that the amount of corrosion on this wire does not penetrate deeply, it will, after cleaning, fit into the bore 13 and abut against the shoulder 17. The sleeve 10 is then forced down into intimate contact with the two wires 14 and 16 by means of any suitable device, for example, the device shown in Fig. 4, which illustrates a pair of rollers 18 and 19 having flats 20 and 21 provided thereon for the purpose of applying the rollers to the sleeve at the beginning of the operation and to remove them at the end. As shown in Fig. 4, the rollers 18 and 19 have traveled approximately one-half the distance of the sleeve 10 and are forcing the sleeve into intimate contact with the wires 14 and 16 as shown by the reduced diameter of the sleeve 10 at the end 22. When the rollers 18 and 19 have traveled the entire length of the sleeve 10, they will have forced the sleeve into intimate contact with the wires 14 and 16 and will have formed a gas-tight union between the wires and the sleeve possessing adequate holding power to insure retaining the cores at loads up to and through their breaking strength.

When the degree of corrosion is greater or the wire itself is smaller in diameter, as shown at 23 in Fig. 3, it will pass by the shoulder 17 and will enter the small bore 12 and will abut against the indented portion 24. Thus we have, as shown in Fig. 3, the new line wire 14 in position in the bore 11 and the old corroded wire located in the small bore 12. The sleeve 10 may then be forced down into intimate contact with the wires 14 and 23, as explained above with regard to the sleeve 10 and the wires 14 and 16. By proper proportioning of the bore diameters, the sleeve may be brought into close contact with the wire throughout the bore 13, while being securely held in bore 12. This is advantageous in preventing access of moisture which might facilitate corrosion throughout the length of the bore 13.

By virtue of this invention, the applicants have

provided a method of joining wires of varying diameters by means of a sleeve which will adapt itself to the size of the wires to be joined.

- 5 We do not limit ourselves to any specific tool for forcing the sleeve into contact with the wires. It is to be understood that the invention is not to be restricted to the examples shown, but only by the scope of the appended claims.

What is claimed is:

- 10 1. A connector for connecting wires of different size, comprising a circumferentially complete metal sleeve having a uniform outside diameter throughout its length, and three connecting coaxial bores each of a different diameter on its interior, the smallest of said bores being intermediate the other two.

- 15 2. A connector for joining new steel line wire to corroded steel line wire, comprising a galvanized steel circumferentially complete sleeve 20 having a uniform outside diameter throughout

its length and three connecting coaxial bores each of a different diameter on its interior, the smallest of said bores being intermediate the end bores, said sleeve being arranged to be forced into intimate contact with the wires in the bores by pressure applied to the outside of said sleeve. 5

3. A connector for joining new steel line wire to corroded steel line wire, comprising a galvanized steel circumferentially complete sleeve having a uniform outside diameter throughout its length and three smooth connecting coaxial bores each of a different diameter on its interior, shoulders formed by said bores for limiting the size of the wire to be inserted and the smallest of said bores being intermediate the end bores, said sleeve being arranged to be forced into intimate contact with the wires in the bore by pressure applied to the outside of said sleeve. 10 15

JOHN B. DIXON.

CHESTER S. GORDON. 20