

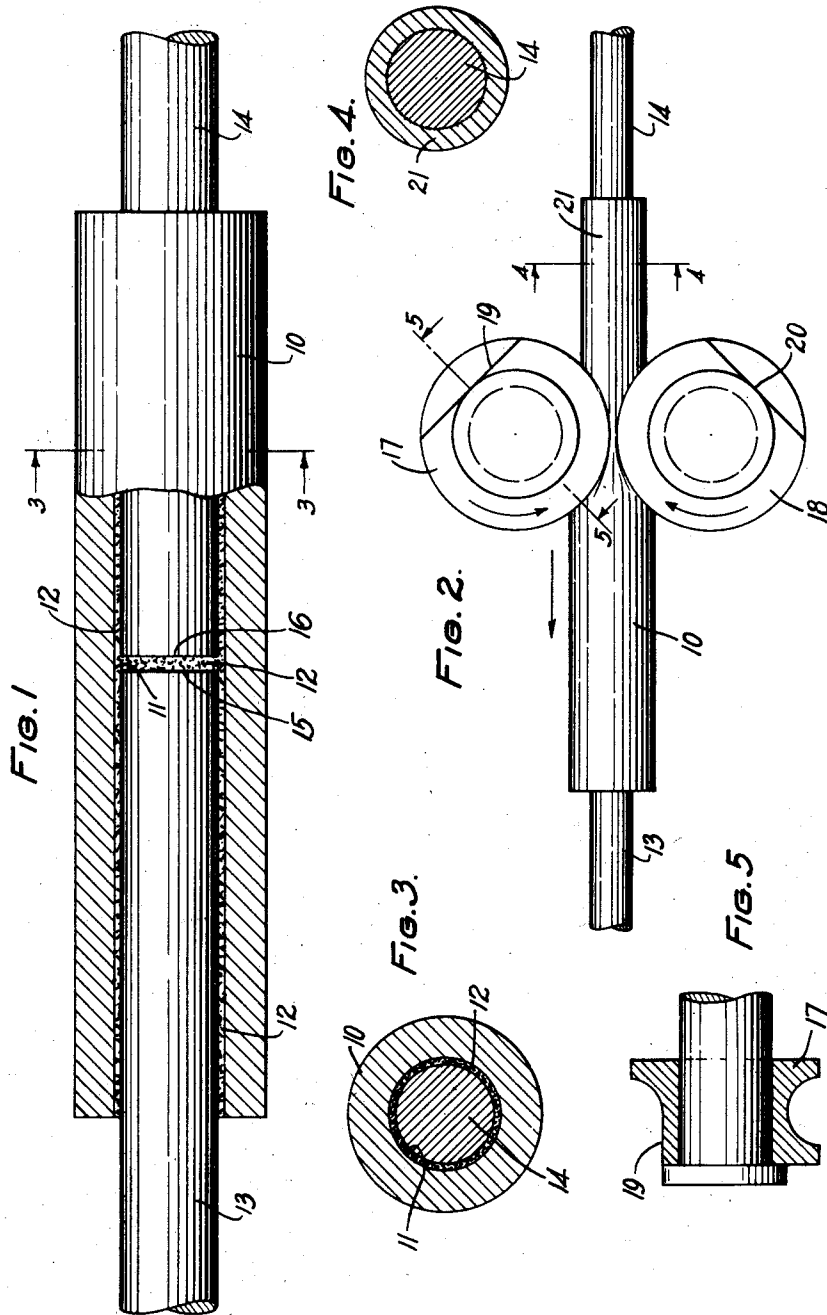
Oct. 13, 1931.

C. R. MOORE

1,827,297

METHOD OF JOINING WIRES BY MEANS OF SLEEVES

Filed Jan. 3, 1930



INVENTOR
C. R. MOORE
BY *J. Mac Donald*
ATTORNEY

UNITED STATES PATENT OFFICE

CHARLES R. MOORE, OF MAPLEWOOD, NEW JERSEY, ASSIGNOR TO BELL TELEPHONE LABORATORIES, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

METHOD OF JOINING WIRES BY MEANS OF SLEEVES

Application filed January 3, 1930. Serial No. 418,179.

This invention relates to a method of making joints in telephone or telegraph wires by means of a metallic sleeve.

One of the objects of this invention is to produce a joint which may be readily made and which will be equally 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 will not corrode. Such a joint will maintain a constant resistance.

In the joining of electrical conductors and the like, particularly wires which are used on open and exposed lines, it is very important that not only a joint be made which will not be affected by the weather, but also one which will be at least as strong as the wire itself. It is also highly desirable to reduce the mass concentrated at a joint to a minimum.

In order to overcome the difficulties that have been present heretofore in the methods used for the joining of abutting ends of wire by means of a metallic sleeve and also to render it unnecessary for special skill on the part of the operator, I have devised a method in which the joint is formed by inserting the ends of the wire to be joined in a metallic sleeve, the inner surface of which has been previously coated with a fine abrasive material, such as emery dust and then forcing the sleeve into intimate contact with the wire, thus forming an exceedingly strong and durable joint.

I have found that in making a joint in accordance with this invention a much shorter sleeve can be employed than in the ordinary method where no abrasive is used on the interior surface of the sleeve. For example, a sleeve two inches long with abrasive on its inner surface will have a holding power as great if not greater than a sleeve six inches long that has no abrasive on its interior. Thus it can be readily observed that a considerable amount of material and time will be saved by making wire joints in accordance with the method as set forth in this invention.

Further tests have shown that joints made in accordance with this invention do not pre-

mit the circulation of any gas or moisture between the sleeve and the wire.

In accordance with the preferred form of the invention a metallic sleeve, of suitable length and diameter for the wire to be joined, is treated on its inner surface with a suitable adhesive, such as cellulose acetate, and while the adhesive is still moist a fine abrasive, such as emery dust, is introduced into the sleeve in such a manner that the entire inner surface is covered with a thin film of dust which adheres to the adhesive and forms a coating of emery on the entire inner surface of the sleeve. The wires to be joined are now inserted in the sleeve with their ends abutting and the sleeve forced into intimate contact with the wire by any suitable means, for example a device such as disclosed in the pending application of W. S. Hayford, Serial No. 371,254, filed June 15, 1929.

Referring now to the drawings:

Fig. 1 is an enlarged view partly in section showing the wires in the sleeve with the abrasive material adhering to the inner surface of the sleeve.

Fig. 2 illustrates one method of forcing the sleeve into contact with the wire;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1 before the sleeve is forced into contact with the wire;

Fig. 4 is a cross-sectional view taken at line 4—4 of Fig. 2 and illustrates a sleeve after it has been forced into contact with the wire; and,

Fig. 5 is a cross-sectional view of one of the rollers illustrated in Fig. 2 taken on line 5—5.

Referring now to Fig. 1, a metallic sleeve 10 is first coated on its inner surface 11 with a suitable adhesive, an abrasive 12, such as emery dust is then dusted thereon while the adhesive is still wet. The wires 13 and 14 which are to be joined are inserted into the sleeve 10 the proper distance; that is, so that the ends 15 and 16 of the wire are approximately in the center of the sleeve. The sleeve 10 is now ready to be forced into contact with the wires 13 and 14. This may be done in any suitable manner, for example the device shown in Fig. 2, which illustrates a pair of rollers 17 and 18 having flats 19 and 20 pro-

vided thereon for the purpose of applying the rollers to the sleeve at the beginning of the operation and removing them at the end. This obviates the necessity of shifting the rolling tool over the full length of the wire in applying or removing the tool.

As shown in Fig. 2 the rollers 17 and 18 have traveled approximately one-third of the distance of the sleeve and are rolling the sleeve 10 into intimate contact with the wire, as shown by the reduced diameter of the sleeve 10 at the end 21. When the rollers 17 and 18 have traveled the entire length of the sleeve, they will have rolled the sleeve into intimate contact with the wires 13 and 14 and will have formed one mass of the wire and the sleeve with the abrasive material embedded therebetween as shown in Fig. 4. It is therefore apparent that due to the presence of the abrasive material between the sleeve and the wire it will be practically impossible to remove the wire from the sleeve without breaking the wire.

I do not limit myself to any specific tool for forcing the sleeve into contact with the wire, as it is obvious that many modifications may be made by those skilled in the art and that I am not restricted to the example shown and only by the scope of the appended claims. What is claimed is:

1. The method of making joints in wire or the like which consists in inserting the ends of the wires to be joined in a sleeve, the inner surface of which has been coated with a layer of an adhesive and an abrasive, and then forcing the sleeve into intimate contact with the wire.

2. The method of making joints in wire or the like which consists in inserting the ends to be joined in a sleeve, the inner surface of which is coated with a layer of an adhesive and an abrasive, and then rolling the sleeve into intimate contact with the wire.

3. The method of making joints in wire or the like which comprises inserting the ends of the wire to be joined in a malleable metal sleeve which has its inner surface coated with a layer of an adhesive and an abrasive, and then forcing the sleeve into intimate contact with the wire by subjecting said sleeve to a rolling action from end to end.

4. The method of making a joint in wire or the like which consists in inserting the ends of the wire to be joined in a copper sleeve, the inner surface of which is coated with a layer of an adhesive and an abrasive, and then rolling the sleeve beginning at one end and continuing to the other.

5. The method of making a joint in wire or the like characterized in this that a metallic sleeve, the inner surface of which is coated with a layer of an adhesive and an abrasive is rolled into intimate contact with the ends of said wire, said rolling action starting at

one end of the sleeve and continuing to the other end.

6. The method of making a joint in wire or the like which comprises coating the inner surface of a metallic sleeve with a suitable adhesive, introducing an abrasive into the sleeve while the adhesive is still moist, inserting the ends of the wire into the sleeve and then forcing the sleeve into intimate contact with the wire.

7. The method of making a joint in wire or the like which comprises coating the inner surface of a metallic sleeve with cellulose acetate, introducing an abrasive into the sleeve while the cellulose acetate is still moist, inserting the ends of the wire into the sleeve and then forcing the sleeve into intimate contact with the wire.

8. The method of making a joint in wire or the like which comprises coating the inner surface of a metallic sleeve with cellulose acetate, introducing an abrasive into the sleeve while the cellulose acetate is still moist, inserting the ends of the wire into the sleeve and then rolling the wire.

9. The method of making a joint in wire or the like which comprises coating the inner surface of a metallic sleeve with cellulose acetate, introducing an abrasive into the sleeve while the cellulose acetate is still moist, inserting the ends of the wire into the sleeve and then rolling the wire, said rolling action starting at one end of the sleeve and continuing to the other end.

In witness whereof, I hereunto subscribe my name this 31st day of December, 1929.

CHARLES R. MOORE.