(No Model.)

L. F. REQUA.

INSULATED ELECTRIC CONDUCTOR.

No. 506,830. Patented Oct. 17, 1893.

Fig. 1,

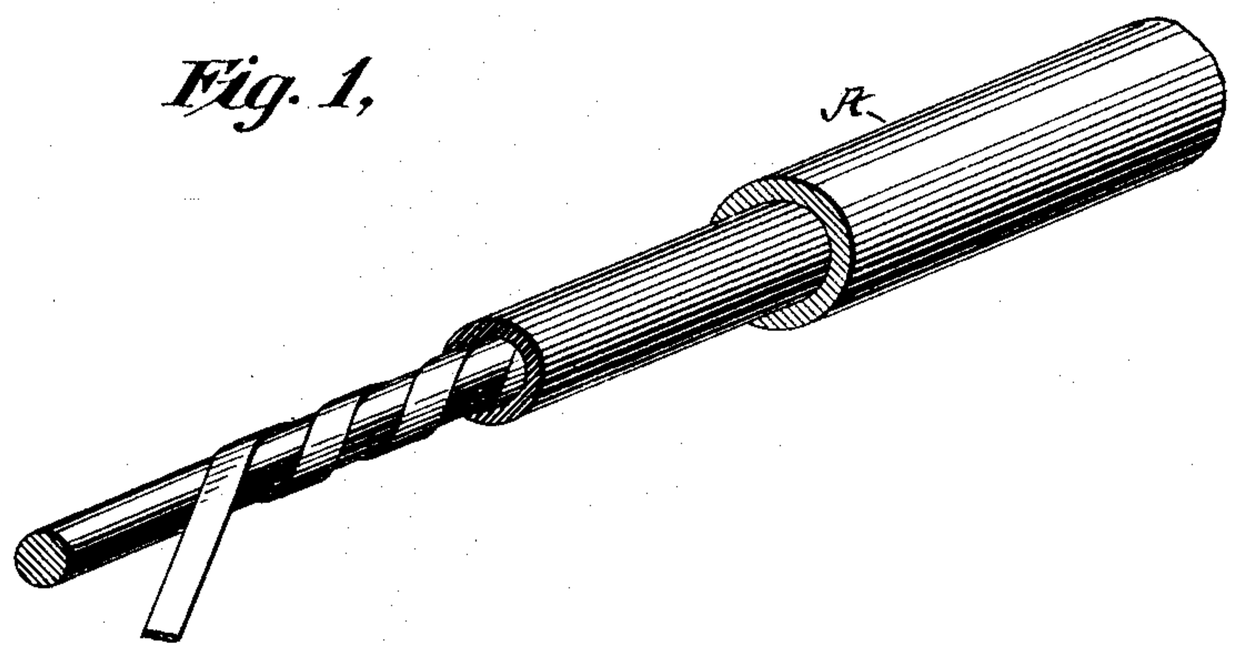


Fig. 2,

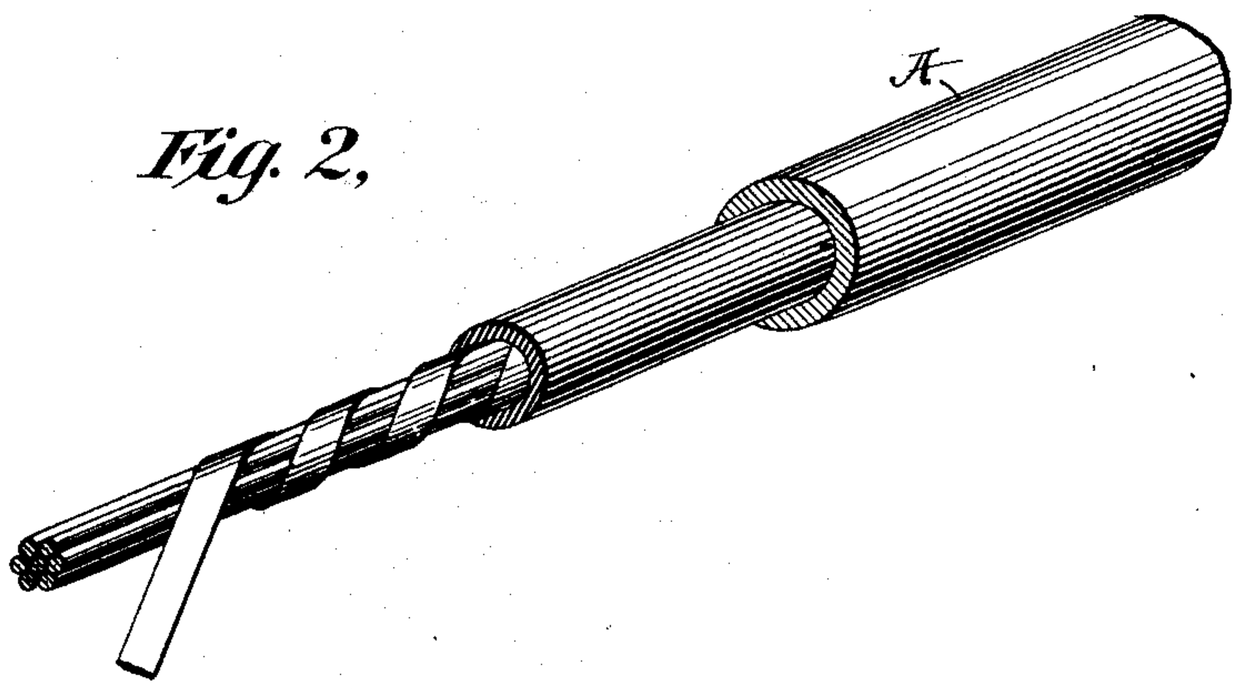
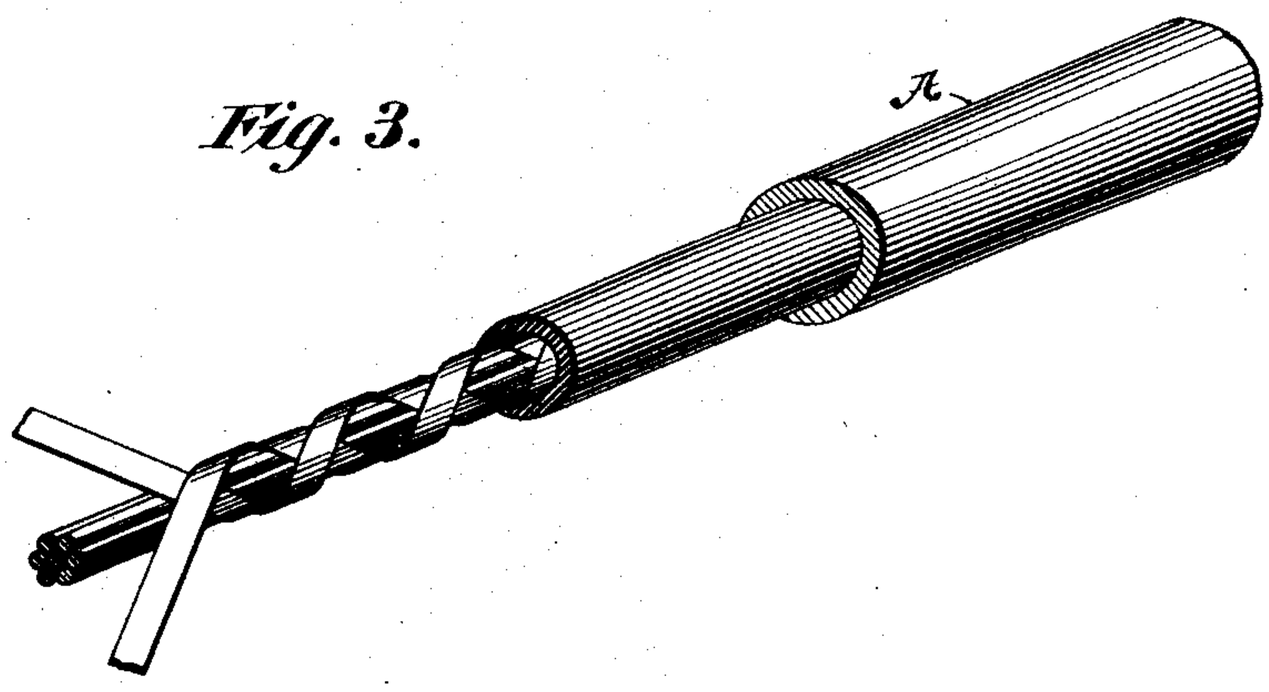


Fig. 3.



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UNITED STATES PATENT OFFICE.

LEONARD F. REQUA, OF NEW YORK, N. Y.

INSULATED ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 506,830, dated October 17, 1893.

Application filed December 24, 1892. Serial No. 456,219. (No model.)

To all whom it may concern:

Be it known that I, LEONARD F. REQUA, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Insulated Electric Conductors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to insulating electric conductors.

The object is to simplify and cheapen the construction and increase the insulating and lower the inductive capacity of electric conductors. In conductors which are insulated by a covering applied thereto in a soft or plastic state, wherein the insulating material is pressed into intimate contact by suitable apparatus with the surface of the conductor, great care must be taken in applying the insulation that it is not contaminated with dust or small particles of metal which vary the insulating power of the medium surrounding the conductor.

In carrying out my invention I apply between the conductor and a water-proof insulating coating a separating medium, preferably using as the material a substance having high insulating power such as paper, which holds the insulating sheath or covering out of contact with the conductor and leaves between them a layer of dry paper or paper and air which improves its insulating qualities and reduces its static capacity, and over the insulated conductor thus formed I place a protective armor of lead pipe.

The several features of novelty will be more particularly hereinafter described and definitely indicated in the claims appended to this specification.

In the accompanying drawings which illustrate the invention, Figure 1 is a perspective view with part broken away of a conductor embodying my improvements. Fig. 2 is a similar view of a group of conductors embodying my improvements; and Fig. 3 is a similar view of a modification.

In carrying out my improvements I wind about a conductor or group of conductors a spiral layer of fibrous material of high insulating power, such as paper ribbon, and then surround the wound conductor with an insulating tube preferably of soft rubber. A conductor so constructed is shown in Fig. 1. The tube of soft rubber may be formed simultaneously with the winding of the ribbon or may be formed or drawn over the conductor after the ribbon is wound upon it. In a conductor thus constructed the insulating envelope surrounding the conductors is out of mechanical contact therewith, being held away by the paper or other fibrous material with which the conductor is wound, and impurities in the composition of the rubber covering do not affect the insulation to any considerable degree because of the high insulating power of the paper and dry air which intervene between it and the conductor. The paper may be wound in a close or open spiral as desired. By using a soft rubber envelope on the outside the conductor is readily bent without cracking or rupturing the insulating envelope. After the rubber covering is applied the conductor is drawn through or surrounded in any suitable manner by a lead pipe or other suitable protective armor, as illustrated at A in the drawings.

In Fig. 2 is illustrated a cable or group of conductors insulated as described in connection with Fig. 1.

In Fig. 3 a double serving of the paper spiral, the two spirals being wound in opposite directions, is illustrated.

In all cases the same result is attained, namely, high insulating power and low inductive capacity, and an ability to endure twists or bends or exposure to water and moisture without interference with the insulating qualities of the conductor. The soft rubber tube is preferably of such a diameter that it will closely embrace the conductor so that it will be in intimate contact with the paper covering when the conductor is completed, so that the entrance of moist air to the conductor will be excluded. The armor A also is made of such a diameter as will produce a snug fit when it surrounds the covered conductor. Such air in order to enter

the conductor for any considerable distance will be forced to traverse the narrow spiral space which intervenes between the conductor and the tube. When exceptionally low inductive capacity is required, as in conductors designed to carry alternating currents, the open spiral winding of paper shown in the drawings is to be preferred, but when inductive capacity is of secondary importance to high insulation a close spiral winding is to be preferred.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An insulated conductor or group of conductors inclosed in a sheath or tube of soft rubber held out of contact therewith by a fibrous insulating material.

2. An insulating conductor or group of conductors wound spirally with a paper ribbon and inclosed in a soft rubber sheath or tube.

3. An insulating conductor or group of conductors wound with a paper ribbon and surrounded by a soft rubber tube closely embracing the ribbon.

4. An insulated conductor or group of conductors inclosed in a sheath or tube of soft rubber held out of contact therewith by a fibrous insulating material, and surrounded by a metallic protective armor.

In testimony whereof I affix my signature in presence of two witnesses.

LEONARD F. REQUA.

Witnesses:

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DAVID FRANKLIN.