No. 805,260. PATENTED NOV. 21, 1905.

J. G. CALLAN.

INSULATING BUSHING.

APPLICATION FILED AUG. 28, 1902.

Fig. 1.

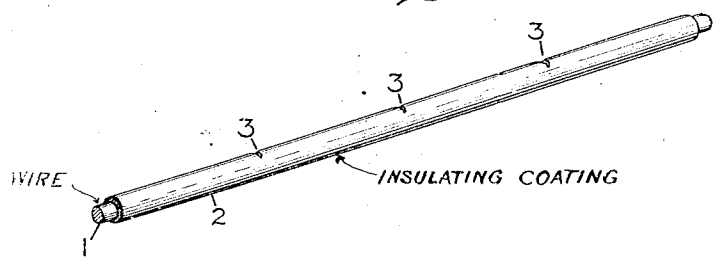


Fig. 2.

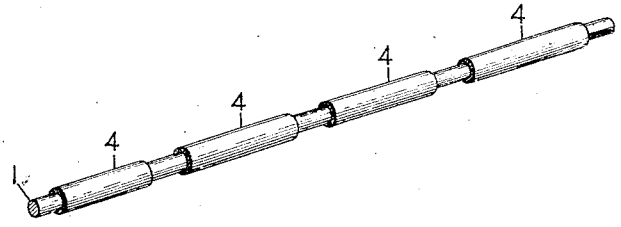
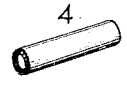


Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN G. CALLAN, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

INSULATING-BUSHING.

No. 805,260. Specification of Letters Patent. Patented Nov. 21, 1905.

Application filed August 28, 1902. Serial No. 121,317.

To all whom it may concern:

Be it known that I, JOHN G. CALLAN, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Insulating-Bushings, of which the following is a specification.

This invention relates to bushings of insulation for use in electrical apparatus, and especially for insulating the shafts in Thomson recording wattmeters. Such bushings are necessarily of small diameter and are somewhat expensive to make by methods heretofore known to me.

My invention aims to make bushings at low cost and of any predetermined diameter, though it is most useful in making bushings up to about one-eighth of an inch. The material which I prefer to use in making such bushings is that described and claimed in the patent of Thomson and Callan, reissued May 27, 1902, No. 11,997. This material is an acetate of cellulose; but I do not wish to limit myself to this particular compound, as any other insulating compound capable of manipulation in the manner hereinafter described may be used. I omit from the process described in the said patent when making bushings in accordance with my present invention the special means for securing adhesion.

The method of making insulating-bushings which I have invented consists in applying to a metallic wire of the desired diameter a series of coatings of the insulating material selected and after drying the same stretching the wire in order to loosen the coating of insulating material, which can then be slipped off the wire in the form of a tube and cut up in lengths as desired for use.

In the accompanying drawings, Figure 1 is a perspective view of a wire coated with insulating compound and nicked at intervals to facilitate the separation of the coating into suitable lengths of bushing. Fig. 2 is a similar view showing a coating separated into lengths. Fig. 3 is a perspective view of one of the insulating-bushings made in accordance with my invention.

In carrying out my invention I join together the ends of the wire 1 of a diameter required for the inside of the bushing and then run said wire continuously through baths containing the liquid insulating material until the thickness of the series of coatings thus applied to the wire is sufficient to insure the proper insulation. The coating-machine may be similar to that shown in the Thomson-Callan patent above referred to. Precaution should be taken to prevent the coating from adhering closely to the wire in order that its ready removal from the wire may be insured. The coating is then suitably dried, and the ends of the wire having been disengaged the wire is then stretched in order to slightly reduce its diameter and loosen the coating 2 of insulation. In order to secure this result, it is preferable to use a wire of lead or some similar non-resilient material or alloy. If it is desired to withdraw the coating in predetermined lengths, the coating can be nicked, as shown at 3 in Fig. 1, and when it is attempted to remove the coating from the wire it will break into lengths 4 at the nicks, as shown in Fig. 2. In any event the lengths of tubing can be cut to any definite length after they are removed from the wire.

I am aware that tubular pieces have been made by applying the material to a round supporting member on which the tube is formed and removing it by turning the material back on itself and peeling it off, as a glove is removed from the hand; but the material which I prefer to use in making these insulating-bushings—namely, cellulose acetate—is relatively inelastic unless specially compounded to obtain elasticity and cannot be removed from a round supporting member in this way.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The method of making an insulating-bushing, which consists in coating a wire with a suitable insulating compound, stretching said wire to reduce its diameter, and then removing the coating of insulating compound.

2. The method of making an insulating-bushing, which consists in coating a wire of non-resilient material with an insulating compound, stretching said wire to reduce its diameter and loosen the coating, and then removing said coating.

3. The method of making an insulating-bushing which consists in coating a support a plurality of times in a bath of a non-adherent cellulose acetate, drying said coating, varying the relative diameter of the support and coating at the surface of junction, and then removing the coating.

4. The method of making an insulating-

bushing which consists in applying to a wire a coating of non-adherent cellulose acetate in a liquid condition, stretching said wire to reduce its diameter and loosen the coating, and then removing the coating in tubular form from the wire.

5. The method of making an insulating-tube consisting in building up on a support of non-resilient material having a smooth surface a closely-fitting coating of an insulating compound which is relatively inelastic when hard, then varying the relative diameter of the coating and support at the surface of junction, and then removing the coating.

In witness whereof I have hereunto set my hand this 26th day of August, 1902.

JOHN G. CALLAN.

Witnesses:
DUGALD McK. McKILLOP,
JOHN J. WALKER.