

(No Model.)

T. L. REED.
INSULATED ELECTRIC WIRE.

No. 482,753.

Patented Sept. 20, 1892.



WITNESSES:
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UNITED STATES PATENT OFFICE.

THOMAS L. REED, OF PROVIDENCE, RHODE ISLAND.

INSULATED ELECTRIC WIRE.

SPECIFICATION forming part of Letters Patent No. 482,753, dated September 20, 1892.

Application filed May 31, 1890. Serial No. 353,862. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS L. REED, a citizen of the United States, residing in Providence, State of Rhode Island, have invented certain new and useful Improvements in Insulated Electric Wires, of which the following is a specification.

This invention provides an improved means for insulating electric conducting wires or cables. It is applicable to wires which are covered with a textile or equivalent fibrous or absorbent wrapping or envelope applied by braiding, weaving, winding, or otherwise.

The novelty of the invention resides in a composition for saturating or filling such textile or porous wrapping. It is desirable that such a composition shall be permanently flexible and yielding, in order that no matter how long the wire may have been in use it may still be bent without injury to its insulating-covering. Porous compositions having for their bases bituminous matter or other analogous cementing substances have been applied as such filling materials; but they have usually been subject to the disadvantage of becoming hard or brittle in course of time or of disintegrating, and thereby permitting moisture to penetrate the fibrous wrapping. My invention aims to render such filling compositions thoroughly tenacious, resistant of atmospheric influence, and permanently soft and pliable. To this end I employ as essential ingredients of the filling composition suitable proportions of wax, bitumen, and oxygenized linseed-oil or other oxygenized or oxidizable oil of equivalent or analogous character—such, for example, as cotton-seed oil. By this mixture I produce an insulating filling composition which can be applied to thoroughly permeate the textile wrapping, adhere strongly to the wire, effectually exclude air and moisture, present an impermeable, tough, and durable exterior, and remain permanently soft or tacky in the interior of the insulation, so that the wire may be bent to any extent necessary in practice without impairing the insulation and without causing it to crack, break, or deteriorate.

The composition which I prefer to employ in carrying out my invention is the following: wax-tailings, one pound; bitumen, one pound;

oxygenized linseed-oil, one ounce. The wax-tailings is the yellow waxy residuum of petroleum distillation. The bitumen used is preferably petricite, melting, preferably, at about 184° Fahrenheit. The oil used is preferably oxygenized linseed-oil of .98 specific gravity.

In preparing the composition I first melt the wax-tailings in a suitable vessel, then add the oil, stirring it in, and then drop in the pieces of bitumen and continue boiling and stirring until thoroughly incorporated. That this condition is reached may be recognized by the formation of little air-bubbles, which ascend after the manner of soap-bubbles.

To apply this composition to the wire, it is placed, preferably, in a long narrow vat or trough, preferably about twenty-four feet long, and heated to about 260° to 300° Fahrenheit. The wire already braided or otherwise covered with cotton or other textile material and thoroughly dry is then drawn longitudinally through this vat, so that it is exposed for a considerable time to the action of the hot composition and the latter is caused to thoroughly penetrate the interstices of the textile covering. As the wire emerges from the end of the trough the excess of composition is wiped or scraped off from its exterior by drawing the wire through a suitable die or wiper called, technically, a "snugger." The best form of such wiper or snugger consists of a rope or cord wrapped for a few turns around the wire and drawn taut as the wire is pulled through. The wire on leaving the snugger should pass through the air for preferably about one hundred and fifty feet, passing then over a reel or pulley, and then back about one hundred and fifty feet, by which time the coating is thoroughly cool, dry, and firm, and it is then wound on a reel. Insulated wire prepared in this way has been used, practically, for several months without showing the slightest deterioration and retaining the pliability of its insulating-coating unimpaired. Its insulating properties are very high and it has great durability to withstand abrasion and great resistance to atmospheric influences, while its cost is but moderate.

The accompanying drawing shows, approxi-

mately, the appearance of the insulated wire before and after the application of the composition filling.

5 In place of the petricite other species of bitumen may be used; but I have found petricite to give the best results.

10 In place of the wax-tailings other waxy materials may be substituted. I have produced good results by the use of a superior grade of rosin-oil.

15 In place of the oxygenized linseed-oil any other oxygenized or oxidizable oil—such as cotton-seed oil or any other analogous oil which dries with a tenacious skin and has otherwise the requisite properties—may be substituted. Preferably the oil is already oxidized or oxygenized; but an oxidizable oil not yet oxidized may be used, although the results are not quite so satisfactory.

20 The proportions stated may be varied to some extent, according as the composition is desired to be more or less soft or yielding or

as may be rendered necessary by any change in the precise character of the ingredients. The proportions stated are those which have 25 with the preferred ingredients yielded the best results.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely: 30

1. A conducting-wire covered with a textile wrapping filled with a composition of bitumen, wax, and oxidized or oxidizable oil.

2. A conducting-wire covered with a textile wrapping filled with a composition of petri- 35 cite, wax-tailings, and linseed-oil, in substantially the proportions specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS L. REED.

Witnesses:

CHARLES K. FRASER,
JNO. E. GAVIN.