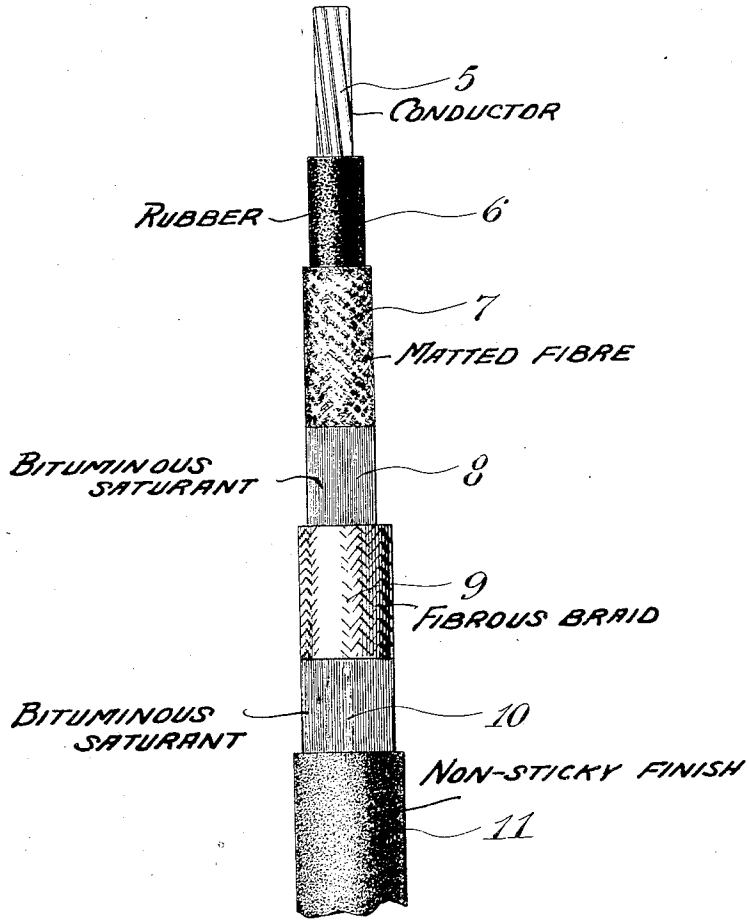
Sept. 29, 1936. A. S. WATSON 2,056,130

INSULATED ELECTRICAL CONDUCTOR

Filed April 9, 1932



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Patented Sept. 29, 1936

2,056,130

UNITED STATES PATENT OFFICE

2,056,130

INSULATED ELECTRICAL CONDUCTOR

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Application April 9, 1932, Serial No. 604,219

9 Claims. (Cl. 173—264)

This invention relates to electrical conductors and more particularly to insulated conductors of the type usually employed in exposed locations such, for example, as on pole lines, although it will be apparent that important features of the invention are adapted for general use and are not limited to conductors of any one type.

An object of the present invention is to provide a conductor having an improved construction and arrangement of insulating and protecting cover capable of resisting deterioration due to exposure to weather for prolonged periods of time.

This and other objects which will be apparent to those skilled in this particular art are accomplished by means of the invention hereinafter described, one embodiment of which is illustrated in the accompanying drawing which shows a conductor provided with a protective cover illustrative of one form of this invention, the successive layers being progressively exposed to illustrate the detailed construction.

The particular embodiment of the invention which has been chosen for the purposes of illustration is shown in connection with a stranded conductor 5 which may, if desired, be solid. A moisture seal 6 is provided by a sheath of homogeneous moisture-resistant material such as unvulcanized rubber which surrounds the conductor and, when stranded wires are employed, fills the valleys formed by the separate strands, eliminating all possible open spaces in such valleys. The plastic, unvulcanized rubber is highly resistant to deterioration by ozone, and the moisture seal formed thereby is not readily subject to damage by corona. I have found that a very thin rubber wall, in some instances as thin as $\frac{1}{32}$ of an inch, forms a satisfactory moisture seal. The thickness of the wall may vary somewhat with different sizes of conductors but in general will be of the order specified.

Over the unvulcanized rubber compound a matted layer 7 of cotton or other fiber is formed. The fiber may be applied in the form of a roving or the fibers may be substantially individually applied in the manner described in a co-pending application of Frank M. Potter, Serial No. 604,208, filed April 9, 1932, to form a seamless, felted layer of interentangled fibers. The fibrous layer forms a soft cushion over the rubber which protects it against abrasion and, when properly saturated, increases the moisture seal. The matted fibers are saturated with a saturant 8 comprising a high melting point bituminous compound such, for example, as blown asphalt, or a high melting point stearin pitch, or the like, which completely covers the fibers and completely fills the voids in the fiber layer to bind the fibers together, to provide a moisture seal and to increase the dielectric strength. The saturated fibers are bound in place and are themselves protected against abrasion by an outer protective, abrasion-resistant cover which is preferably formed by a closely woven braid 9 of twisted cotton or fibrous yarn which compresses the felted fibers, binds them in place and forms a protective outer jacket. The braid is saturated with a suitable bituminous saturant 10 capable of filling the voids in the braid 9 and filling the fiber so as to increase the dielectric strength and the resistance to moisture, and binding the fibers of the braid together to form adequate abrasion and weather protection. The bituminous saturant 10 is of the flexible type which will permit flexing of the conductor without cracking or otherwise injuring the saturated layer. A smooth surface 11 can be provided by any suitable finishing material capable of providing suitable weather resistance and preventing migration of the saturant 10, at the same time providing a smooth, non-sticky surface. A high melting point flexible stearin pitch will produce a smooth, dry coating capable of being polished and tending to prevent any tackiness from the bituminous saturant 10, and will also permit the wire or cable to be easily drawn into position during installation. In place of the stearin pitch compound, a metallic oxide paint will also be satisfactory as an outer finish coat.

The use of a high melting point bituminous saturant in the protective cover, either in the felted layer 7 as described, or in the outer braid 9, provides a filling material which will not migrate under weather conditions or leave any part of the cover unprotected by the saturant.

I claim:—

1. An article of manufacture comprising in combination a conductor, a plastic moisture-resistant sheath surrounding said conductor, a protective cover comprising a felted fibrous layer surrounding said moisture-resistant sheath, a high melting point bituminous saturant filling said felted layer, an abrasion-resistant braid immediately enclosing the saturated fibrous layer compressing and binding the fibres in place, a flexible moisture-resistant bituminous saturant filling said braid, and a coating of a high melting point stearin pitch surrounding said braid and forming a smooth outer surface.

2. An article of manufacture comprising in combination a stranded conductor, a plastic mois-

ture-resistant compound surrounding said conductor and filling the valleys between said strands, a felted cushion of fibrous material surrounding said moisture seal, a high melting point bituminous saturant filling said felted layer, an abrasion-resistant braid immediately enclosing the saturated fibrous layer compressing and binding the fibres in place, a flexible moisture-resistant bituminous saturant filling said braid, and a coating of a high melting point stearin pitch surrounding said braid and forming a smooth outer surface.

3. An article of manufacture comprising in combination a conductor, a homogeneous moisture-resistant layer of unvulcanized rubber surrounding said conductor, a matted layer of fibrous material surrounding said rubber, an abrasion-resistant braid enclosing the fibrous layer compressing and binding the fibres in place, a high melting point bituminous saturant filling said felted layer and said braid, and a smooth outer coating of weather-resistant material sealing said bituminous saturant against migration.

4. An article of manufacture comprising in combination a conductor, a thin layer of rubber surrounding said conductor, a matted layer of fibrous material surrounding said rubber, a bituminous saturant incorporated in said fibrous layer, an outer abrasion-resistant braid, a saturant comprising a high melting point bituminous compound incorporated in said braid, and a non-sticky weather-resistant finishing material surrounding said braid.

5. An article of manufacture comprising in combination a conductor, a plastic moisture-resistant compound surrounding said conductor, a felted layer surrounding said compound, a saturant comprising a high melting point bituminous compound filling said felted layer, an abrasion-resistant braid surrounding said felted layer, a high melting point bituminous compound filling said braid, and a smooth, non-sticky coating of weather-resistant material over said braid, said non-ticcky coating sealing the underlying saturant against migration.

6. An article of manufacture comprising in combination a conductor, a homogeneous moisture-resistant sheath of unvulcanized rubber surrounding said conductor, a matted layer of fibrous cotton forming a cushion around said rubber, a high melting point moisture-resistant bituminous saturant filling said matted layer, an abrasion-resistant braid surrounding said matted layer, a flexible moisture-resistant bituminous saturant filling said braid and a layer of a high melting point stearin pitch surrounding said braid and forming a smooth non-sticky outer surface.

7. An article of manufacture comprising in combination a conductor, a homogeneous moisture-resistant sheath of unvulcanized rubber surrounding said conductor, a felted layer of fibrous cotton forming a cushion around said rubber, a high melting point moisture-resistant bituminous saturant filling said felted layer, an abrasion-resistant braid surrounding said felted layer compressing and binding the fibers in place, a flexible moisture-resistant bituminous saturant filling said braid and a layer of metallic oxide paint forming a smooth non-sticky outer surface.

8. An article of manufacture comprising in combination a conductor, a homogeneous moisture-resistant sheath of unvulcanized rubber surrounding said conductor, a matted layer of fibrous cotton forming a cushion around said rubber, a high melting point moisture-resistant blown asphalt saturant filling said matted layer, an abrasion-resistant braid surrounding said matted layer, a flexible moisture-resistant bituminous saturant filling said braid and a layer of a high melting point stearin pitch surrounding said braid and forming a smooth non-sticky outer surface.

9. An article of manufacture comprising in combination a conductor, a homogeneous moisture-resistant sheath of unvulcanized rubber surrounding said conductor, a matted layer of fibrous cotton forming a cushion around said rubber, a high melting point moisture-resistant blown-asphalt saturant filling said matted layer, an abrasion-resistant braid surrounding said matted layer, a flexible moisture-resistant bituminous saturant filling said braid and a layer of metallic oxide paint forming a smooth non-sticky outer surface.

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