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F. MEIWALD

INSULATED FLEXIBLE CONDUCTOR AND METHOD OF PRODUCING SAME

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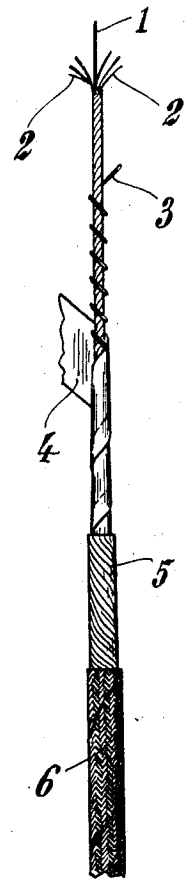

Inventor
Franz Meiwald
by [illegible]
Attorney

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FRANZ MEIWALD, OF VIENNA, AUSTRIA.

INSULATED FLEXIBLE CONDUCTOR AND METHOD OF PRODUCING SAME.

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Heretofore the conductors of telephone wires or the like have been provided with one insulation of textile fibres only, in order to render the same very flexible. However all textile or like fibres are of a very hygroscopic nature, so that the insulation-value for such conductors cannot be increased beyond a certain degree.

The present invention relates to a new method of producing insulated flexible conductors, according to which the insulation is carried out in particular manner by means of a very thin gutta-percha tape.

In order to make this invention readily understood it is illustrated in the accompanying drawing, which shows the manner in which the new flexible conductor is built up.

It is already known to insulate certain kinds of cables and conductors by means of gutta-percha, but this mode of insulation as heretofore employed is not suited for conductors of particular flexibility because gutta-percha becomes porous and brittle during the use in the event of a non-air-tight closure. Also the common practice of manufacturing cables by enclosing a solid copper conductor by a number of layers of different kinds of fabrics or materials cannot be satisfactorily used in the case of very flexible conductors, such as telephone wires or the like. As it is well known the cable is stiffened by luting together the threads of the winding, consisting of any fibrous material, by subsequently coating or varnishing the same with resin, gutta-percha or similar sticky materials. This stiffness is objectionable in the case of a conducting line which, in contra-distinction to the cable, is designed to remain especially flexible and the conductor of which consists for instance of fine wires for securing extreme flexibility.

According to the present invention the improved flexible conductor, which comprises in the well known association the central core or carrier thread 1, the stranded wires 2, the inner cotton covering 3, the close cotton sheath or serving 5, and the outer braided covering 6, is additionally generally strengthened and improved in its insulating capacity, without impairment of its flexibility, by the provision of a covering 4 of thin gutta-percha tape which is wound in relatively steeply pitched helical edge-overlapping turns all along the conductor upon the inner cotton covering 3, as clearly shown in the drawing. The overlapping edge portions of the turns are not permanently united, which insures perfect flexibility at all times and avoidance of injury or interruption in the continuous sheathing thus provided between the coverings 3 and 5.

Telephone wires insulated in this manner with very pliant gutta-percha tape as thin as paper are just as flexible as the wires produced according to the known method, but compared with the latter they show the insulation-values indicated in the following table, whereby A designates the samples according to the known method and B designates the samples manufactured according to the present invention.

Sample	Number of conductors	Twisted length in metres	Insulation resistance in megohm at 70% air-moisture	Insulation resistance in megohm at 100% air-moisture
A	4	1.25	7.4	1.11
A	5	1.80	1.9	0.212
B	4	1.25	1220	154
B	5	1.80	820	49

In the Government Testing Institute at Vienna the cables or conductors have been tested for 24 hours at a temperature of the room of 16 degrees centigrade, whereby the moisture of the air has been as indicated in the above table.

The conductor produced according to the present invention shows 90 to 400 times the insulation-resistance, compared with the known conductors, whereby not only a quite novel technical effect is obtained, but also an economical effect in consequence of its longer life. On using the conductors according to the present invention a large part of the disturbances and effects caused by the moisture are removed, this being of particular advantage in the telephone and radio trades.

I claim—

1. A flexible conductor comprising a core, flexible conductor strands wound about the core, a binder holding said strands to the core, a covering of one or more fabric layers, and an insulating band of substantially tissue-thin gutta-percha interposed between the bound strands and inner fabric layer and helically wound about said strands with the edges of its windings overlapping.

2. A low-current flexible conductor comprising a flexible metallic conductor core, a covering, and an insulator between the covering and the core and consisting of an edge lapped tissue-thin helically wound gutta-percha strip directly enveloping the core.

3. A method of making a flexible conductor so as to insulate the conducting element without impairing the flexibility of said element, which comprises interposing between a suitable outer fabric covering and the conducting element and disposing in contact with the latter a substantially tissue-thin helically-wound edge-lapped insulating band of gutta-percha.

4. A flexible conductor comprising a conductor core, a suitable outer fabric covering, and an insulating band of substantially tissue-thin gutta-percha between the conductor core and cover and helically wound about the conductor core with the edges of its windings overlapping.

In testimony whereof I affix my signature.

FRANZ MEIWALD.