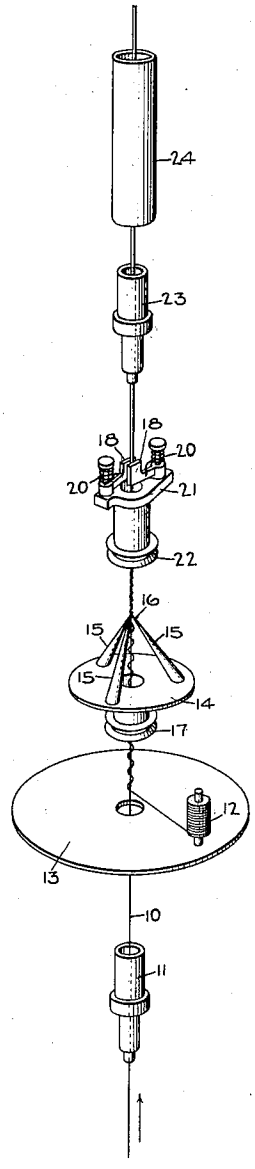
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INSULATION

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INSULATION

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2 Claims. (Cl. 117—2)

This invention relates to insulation, and it has for its object the provision of improved means for insulating electrical filaments or conductors, and the like.

Heretofore, in certain instances, when insulating electrical conductors with asbestos and like materials, it has been the practice to provide a rough yarn of the asbestos fibres and then convert the yarn by suitable devices into a loosened or finely divided condition. The asbestos thus treated has been applied by first forming the asbestos into a paste and then covering the conductor with the paste, or by applying the asbestos dry to the conductor which will have been previously covered with an adhesive. In these processes, the structure of the asbestos is loosened before it is applied to the conductor. The loss of mechanical strength of the asbestos due to this loosening has resulted in poor insulation in some cases, because it has been difficult to prevent slipping of the insulation while applying it to the conductor and during the subsequent finishing steps which consist in smoothing, impregnating, and like operations.

It has also been proposed in order to avoid loosening of the fibrous material before applying it, to apply the asbestos yarn to the conductor by spinning it onto the conductor, which will have been previously provided with an adhesive covering. The disadvantage of this process resides in the fact that the asbestos yarn at the best possesses but very little tensile strength, and consequently the yarn cannot be wound with sufficient tension to cause it to lie tightly and compactly on the conductor. As a result, spiral gaps are formed in the insulation covering which cannot be completely eliminated by subsequent smoothing operations.

In accordance with this invention, asbestos yarn is applied to the conductor to which an adhesive has been applied. Then the asbestos covering is subjected to the action of suitable loosening devices so as to distribute the asbestos fibres uniformly over the conductor. In one form of this invention, the loosening device consists in a plurality of steel pointed members arranged to engage the asbestos covering, and to rotate at a relatively high speed around the conductor.

For a more complete understanding of this invention, reference should be had to the accompanying drawing in which the single figure illustrates in diagrammatic form apparatus for insulating electrical conductors arranged in accordance with this invention.

Referring to the drawing, the invention is shown as applied to apparatus for applying asbestos fibres to an electrical conductor. As shown, the conductor 10 is advanced in a vertical direction through the apparatus. It will be understood that the conductor 10 will usually be fed from a suitable supply spool (not shown) from which it will be advanced to a suitable collecting spool (also not shown). This collecting spool will be driven by some suitable means to advance the conductor through the apparatus, or the conductor may be advanced by any well-known suitable means.

The conductor 10 as it advances passes through a suitable container 11 in which a suitable adhesive material is placed so that the conductor as it advances will be completely coated with the adhesive.

Then the conductor 10 is coated with asbestos yarn. For this purpose, a spool 12 of asbestos yarn is positioned upon a suitable supporting member 13. The asbestos yarn preferably will be wound upon the conductor as indicated in the drawing.

Then the asbestos which has thus been applied to the conductor is subjected to a suitable crushing or loosening operation, whereby the asbestos fibres are distributed uniformly over the surface of the conductor.

This loosening device comprises a plate 14 upon which are supported a plurality of tooth-like members 15 spaced at intervals circumferentially of the plate. These members, as shown, are arranged adjacent the periphery of the plate 14 and are inclined inwardly toward the conductor. Each of the members 15, as shown, is provided at its upper end with a tapered point 16, and while the members 15 are positioned adjacent the periphery of the plate 14, they are inclined inwardly so that the points 16 engage the asbestos covering of the conductor 10 as it advances.

The plate 14 is driven at a relatively high speed by any suitable means, such, for example, as an electric motor, which may be connected to the plate by means of a belt drive. For this purpose, the plate 14 is provided with a pulley 17 over which a suitable driving belt may be passed.

The plate 13 which carries the asbestos spool 12 may be rotated in a counter-clockwise direction, as viewed in the figure, so that as the conductor advances in an upward direction, the asbestos yarn will be unwound from the spool 12 and wound about the conductor. If desired, the plate 13 may be stationary, because it has been found that the action of the loosening members 15, while rotating about the conductor to engage

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the yarn to distribute it, will at the same time function to wind it spirally about the conductor. Preferably, the plate 14 carrying the loosening members 15 will be rotated in a clockwise direction, as viewed in the figure.

It has been found that asbestos applied to the conductor in accordance with this invention will completely cover the conductor in a uniform layer, which possesses considerable mechanical strength.

After the conductor 10 advances vertically beyond the loosening devices 15, the asbestos covering is subjected to a smoothing operation. This is accomplished by means of a rotary device comprising a pair of shoes 18, which are biased to engage opposite sides of the conductor by means of suitable springs 20. These shoes 18 are carried by means of a supporting plate 21, which is arranged to be rotated at a high speed about the conductor. The member 21, as shown, is provided with a suitable pulley 22 over which a driving belt may be directed.

After the conductor 10 leaves the smoothing shoes 18, it is passed through a suitable container 23 in which a suitable impregnating compound is contained, such as an electrically insulating varnish, whereby the insulating covering is thoroughly impregnated with the compound, after which the conductor advances to a suitable drying oven 24.

It is preferable to direct the conductor vertically through the apparatus rather than in the horizontal direction, because it has been found that a more uniform distribution of the asbestos fibres is obtained with the vertical rather than the horizontal movement.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

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

1. Apparatus for applying asbestos and like materials to a conductor and the like comprising means for advancing said conductor, means for wrapping a yarn formed of said material on said conductor as it advances, a supporting member, a plurality of members spaced at intervals on said supporting member, each member having one end resting on said supporting member and its other end terminating in a sharp point, said members being arranged so that said points engage the material covering said conductor as the conductor advances, and means for effecting relative motion between said supporting member and said conductor whereby said covering is uniformly distributed about said conductor.

2. Apparatus for applying asbestos and like materials to a conductor and the like comprising means for advancing said conductor, means for applying an adhesive to said conductor as it advances, means for wrapping a yarn formed of said material onto said conductor as it advances, a supporting member arranged to rotate on an axis coincident with the line of movement of said conductor, a plurality of members spaced at intervals on said member, each member having one end resting on said supporting member and its other end terminating in a sharp point, said members being inclined inwardly so that said points engage the material covering said conductor as the conductor advances and means for rotating said supporting member at a relatively high speed.

EMIL PFITZER.