

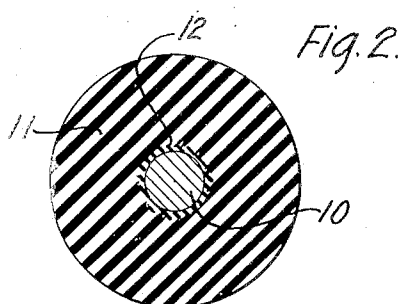
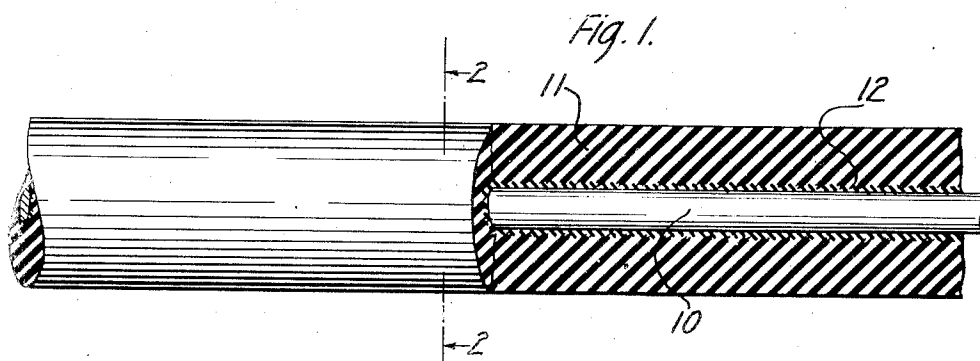
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METHOD OF COATING METALLIC BODIES

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UNITED STATES PATENT OFFICE

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METHOD OF COATING METALLIC BODIES

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This invention relates to a compound for and method of coating metallic bodies, and more particularly to a compound for and method of insuring the adherence of an insulating coating to a metallic conductor.

An object of the invention is to provide a compound for and method of insuring the adherence of a coating to metallic bodies which will be efficient, practical, and economical.

The invention contemplates the addition to a hydrocarbon insulating compound of an organic acid in such proportion as will insure the creation of a firm bond between the contacting surfaces of the insulating compound and the coated article.

The invention will be understood from the following detailed description read in connection with the accompanying drawing forming a part thereof, in which

Fig. 1 is an elevational view partly in section of an electrical conductor coated in accordance with the invention, and

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Referring to the drawing, a solid conductor 10, preferably composed of tinned copper wire, is shown entirely encased by a cylindrical wall of insulating material 11. Since it has been found that the compound to be hereinafter described is effective to produce the desired condition in such cases, any kind of electrically conductive metal is permissible for use as a conductor in lieu of tinned copper wire. According to the preferred form of the invention, the compound contains substantial proportions of hydrocarbon substances, such as rubber, paraffins, gutta percha, mineral rubber, balata, and reclaimed rubber.

For the purpose of creating a firm and lasting bond between the compound and the conductor, a relatively small percentage of oleic acid is fixed therewith during the preparation of the compound and before the deposition of the compound upon the core. When, in accordance with well known processes of insulating copper wire or other stranded conductors, the compound, in a warm and plastic state, is extruded upon

the wire, the acid becomes effective as a bonding agent by reacting with the core which is carried to completion during subsequent vulcanization of the insulation upon the wire. The precise nature of this reaction is somewhat obscure owing to the extreme difficulty of closely observing the changes which the substances undergo. It is logical, however, that the acid attacks the surface of the tinned copper conductor on the one hand by virtue of its inherent acid property of reacting upon metal, thereby forming a film of salts of tin therearound. Since these salts of tin are soluble in hydrocarbon substances, the second phase of the reaction consisting in the dissolving of the salts in the coating compound proceeds, while the latter is undergoing vulcanization, resulting, upon completion of the vulcanizing process, in the observed adherence of the insulation to the conductor. The structure thus set up, as indicated on the drawing by the numeral 12, constitutes a bond between the insulation and the core which is practically integral with both bodies. A conductor insulated in such manner is able to stand much greater mechanical strains than heretofore without stripping of the insulation therefrom, due to the fact that a considerable portion of the strain is borne by the insulation, and the conductor is relieved to that extent.

Although oleic acid has been specified above as the bonding agent, other organic substances are equally efficacious in promoting the desired reaction and may be used in lieu thereof, in fact, any of the organic acids such as palmitic or stearic acids or others having similarly high molecular weights may be employed. Even those organic acids having lower weights, such as acetic acid and formic acid, may be used if a somewhat longer period is allowed for the completion of the reaction.

A typical compound with which satisfactory results have been obtained consists of 25% reclaimed rubber, 20% smoked sheet rubber, 5% mineral rubber, 5% zinc oxide, 2% sulphur, 2% pine tar, 38½% whiting, and 2½% oleic acid. The materials and the proportions specified may of course be great-

ly varied in accordance with the established practice in the art. However, due to its additional property of promoting vulcanization, care should be exercised in varying the percentage of acid employed; since, though the acid when used in smaller quantities has been found to be a good vulcanizing agent especially when used with basic materials, an excess thereof causes the rubber to harden and be affected deleteriously by the acid promoting deterioration with age. Permissible limits of variation of oleic acid employed under normal conditions may be accepted as from one to five percent by weight of the compound.

Although the invention has been described in connection with the securing of insulation containing rubber to electrical conductors, it is obvious that by including a suitable percentage of an organic acid in hydrocarbon substances that the adherence of such substances to any type of metallic article may be procured.

The above represents but one manner in which the invention may be successfully practiced, and it is accordingly desired that the invention be not limited thereby, but only by the scope of the appended claims.

What is claimed is:

1. The method of securing the adherence of a rubber compound to a tinned metallic body which consists in mixing with the compound while in a plastic state a quantity of oleic acid, applying the compound to the metallic body, and vulcanizing the compound thereto.

2. The method of insulating a tinned electrical conductor which consists in mixing with a rubber insulating compound containing sulphur while in a plastic state a quantity of oleic acid, applying the rubber compound while still in a plastic state to the conductor and vulcanizing the rubber compound thereto, causing a film of the salts of tin to be formed about the conductor, which are thereafter dissolved by the rubber compound.

In witness whereof, I hereunto subscribe my name this 29th day of May A. D., 1929.

EARL GROVER STURDEVANT.