

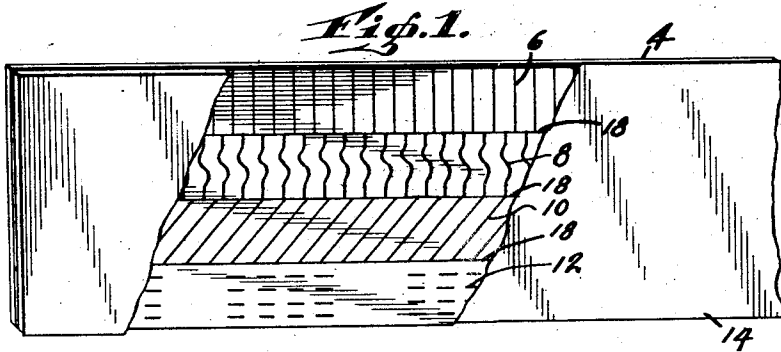
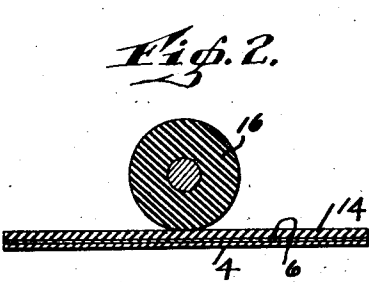
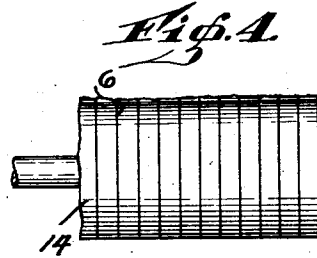
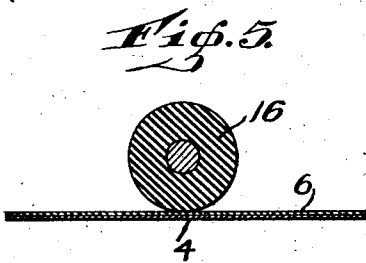
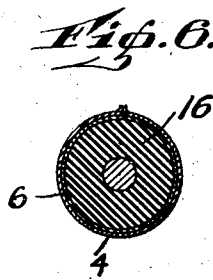
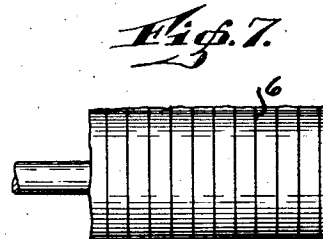
Oct. 15, 1946.

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2,409,539

INSULATED WIRE AND CABLE

Filed July 14, 1943



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2,409,539

INSULATED WIRE AND CABLE

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Application July 14, 1943, Serial No. 494,623

2 Claims. (Cl. 41—33)

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This invention is directed to an improvement in the marking of cables, and has for one of its objects to provide a method by which a permanent marking can be applied to the finished cable without the necessity of employing anything but the most simple equipment.

In order that my invention may be readily understood and in order that its advantages may be appreciated by those skilled in this art, a brief reference will be made to some of the prior methods employed in this connection.

One method which is very common is to mark the finished cable with a type wheel. It is obvious that with this method only one side of the insulation can be printed on the one pass, and the colored symbols are generally no better than ordinary ink in permanency.

In another method which has been used somewhat extensively colored rubber labels have been applied to the insulation surface, while in other cases cable has been marked by passing a stencil through a die along with the cable to be marked to provide either raised or depressed markings at the surface of the cable insulation. The rubber label method is very slow and relatively expensive, while with the stencil method the marking is not in a contrasting color.

Generally speaking, the method of the present invention involves the application, in ink, of the desired marking to one face of a metal strip, tin, for example, which is say from ten to thirty mils in thickness, and of such a width that when folded about a cable to be marked the metal will completely surround the cable. Upon the marked face of the metal strip I calender a thin layer of a rubber-like compound which may or may not be a compound of the same materials as the insulation of the cable. The strip thus prepared is then folded lengthwise about the cable insulation, the assembly subjected to vulcanization and then the metal is stripped off. As an alternative to this procedure the metal strip may have markings applied to it and then be folded immediately about the cable insulation, as distinguished from first applying a rubber-like compound to the metal and folding this assembly about the unvulcanized insulated cable.

The ink I employ for the markings is preferably composed of a solution of the compound to which the markings are to be applied and suitable color pigment.

It will be seen from the foregoing that the cable covering is vulcanized in the last stage of my method, just prior to the stripping of the metal. This is advantageous in that upon ex-

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amination of a cable which has been marked in accordance with my invention I have found that the ink has penetrated the surface of the cable covering to an appreciable extent instead of being a mere surface coating. This is probably due to the fact that the ink, as above mentioned, is a solution of the same material as composes the surface of the cable being marked. It is applied while the cable covering is in an unvulcanized condition, and the pressure of the metal strip is considerable, so that the ink becomes vulcanized into the surface of the cable. In any event there is this penetration. I find also that the markings are of a permanent nature in that they remain flexible so there is no tendency for them to flake off in bending the cable. While in time and under the right conditions there may be a surface fading of the markings the original color is readily detected by lightly scraping the cable covering.

Not only does my invention excel in the respects already pointed out, as compared with prior processes, but it has another practicable and commercial advantage in that a wide sheet of metal, sufficient for the marking of several cables, may be prepared, the ink for a plurality of identical markings or for as many different markings as the sheet will accommodate being applied to the sheet in a single operation, after which the sheet may be slit to provide a plurality of strips each of the proper width for but one cable.

It is to be noted also that my invention is of advantage in still another respect in that because the markings extend completely around the cable they may take the form of lines extending circumferentially of the cable as distinguished from lengthwise or longitudinal marking which is of considerable practicable worth in color coding and identification.

It will be appreciated still further that with my improved method the one cable may be marked in several colors if desired. In fact the possible color combinations are almost without limit so that I am able to approximate the color codes possible with colored braids.

It will be understood and appreciated by those skilled in this art that my invention possesses great advantages over prior practices where it is desired to mark cables which are to be cabled together and enclosed in an overall sheath.

In the accompanying drawing:

Fig. 1 is a fragmentary plan view of a metal sheet employed in the practice of the invention; Figs. 2 and 3 are cross sectional views and Fig.

4 an elevational view showing the various progressive stages or steps of my process; and

Figs. 5, 6 and 7 are similar views of an alternative procedure.

It is to be appreciated that no attempt has been made to draw the ink markings to scale.

It is to be understood also that the term "marking" is to be interpreted herein to the exclusion of indenting and embossing.

Referring to the drawing in detail: 2 designates a conductor the covering of which is to be marked before this covering has been cured.

4 designates a metal sheet, of tin or other suitable metal. For purposes of illustration I have shown this sheet of a width sufficient to make strips for the marking of four cables. The sheet 4 is thin, say from twelve to thirty mils, depending upon the dimensions of the cable to be marked.

In accordance with the method as practiced in Figs. 2, 3 and 4 I first apply a mould solution to the face of the sheet 4. This solution may be wax, lacquer, etc., for example, and is employed to facilitate removal of the metal after the marking of the cable has been completed. After this solution has dried and set I apply the desired markings in ink to the coated face of the sheet, as shown at 6, 8, 10 and 12 in Fig. 1. In order that the possibilities and flexibility of my method may be appreciated I have illustrated four different marking designs. Just for illustrative purposes markings 6, 8 and 10 are shown as lines of various shapes extending transversely of the sheet while markings 12 may be the manufacturer's name or customer's name, for instance, extending lengthwise of the sheet and repeated over and over.

I next calender a rubber-like compound upon the inked face of the metal sheet. This compound, designated 14, is unvulcanized and may be, although not necessarily, of the same materials as the main body 16 of the cable cover or insulation. The ink composing the markings is preferably a solution of the same materials as the compound 14. For example, the compound 14 may be a synthetic rubber made by polymerization of chloroprene, and the ink may be a toluene solution of this material plus a suitable color pigment which will depend of course upon the color desired in the finished markings. The metal sheet 4 is now slitted along the lines 18 to form four strips each of which is of a width sufficient to enable the same to be bent or formed longitudinally about the cable covering completely to surround the same as illustrated in Fig. 3.

In Fig. 2 I show the unvulcanized but covered cable with one of the narrow metal strips adjacent thereto preparatory to being bent or formed lengthwise about the main body 16 of the cable cover as illustrated in Fig. 3. This main body 16 of the cable covering is preferably, although not necessarily, applied to the conductor 2 by the strip method, that is, by making up a sheet of the desired compound, cutting it into strips, splicing the strips to form a long length and leading the conductor and the strip through suitable apparatus which shapes the strip about the conductor. Similar apparatus may be employed to form the compound 14 and inked metal strip about the cable covering.

The assembly as illustrated in Fig. 3 is then subjected to curing to vulcanize the compounds 14 and 16 and unite them into a homogeneous mass or layer, after which the metal is stripped off to leave the marked article of Fig. 4, the mould solution above referred to facilitating this removal without marring the cable surface and its markings.

From all of the foregoing it will be appreciated that my invention provides a method for marking the insulation of cables which is very simple in execution yet distinctly superior to the prior methods briefly referred to herein.

The alternative method illustrated in Figs. 5, 6 and 7 involves the application of insulation 16 to a conductor 2 in the same manner, for example, as suggested for Figs. 2, 3 and 4. In this alternative procedure I apply ink markings such as 6 to the face of a thin metal sheet which is first coated with the mould solution above referred to, the sheet is then slitted into strips and the metal strip formed directly about the unvulcanized insulation 16 of the cable. The cable is then vulcanized and the metal stripped off.

It is to be understood that changes may be made in the details described within the purview of my invention.

What I claim is:

1. The method of marking the surface of the insulation of insulated wire and cable and vulcanizing the same in a continuous operation, which method comprises applying desired markings in ink to one face of an elongated metal strip, calendering a layer of unvulcanized rubber-like compound upon the inked face of said strip, said ink comprising color pigment and a solution of a compound similar to the compound composing the said unvulcanized layer, forming this assembly about the unvulcanized insulation of the wire or cable to bring the rubber-like compound into intimate contact with the said insulation and completely envelop the same, subjecting the assembly to a vulcanizing temperature with said metal strip restraining the insulation against distortion and then removing the metal strip, whereby the said markings are transferred to the exterior of said compound and the wire or cable insulation and said compound are vulcanized.

2. The method of marking the surface of the insulation of insulated wire and cable and vulcanizing the insulation in a continuous operation, which method comprises coating one face of a metal strip with a mould solution which facilitates removal of the metal strip after the marking of the surface of the insulation has been completed, applying desired markings in ink to the coated face of the metal strip, forming the strip about the insulation of the wire or cable prior to vulcanizing the insulation, the metal strip being applied with its inked face in contact with the wire or cable insulation and completely enveloping the same, with said metal strip restraining the insulation against distortion subjecting the assembly to vulcanizing temperature to vulcanize the insulation and effect transfer of the ink markings to and penetration of the same into the insulation, and then removing the metal strip.

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