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H. O. BATES

2,316,149

PROCESS OF INTEGRATING COLORED INSIGNIA TO RUBBER

Filed Oct. 24, 1940

Fig. 1.

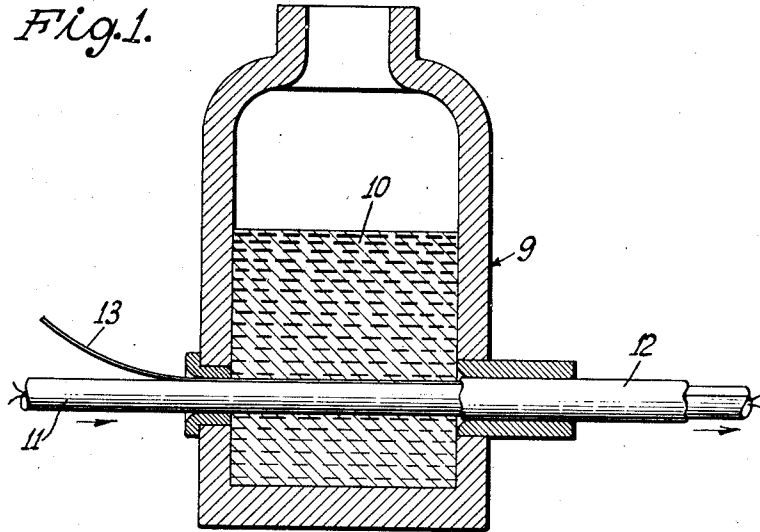


Fig. 2.



Fig. 3.



Fig. 4.

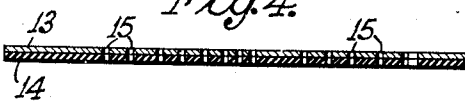


Fig. 5.



Fig. 6.

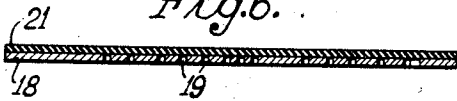


Fig. 7.



Fig. 8.



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PROCESS OF INTEGRATING COLORED
INSIGNIA TO RUBBER

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6 Claims. (Cl. 18—59)

This invention relates to a process of integrating labels, trademarks, or other insignia on articles of rubber or other composition having similar vulcanizable properties, such as cable or hose and to certain devices employed in such process.

It is an object of this invention to provide a process by which any mark or insignia desired may be caused to appear upon the surface of such article in color, as a part or substantially as a part of the article itself.

It is a further object to provide a process which is applicable to a continuous article such as cable or hose, and which is applicable continuously.

Within the broad scope of the invention, the process may be supplied by a variety of forms of heat treatment, but the process is specially intended for use on rubber hose or rubber covered cable, when made by the lead bath process. It will accordingly be specifically described in such an application.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Fig. 1 is a diagrammatic elevation of the process.

Fig. 2 is a view of the article after treatment, as the lead sheathing is being removed.

Fig. 3 is a plan of one form of working strip.

Fig. 4 is a longitudinal central section of the strip of Fig. 3.

Fig. 5 is a side elevation of the cable after the insignia is applied.

Fig. 6 is a section of modified form of strip.

Fig. 7 is a further modification of the strip.

Fig. 8 is a plan of a modification showing a modified form of insignia.

In the drawing the numeral 9 diagrammatically represents a lead bath such as is commonly used in curing cable coverings and containing molten lead 10. Into this bath is fed the cable 11 covered with the, as yet, uncured rubber. As this cable passes through the lead bath it solidifies upon its surface a coating of lead from the bath which emerges with the cable, as seen at 12. This

is to this extent a standard practice and in accordance with it the shrinkage of the lead coating as it cools imposes a very considerable hydrostatic pressure on the rubber as it cures, producing a firm, well cured rubber coating. The coating is then removed.

It has also been proposed to feed into the lead bath with the uncured cable, a strip having an insignia in the form of depressions or cut-out portions, whereby the strip is carried through the lead bath, inside the lead coating and is pressed into the rubber as the lead coating shrinks.

It results that when the lead coating is removed the insignia are raised above the surface and are thus visible. The resulting characters are clearly legible and are satisfactory for many purposes but are neither striking nor prominent.

It is an object of this invention to provide a process which will result in a more prominent and striking insignia, by reason of its being applied in contrasting color.

Because of the flexibility of rubber cable and hose, printing processes are not satisfactory in many cases.

In accordance with this process there is formed upon the surface of the cable a flexible color either in the form of the insignia desired or forming a contrasting background for such insignia. This color is preferably of a pigment carrying rubber composition that may be made to stick to and vulcanize integral with the rubber of the cable itself.

In carrying out the invention, I may provide a strip of very thin material such as paper and coat the same upon one side with a suitable composition, that under the conditions of vulcanization will unite with the rubber of the cable. A very suitable material for this purpose is a rubber composition containing preferably a relatively low sulphur content and a self-limiting accelerator and a suitable pigment. This strip thus coated may be then punched with suitable characters. This strip, coated and punched, may be used immediately or it may have its surface protected by a suitable protecting paper as is usual with rubber products that are to retain a cementable surface.

Rolls of this kind may readily be formed at a central establishment and furnished to the cable manufacturer, if desired, ready for use.

Instead of punching the insignia in the strip, the coating itself may be applied to the strip in the form of the insignia or in contrasting colors.

In use the strip is continuously fed with the cable itself and is pressed into it under a vulcanizing heat until the rubber coating of the strip unites with the cable itself and is vulcanized to it. This may be done with various types of heat and pressure. When the strip is used with a lead bath process, however, particularly satisfactory results are obtained.

The cable and strip passing out of the lead bath together are firmly pressed together and thoroughly vulcanized into a single mass of rubber. As soon as the lead coating is stripped from the cable the insignia will show up in the color of the cable against the contrasting color of the pigment from the strip.

The numeral 13 in Figs. 3 and 4 designates the paper strip having a rubber coating 14 upon one face thereof and the character 15 punched through both layers.

In Fig. 2 there is shown how the characters appear in natural color against the pigmented background, as soon as the lead covering 12 is removed.

In Fig. 5 there is shown a side elevation of the resultant cable having insignia 16 extending above the surface and showing against a slightly depressed pigmented background 17.

In Fig. 6 a modification of the device is shown in which the strip comprises two layers, the lower layer 18 being of paper having the insignia 19 cut therein and the upper layer 21 comprises a coating of the pigmented material to be united to the rubber; this rubber layer being unperforated. Such a strip is used as in the previous embodiment but the strip is fed with the paper side toward the mold. In this manner the pigmented material contacts and unites with the cable only through the openings in the strip. It follows that when the lead covering is removed from the cable and the paper strip is removed, the characters will appear as pigmented against a natural background.

When this embodiment is employed the pigmented composition must be such that the adhering or insignia parts of the composition may be readily broken from the remainder, to form a sharp edge to the insignia.

The form of the invention disclosed in Fig. 7 is similar to that of Fig. 6, except that for convenience of manufacture and use the strip is made of a layer 20 of paper and a layer 21 of pigmented compound, both of which are unperforated and a third or perforated strip attached thereto. This functions the same as the construction of Fig. 6 but it is easier to maintain the thin rubber coating over the punched-out insignia when it is supported by the paper strip 20.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic

and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A process of applying an insignia to a cable or the like having a coating of vulcanizable material, which comprises pressing against said cable in the uncured state a carrier strip having coated thereon a pigmented coating of material adapted to be united to the coating by vulcanizing and then heating said parts while in contact under pressure until the coating adheres and becomes integral with the cable.

2. A process of applying an insignia to a cable or the like having a coating of vulcanizable material which comprises pressing against said cable in the uncured state a carrier strip having coated thereon a pigmented coating of material adapted to be united to the coating by vulcanizing and having perforations through said coating to define a pattern and then heating said parts while in contact under pressure until the coating adheres and becomes integral with the cable.

3. A process of applying an insignia to a cable or the like having a coating of vulcanizable material which comprises pressing against said cable in the uncured state a carrier strip having coated thereon a pigmented coating of material adapted to be united to the coating by vulcanizing and having perforations through said carrier strip, to define a pattern, and then heating said parts while in contact under pressure until the coating adheres and becomes integral with the cable.

4. A process of applying an insignia to a cable or the like having a coating of vulcanizable material which comprises pressing against said cable in the uncured state a carrier strip having coated thereon a pigmented coating of material adapted to be united to the coating by vulcanizing and having perforations through said carrier strip but not through said coating, to define a pattern, said strip being fed with the perforated strip toward the cable, and then heating said parts while in contact under pressure until the coating adheres and becomes integral with the cable.

5. A strip for integrating an insignia with a rubber coated article as a continuous process which comprises a shielding layer of material which will not integrate with the rubber coating and having the insignia cut therein, and having a coating of adherent uncured pigmented rubber compound, said strip being of such size and shape that it may be fed to the lead bath in a lead bath curing process.

6. A strip for integrating an insignia with a rubber coating article as a continuous process which comprises a shielding layer of material which will not integrate with the rubber coating and having a coating of an adherent uncured pigmented rubber compound, said strip having insignia cut therein and being of such size and shape that it may be fed to the lead bath in a lead bath curing process.

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