Dec. 19, 1939. A. DEUTSCHMANN 2,183,550

ELECTRICAL CONDENSER

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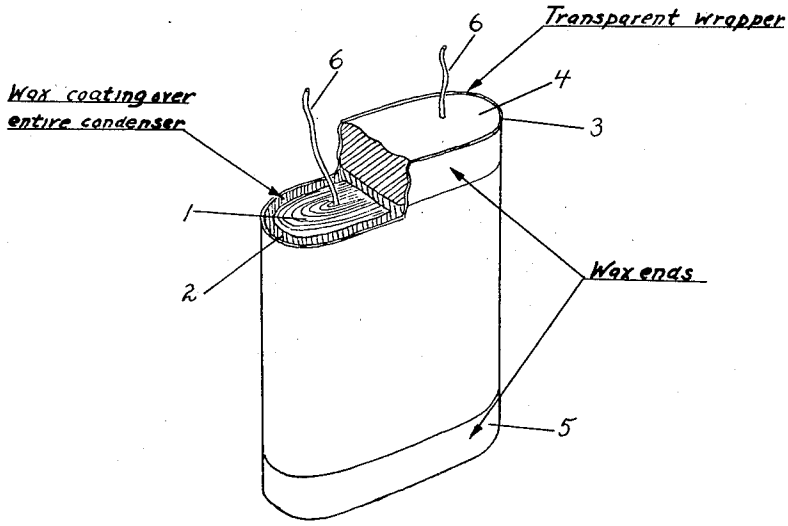

Fig. 1.

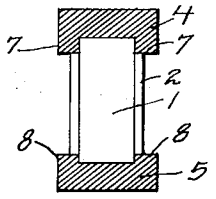

Fig. 2.

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ELECTRICAL CONDENSER

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3 Claims. (Cl. 175—41)

The present invention relates to electrical condensers and their methods of manufacture, and more in particular to condensers which are wrapped with layers of metal foil and insulating material which are impregnated either with wax or other compounds.

In the construction of condensers of the type described above, it has been common practice to dip the condenser in a bath of wax in order to effect a seal of the same from moisture and thereby prevent moisture from getting into the condenser and lowering the resistance of the same.

This has been done by dipping the condenser in the bath of wax and withdrawing it after it has become thoroughly saturated. Such a treatment, while helping to preserve the condenser from moisture, does not affect completely the desired results, and in any but dry places the shelf life of such a condenser is no more than about six months. Of course the condenser may be placed in a hermetically sealed can, but such a means is rather expensive.

In the method which I employ at the present time, the condenser is made unaffected by moisture and is completely sealed. In fact, condensers of the type described in the present invention have been placed in water for over 48 hous, and still show their original characteristics unchanged.

The difficulty with the dipping method in the manufacture of paper condensers or the like, is that air bubbles are entrapped in the top edges of the condenser and between the layers, and remain there, making the wax which clings to the top porous, so that moisture can work its way through. Further, since the whole condenser is dipped, the heat applied to the body of the condensers, forces the air bubbles between the paper layers to the top, and they are continually coming through the top wax and tend to keep it porous.

In the method which I employ in the present invention, I dip the condenser as usual in a wax bath which seals the sides and forms an initial wax layer on the top. This is then allowed to harden and dry and then I place a second wax layer on top and on the bottom by wrapping the condenser and pouring the wax first on top and then after this has hardened, on the bottom when it is turned upwards.

The invention will be more clearly understood from the drawing in which, Figure 1 shows the invention in perspective with a fragmentary section at the top of the condenser, and Figure 2 shows a section of a further modification of the condenser the section being taken only through the top and bottom ends of the condenser.

Here the condenser is shown as a wrapped roll 1 of paper and metal foil. Outside of this on the sides is a coating 2, of wax which extends about the sides and on top and on the bottom. About this condenser is then wrapped after it has cooled and hardened, a piece of Glassine or Cellophane paper 3, although any other wrapping may be used such as metallic covers or the like, but transparent material is preferable because it makes it possible to see if a perfect job has been done at the joining edge of the two wax layers.

The wrapper is placed about the condenser so that it extends beyond the upper and lower edges about one-quarter to three-quarters of an inch, although it may extend further, but that has not been found necessary, in the type of condenser I have built.

After the condenser is wrapped, a second layer 4, of wax is poured in at the top and allowed to harden. This layer is made to seal with the top dipped layer. In the same manner the layer 5 is made.

While the side covering tends to help make a complete seal, this need not be depended upon in most cases, as the sides are usually well sealed by the wax dipping process.

The topping wax which I use is a wax of the dry battery type containing mineral filter and suitable coloring, having a ball and ring melting point of about 255 degrees Fahrenheit. The condenser is dipped in wax at a temperature of 300 degrees Fahrenheit and the topping wax is poured at a temperature of 350 degrees Fahrenheit, so that the topping wax fuses with the main body of the condenser.

The condenser is wrapped and the wrapping held fast during the pouring operation in such a manner that the topping wax overflows slightly around the edges of the body of the condenser, forming an overlaid seal. This result may also be achieved by using a wrapper which has been formed with an offset of ¼'' from each edge so that when wrapped around the condenser body a shoulder is formed at each edge below the top and bottom of each condenser.

The construction described above is illustrated in Figure 2 where the topping wax 4 has overflowed on the sides as indicated at 7 and the topping wax 5 has overflowed on the sides as indicated at 8.

It is not absolutely necessary to use Celluloid or Cellophane as a thin metal wrapper, fibre, heavy paper, etc., would be sufficient to hold the con-

denser in place, but the advantage of the transparent wrapper is that one can see the form made by the union of the topping and body wax, and detect any failings that may occur.

This method of manufacture improves the condenser by sealing the air hose left in the top and bottom when initially dipped and also insures a tight seal where the leads 66 come out of the condenser as well as preventing fracture of the leads at the paper edge. The top and bottom of the condenser are also reinforced against breakage.

I propose also to use a color scheme to indicate different colored ratings, the combination of two or three colors being possible where a transparent cover is used.

Having now described my invention, I claim:

1. The method of finishing paper electrical condensers in which the condenser is made of wound rolls of sheets of metal foil and paper dielectric or the like which comprises dipping the wound condenser in an impregnating wax, removing the condenser after impregnation and allowing it to dry, placing a flexible wrapper about the condenser, said wrapper having an offset to space it away from the condenser side and having a wall extending beyond the condenser ends, and filling first one end with wax applied at a temperature higher than the melting point of the wax used in the dipping and allowing said wax to flow down around the side of the condenser between the sides and the wrapper and then filling the other end after the first end has congealed and in the same manner allowing the wax to flow down around the side.

2. In combination with a paper electrical condenser having wound rolls of sheets of metal foil and paper dielectric or the like and having end electrode connections for connecting terminals, an impregnating wax enclosing the condenser around the sides and ends where the connections come through, a paper wrapper placed around the condenser offset from the sides and forming a wall extending beyond the ends of the condenser and a wax poured in at both ends of the condenser and around the sides forming sealing elements at the ends.

3. In combination with a paper electrical condenser having wound rolls of sheets of metal foil and paper dielectric or the like and having end electrode connections for connecting terminals and impregnating wax enclosing the condenser around the sides and ends where the connections come through, a paper wrapper placed around the condenser and forming a wall extending beyond the ends of the condenser and a wax poured in at both ends of the condenser and around the sides forming sealing elements at the ends.

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