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PROCESS FOR MANUFACTURING METAL CAPS FOR ELECTRIC INCANDESCENT LAMPS

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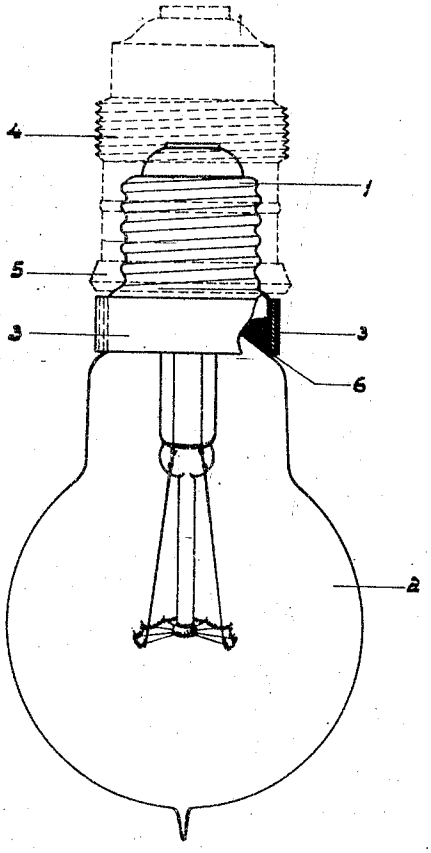

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UNITED STATES PATENT OFFICE.

LADISLAUS PETER GRÁNER, OF EINDHOVEN, NETHERLANDS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

PROCESS FOR MANUFACTURING METAL CAPS FOR ELECTRIC INCANDESCENT LAMPS.

Application filed November 17, 1923. Serial No. 675,400.

To all whom it may concern:

Be it known that I, LADISLAUS PETER GRÁNER, a subject of the Hungarian State, residing at Eindhoven, in the Province of North Brabant, in the Kingdom of the Netherlands, have invented certain new and useful Improvements in or Relating to Processes for Manufacturing Metal Caps for Electric Incandescent Lamps, of which the following is a specification.

This invention relates to an improved metal cap for electric lamps and the like, such for example as electric glowlamps, glow-discharge lamps, vapour lamps, discharge tubes and heating lamps.

When using metal caps for electric lamps and the like the drawback is experienced that the cap extends beyond the lampholder so that it is possible to touch parts of the cap under tension.

In order to obviate this disadvantage it has already been proposed to provide the lamp-holder in such a way with an insulating ring or enevelope that the latter wholly protects the protruding part of the cap under tension. Also caps of insulating material have already been manufactured.

According to the invention lamp-holders of normal construction may be used. The part of the metal cap adjacent the lamp however is surrounded by a metal ring, which is insulated with regard to the cap.

It will be evident that the metal ring always remains dead and being mounted on the part of the cap that extends beyond the lamp-holder when the cap is screwed in, the risk of touching parts under tension is eliminated or at least considerably reduced.

According to the invention the ring is fixed to the cap preferably by insulating material that at the same time serves as a cement.

As an insulating material the substance known under the registered trade mark "bakelite" or bakelized paper may be used. It may be easily applied in a thin layer and after hardening it is perfectly adapted to rigidly unite the ring and the cap. In addition bakelite shows the advantage that, once hardened, it does not melt at the temperature necessary for cementing the cap to the lamp whilst its insulating capacity does not decrease at a higher temperature.

Bakelite is an artificial resin that is everywhere on the market and it is produced by condensation of formaldehyde and phenols. It exists in three forms which are called A, B and C and which by heat are transformed in each other, when starting with bakelite A.

At ordinary temperatures bakelite is in a liquid state or in a solid state, yellow or colourless and soluble in alcohol, acetone, phenol, etc. It is fusible when it is in a solid state. Bakelite B is an intermediate product, bakelite C is the final product of the condensation, it is infusible and insoluble in all, even alkaline solvents. Where in this specification reference is made to the hardening of bakelite the transformation of bakelite A into bakelite C is meant.

By way of example the accompanying drawing represents a cap according to one embodiment of the invention.

The cap 1, which is provided with the metal ring 3 is cemented in the known manner to the electric lamp 2. The cap 1 and the metal ring 3 are separated from each other by the layer 6 of insulating material.

In the drawing the lamp-holder 4 of normal contruction provided with the insulating ring 5 is shown in dotted lines so that it is visible that it is made impossible to touch any part of the cap under tension owing to the use of the metal ring 3.

The cap may be manufactured in a very simple manner, especially if the part that is to be insulated by the ring, is cylindrical.

The process of manufacturing the improved caps according to the invention is as follows:

The part to be insulated is coated with a layer of the insulating medium in a liquid or in a dissolved state, said insulating medium, after being dried, serving as a cement, such for example as shellac. When the insulating medium is dry the metal ring is applied after being suitably heated or the dried insulating medium may first be coated afresh with a layer of the insulating medium in a liquid or in a dissolved state, so as to make the ring adhere to the insulating medium. The ring may be applied to the cap prior or subsequent to cementing the cap to the lamp, but preferably this operation is performed prior to the cementing.

Another process according to the invention which is particularly advantageous is the following:

The part of the cap that is to be insulated is coated with a layer of paper that has been

immersed in liquid bakelite A or in a solution of bakelite A. After the layer is dry, its surface is moistened afresh with liquid bakelite A or with a solution of bakelite A. Then a metal ring is pushed around the layer which is still moist, the aggregate is dried and the bakelite is transformed by heat into bakelite C.

The solution of the bakelite may for example be an alcohol solution and the drying may be performed in a vacuum.

The transformation of the bakelite may be preferably performed by gradually raising the temperature. At about 300° C. bakelite A is wholly transformed into bakelite C.

The application of the process according to the invention ensures a rigid attachment of the metal ring to the cap and at the same time good insulation. When having a thickness of about ½ mm. the insulating layer may be easily resist a voltage of 500 volts.

The invention may also be applied to advantage to caps in which a condenser is mounted. As a rule such caps have somewhat larger dimensions than the normal ones so that they further extend beyond the holders and the risk of touching the caps under tension is greater.

What I claim is:

1. The process of applying a protecting ring and insulation above the base of the cap of an electric lamp or the like which consists in coating the metallic base of the cap with a liquid insulating medium and allowing it to dry, and heating the metal ring and placing it over the applied insulation and allowing it to set.

2. The process of applying a protecting ring and insulation about the base of the cap of an electric lamp or the like which consists in coating the metallic base of the cap with a liquid insulating medium and allowing it to dry and thereafter applying more of the insulation over the dried insulation and thereafter placing a metallic ring in a heated condition over the insulating material and allowing it to set.

3. The process of applying a protecting ring and insulation about the base of the cap of an electric lamp or the like which consists in applying a layer of paper over the base of the cap after the paper has been immersed in liquid containing "bakelite", allowing the paper to dry in position and thereafter applying "bakelite" solution again to the paper, placing the protecting ring over the paper and insulation while in a heated condition and thereafter heating the aggregate to dry and harden.

In testimony whereof I affix my signature.

LADISLAUS PETER GRÁNER.