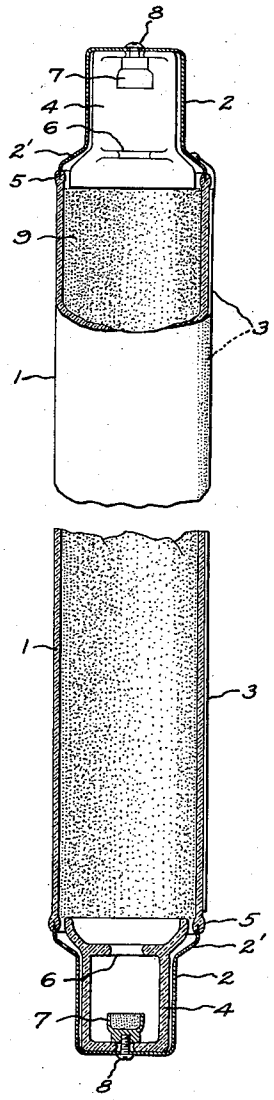
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GASEOUS ELECTRIC DISCHARGE LAMP

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GASEOUS ELECTRIC DISCHARGE LAMP

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4 Claims. (Cl. 176—126)

Our invention relates to gaseous electric discharge lamps generally and more particularly to terminal and electrode constructions therefor. Still more particularly, our invention relates to a double-ended elongated illuminating tube, at both ends of which cup-shaped metal caps, most often consisting of nickel or chrome-iron, are fused on, which metal caps carry the electrodes on the inside and the outer surfaces of which serve as base contacts.

An especially advantageous form of construction of such an illuminating tube is achieved according to the invention, if a likewise cup-shaped insulating body is set into the expediently narrowed, cup-shaped metal base, which insulating body completely receives the electrode within itself, and the front rim of which expediently overlaps the fused joint of the metal base with the tubular envelope which consists of glass.

With the new illuminating tube, the inserted insulating body, which completely receives within itself and closely surrounds the electrode which is heated preferably by the discharge, effects on the one hand a strong heat blockade in the electrode vessel and, as a result of the higher heating of the electrode, an increase of its electron emission, and on the other hand prevents the metal cap, which is in contact with the socket, from assuming excessively high temperatures. Aside from this, with the new illuminating tube, by means of the lining of the expediently narrowed electrode vessel, the otherwise poorly heated dead spaces behind and beside the electrode are eliminated, in which dead spaces the metal vapors, which in a given case are present in the illuminating tube and which serve for light-radiation, could be condensed. The avoidance of such dead spaces permits an accurate measurement of the store of metal which reaches vaporization during operation, and assures an operating vapor pressure which is to a great extent independent of the surrounding temperature, and therefore is always approximately constant. With an illuminating tube constructed according to the invention, the disturbing electrode-light, which in most cases radiates a different color than the luminous positive column, is also completely covered by the inserted insulating body and removed from sight.

It is expedient that the inserted body be prolonged beyond the annular fused joint between the metal base and the glass tube, so that its forward rim offers an effective and dependable protection against a harmful striking of the discharge to the metal base to which voltage is applied, especially near the place of fusion. It is to be recommended further that the cup-shaped, inserted body be closed by means of a transverse wall or constriction with a central passage or opening for the discharge column. Since, by means of this precaution, the heat blockade in the electrode vessel is still further increased, and the particles, which during manufacture and operation of the lamp are unavoidably sputtered from the electrodes, are deposited in the electrode vessel, the glass tube itself remains free from light-absorbing coatings. Further features and advantages of our invention will appear from the following detailed description of a species thereof.

The drawing is an elevation, partly in section, of a mercury discharge tube comprising our invention.

At both ends of the elongated glass tube 1, the flared ends 2' of the cup-shaped metal bases or caps 2 are fused on, which bases are of reduced diameter and are made preferably of chrome-nickel or chrome-iron. A starting strip 3 may be connected with the upper metal base 2, to facilitate the ignition of the illuminating tube. Into each metal base 2, a correspondingly cup-shaped insulating body 4 is fitted, which insulating body consists of glass or of a ceramic material, and the front rim of which overlaps the annular zone of fusion 5 between the metal base 2 and the glass tube 1. Each inserted insulating body 4 has a front transverse wall or constriction 6 with a central passage opening for the discharge column. Inside of each inserted insulating body 4, an expediently activated, discharge heated hot electrode 7 is housed, which hot electrode is conductingly connected with the metal base 2. As shown, the hot electrodes 7 are advantageously provided with a boring and are screwed onto a screw 8 which is soldered to the bottom of the metal cap 2 and at the same time also serves to fasten the inserted insulating body.

The illuminating tube contains an ignition or starting gas filling, such as neon or argon, of several millimeters pressure and also some mercury, the amount of which is so measured that the desired operating vapor density occurs. In place of the mercury, the new illuminating tube can contain any other vaporizable substance of suitable radiation, or a mixture of such substances by themselves or in combination with gases. The new inserted body 4 is suitable also for non-metallic fused-on bases.

The tubular envelope 1 can furthermore be

coated on the inside with luminescing substances 9, such as zinc silicate, calcium tungstate, cadmium borate or mixtures thereof, or can also consist of luminescing glass as is well known in the art.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A gaseous electric discharge lamp comprising a tubular glass envelope, a cup-shaped metallic base member fused at its rim to each end of said envelope, a cup-shaped insulating body located within said base member, and an electrode located wholly within said insulating body and electrically connected to the adjacent surrounding base member.

2. A gaseous electric discharge lamp comprising a tubular glass envelope, a cup-shaped metallic base member fused at its rim to each end of said envelope, a cup-shaped insulating body located within said base member and extending inwardly of said envelope beyond the fused joint between said envelope and base member, and an electrode located wholly within said insulating body and electrically connected to the adjacent surrounding base member.

3. A gaseous electric dicharge lamp comprising a tubular glass envelope, a cup-shaped metallic base member fused at its rim to each end of said envelope, a cup-shaped insulating body located within said base member and having a transverse wall adjacent its forward end with a central opening therein for the discharge column, and an electrode located wholly within said insulating body and electrically connected to the adjacent surrounding base member.

4. A gaseous electric discharge lamp comprising a tubular glass envelope, a cup-shaped metallic base member fused at its rim to each end of said envelope, a cup-shaped insulating body located within said base member and extending inwardly of said envelope beyond the fused joint between said envelope and base member and having a transverse wall adjacent its forward end with a central opening therein for the discharge column, and an electrode located wholly within said insulating body and electrically connected to the adjacent surrounding base member.

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