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ELECTRIC DISCHARGE TUBE WITH LOCATING MEMBER

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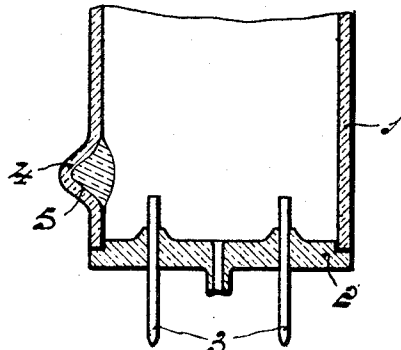


Fig. 1

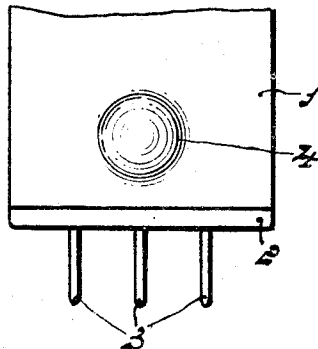


Fig. 2

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ELECTRIC DISCHARGE TUBE WITH
LOCATING MEMBER

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1 Claim. (Cl. 250—27.5)

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This invention relates to electric discharge tubes and more particularly to tubes comprising a locating member.

In order to ensure correct insertion of a tube into its holder, it is known to position the contacts of the tube at unequal distances from one another. Correct insertion of such a tube into a holder is difficult, however, if the holder is not readily accessible and the arrangement of the tube contacts cannot be compared with that of the contacts in the holder. Consequently, one frequently resorted to providing a mark on the side-wall of the cap or bulb and on the top of the holder in addition to such unequal arrangement of the tube contacts. Furthermore, with regular or irregular positioning of the tube contacts it is known to utilize a so-called locating member, for example in the form of a central bush, which may serve as a screening bush for the exhaust tube and also as a centering bush.

Finally, it has been suggested to use a locating member provided on the external periphery of the tube, in which event the lower extremity of the tube itself serves for centering. The locating member is then formed in the shape of a thickened portion of the wall of a moulded tube bottom or of a moulded bulb. In order to avoid great strain in this thickened portion of the glass wall and hence the risk of cracking, said locating member is required to be provided at preferably at least 5 mm. from the place of sealing. However, such a construction is not suitable for tubes having a plane base disc secured to a thin-walled, blown glass bulb. Providing the locating member on the periphery of the base disc is in this case impossible and the positioning thereof on the outside of the blown bulb leads to cracking.

It is an object of the present invention to provide a locating member on an electric discharge tube which will make it possible to avoid the above-mentioned disadvantages.

It is another object of the invention to provide a tube with a locating member in which the distance of the latter from the place of sealing is variable.

It is a further object of the invention to provide a locating member on an electric discharge tube which is made by a simple method and is resistant to breakage during the handling of the tube.

Other objects and advantages will become apparent from the following specification.

According to the invention, an electric discharge tube having a thin-walled blown glass bulb is provided with a protuberance in the bulb

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wall, the thickness of the protuberance being smaller or at the utmost equal to the thickness of the bulb wall. The protuberance is filled up with glaze or similar material that adheres well to the glass. Preferably, the glaze or the like should exhibit approximately the same coefficient of expansion as the glass and should be of low melting point so that, upon heating, it will melt before the glass of the protuberance softens.

An electric discharge tube provided with the locating member according to the invention has the following advantages. The wall thickness of the bulb is substantially even so that the distance between the locating member and the place of sealing is not of critical importance. Furthermore, such a protuberance may be formed in a very simple manner, for instance by local heating of the bulb after being shaped and by pushing the glass of the bulb outwardly by means of a small metal rod consisting of a metal having a high melting point, such as tungsten. With respect to the method in which the protuberance is formed during the blowing process of the bulb, the afore-mentioned method has the further advantage that the glass rapidly cools down on being touched by the tungsten rod and hence will be less soft than the surrounding glass, thus preventing the wall-thickness at the top of the protuberance from becoming too small. This is of great importance since it is just the top of the protuberance which has to be resistant to the heaviest shocks.

Due to the filling of the protuberance with glaze or similar material, the thin-walled member withstands even rough handling which otherwise might cause breakage. Since the filler is not integral with the glass wall, as is the case with the glass of a locating member formed by a locally thicker portion of the glass wall, the disadvantages of such a solid locating member, that is the danger of cracking due to internal strain, do not occur in this case, while the advantages of such a solid member are still present.

It is evident that such a protuberance cannot in practice be formed in the case of a moulded bulb since local strong heating of such a bulb, which naturally is required to have a much greater wall thickness than a blown bulb, is attended with a very great risk of cracking. Such a protuberance cannot in practice be formed during the moulding process so that it was necessary in this case to utilize a solid locating member.

It is known per se to provide the top of a blown bulb with a circular protuberance. This pro-

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tubulance does not serve as a locating member. Such a protuberance of comparatively large size may, however, readily be formed during blowing. Furthermore, it is known to keep a tube in position in a holder by means of springs which engage in one or more re-entrant parts provided in the wall of the bulb. However, such a re-entrant part cannot serve as a locating member and does not cause such difficulty on being formed since a re-entrant part may readily be formed already during blowing, as its top runs little risk of being damaged.

In order that the invention may be more clearly understood and readily carried into effect, it will now be described more fully by reference to the accompanying drawing.

Fig. 1 is a sectional view of a locating member according to the invention, and

Fig. 2 is a plan view of such a locating member.

In the figures, reference numeral 1 indicates the thin-walled blown glass bulb which is closed by means of a base 2. Pins 3 are sealed into the base 2. The bulb exhibits a locating member 4, which is constituted by a protuberance having a wall thickness substantially equal to that of the bulb, the protuberance being filled up with glaze 5. Such a filled-up locating member is of substantially the same rigidity as a locating member of solid glass without exhibiting the disadvantages of the latter.

Upon inserting the tube into its holder the lower extremity of the bulb serves to center the tube, and turning the tube until the member 4 engages in a recess of the upper edge of the holder ensures correct positioning of the contacts with respect to the contacts of the holder so that the tube may subsequently be pushed down in the holder. To prevent the tube from falling out of its holder, a spring may embrace the locating member 4 in known manner.

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Since no metal parts are required for the centering and locating operations, such a tube is highly adapted for use on high frequencies. Furthermore, the tubes may be of very small size without the positioning of the locating member causing difficulty.

What we claim is:

An electric discharge tube comprising a thin walled cylindrical blown glass bulb having a longitudinal axis, a protuberant locating member portion of said bulb radially offset from said longitudinal axis of said bulb, said portion having a wall thickness substantially equal to that of the said bulb, and a filling material in said protuberant portion reinforcing said protuberant portion, said material consisting of a glaze of a melting point lower than and a temperature coefficient of expansion substantially equal to that of the glass of said protuberant portion.

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