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GETTER HOLDER

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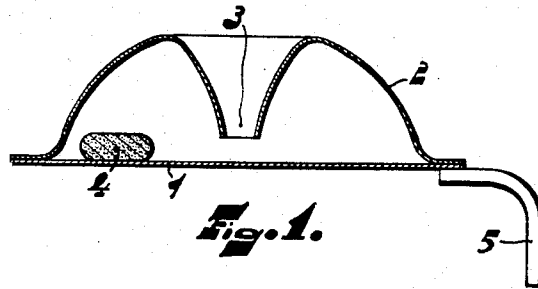


Fig. 1.

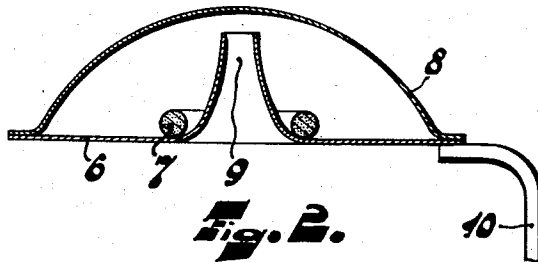


Fig. 2.

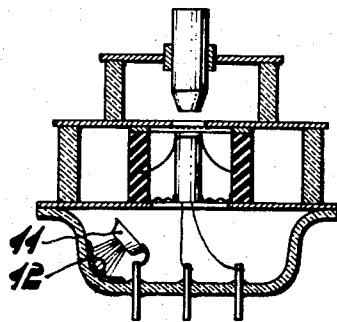


Fig. 3.

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GETTER HOLDER

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3 Claims. (Cl. 313-174)

This invention relates to holders for getters which are usually vaporized in high-vacuum tubes and, more particularly, to getter holders suitable for use in discharge tubes with very small electrode spacings.

A known lamp construction involves the provision of a getter in an enclosed space within the envelope, which space communicates with the other areas within the envelope by means of a spout extending into the enclosed space. The getter is then vaporized onto a wall within the enclosed space. This construction was intended to prevent getter vapor from depositing on undesired areas in the tube by confining it to the enclosed space. Inasmuch as the getter holder in this construction had a higher magnetic permeability than that of the wall in the enclosed space, the latter remained cool, thereby preventing the escape of the getter vapor outside of the enclosed space. This construction suffered from the drawback that the gases in the other areas of the envelope were required to enter the enclosed space through the spout before they could be bound up by the getter material. Consequently, the efficiency of the device was low, and its binding action on the gases within the envelope rather slow.

The present invention relates to a getter holder intended to provide the vaporized getter material on an area within the tube envelope which freely communicates with the entire space within the envelope, with the consequence that the gases therewithin rapidly combine with the getter material. Further, especially in tubes with small electrode spacings, intended for use as amplifiers or oscillators in the higher frequency portions of the electromagnetic spectrum, it is essential that solid getter particles be prevented from being set free within the envelope space, inasmuch as these solid particles may cause short-circuits between the closely-spaced electrodes. This is particularly true when the getter is disposed in small tubes, or is in the form of pills.

These drawbacks of the known constructions are completely overcome in a getter holder construction according to the invention. In accordance with one embodiment of that invention, the holder comprises at least two plate-shaped members joined together to enclose a space therebetween, in which space a getter body is located. One of the plate-shaped members includes at least one spout or nozzle extending into the enclosed space. The holder is then disposed within a tube envelope so as to be spaced from and facing a suitable wall or other portion thereof. When the getter is vaporized, the vapor escapes to the outside of the holder through the spout to deposit on the tube envelope or other portion of the tube, from which position it is freely accessible to the gases within the envelope and can rapidly and efficiently bind them up. Any solid getter particles, however, which become detached within the holder, during vaporization or when the tube is subjected to shock or impact, will be prevented from escaping into the envelope due to the spout construction, even if the tube is inverted.

The invention will now be described with reference to the accompanying drawing in which:

Figs. 1 and 2 are cross-sectional views of two forms of getter holders according to the invention, and

Fig. 3 shows a discharge tube containing one of the holders shown in Figs. 1 or 2.

The holder shown in Fig. 1 comprises a plate 1 to which a cover 2 is welded along its periphery. This cover is furnished with a spout 3 which extends freely into the inner space of the holder defined by the plates. Prior to welding the cover 2 to the plate 1, a getter 4, for example, in the form of a length of wire or pill, is secured to the plate 1. The complete holder is welded to a support rod 5. Since the complete holder attains a high temperature on heating, the getter vapor escapes through the spout and enters the vacuum space in the form of a directed stream with the effect of combining rapidly with any gases present in the tube. However, detached particles of the getter pill 4 cannot, practically, escape from the holder through the spout. This holds particularly for particles set free during vaporization, which particles are swept away at a certain speed by the vapor.

As shown in Fig. 2 it is alternatively possible to mount the spout 9 in the base plate 6 and to employ a spherical cover 8. In this case also, the getter 7 is secured to the base, the holder again being welded to a support 10.

Fig. 3 shows a short-wave tube, in which a holder 11 according to the invention is secured to a pin mounted in the base of the tube, the getter then depositing upon heating in the form of a layer 12 on a predetermined part of the base of the tube.

Of course, further alternative forms are possible according to the invention. Thus, for example, a plurality of spouts may be provided, which may be very narrow but have an overall capacity sufficient to permit the getter vapor to escape sufficiently rapidly from the space inside the holder. Alternatively, the holder may be made up of a larger number of plates.

While we have described our invention in connection with specific embodiments and applications, other modifications thereof will be readily apparent to those skilled in this art without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. In an electron discharge tube including an envelope and a plurality of electrodes therewithin, a getter structure comprising a housing defining a closed space within said envelope, means to support said housing independently of said envelope whereby said housing is adapted to be heated independently of said envelope, said housing having at least one wall facing a portion of said envelope with a reentrant opening therein for the passage of vaporized getter material and deposit thereof on the wall of said envelope, and a supply of getter material disposed within said housing and adapted to be vaporized upon heating without expelling loose particles of getter material from said housing into said envelope.

2. An electron discharge tube as set forth in claim 1 in which said getter holder comprises at least two metal plate-shaped members which are secured together and enclose a space, at least one of the plate-shaped members comprising at least one spout which extends freely into said space.

3. A getter holder as claimed in claim 2 in which one plate is relatively flat, the other plate is substantially hemispherical, and the two plates are secured together along their edges.

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