Dec. 22, 1942. H. SZUBA 2,306,195

ELECTRIC DISCHARGE TUBE

Filed Feb. 4, 1941

Fig. 1.

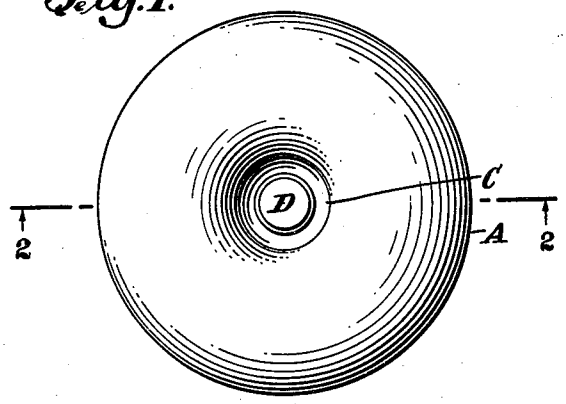
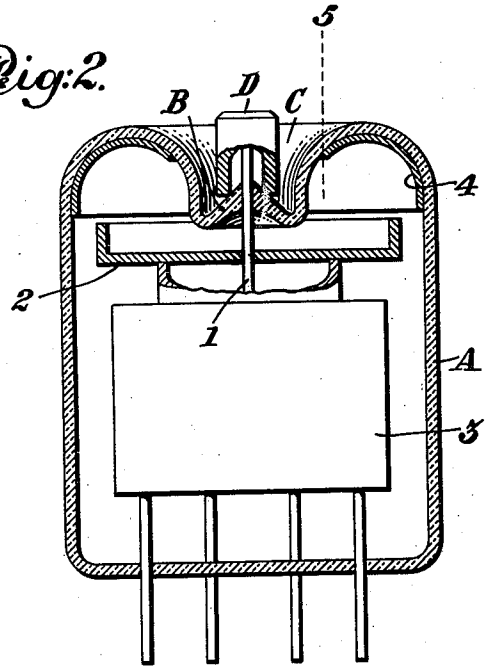


Fig. 2.



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ELECTRIC DISCHARGE TUBE

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2 Claims. (Cl. 250—27.5)

In the construction of small electron tubes of the kind employed in connection with ultra-short and decimeter waves certain difficulties arise through the fact that despite the necessary small dimensions of the electrode system there must be the requisite electrical properties, such as small capacities, sufficient insulating capacities and so forth. Care should be taken that the leads to the electrodes be short as far as possible. Furthermore, stray capacities which, for instance, arise between grid and anode and which in the case of medium or short waves entail no disturbances whatever, are able to render the tubes unsuitable for use with ultra-short and decimeter waves. Such stray capacities are mainly due to the getter coating, since the construction of the tubes is such that this coating must be arranged in the upper part of the bulb where also the lead for the grid is located. In addition the insulating capacity between the grid and the other electrodes greatly decreases so that short circuits may occur in case the well-known evaporation process has failed properly to locate the getter coating or to prevent it from becoming too large. The requirement that the getter coating should not be too large is difficult to fulfill unless constructional measures are adopted in order to keep it small enough. In this respect, however, it is to be understood that it is advantageous or even necessary to make the getter coating large as far as possible because this precaution improves the electrical properties of the tube and adds to the life thereof.

The invention described hereafter aims to overcome these difficulties. To such end the bulb is bulged inward at its top, this being the wall portion having an outwardly pointed projection produced by sealing off the well-known exhaust tube to which a pump is connected in order to evacuate the bulb. Such sealing-off projection contains the grid lead.

In the drawing, Fig. 1 is a plan and Fig. 2, a sectional view on line 2—2 of Fig. 1, showing one embodiment of the invention.

The glass bulb A is so shaped at its upper end that the outwardly pointing sealing-off projection B is located in a depression C thereof. Grid lead 1 is sealed into projection B. D denotes the customary cap or cover for the lead 1. 2 indicates the usual shielding means by which the lead 1 is screened with respect to the anode 3. 4 denotes a getter coating arranged by means of the well-known evaporation process. The dotted line 5 indictaes how far the getter coating will extend toward the lead 1.

Discharge tubes as provided by the invention have the following advantages: The grid lead 1 is considerably shorter than in prior devices. This aids in the operation of such devices. Stray capacities between grid and anode cannot arise as the cap D is arranged near to the shielding means 2 so as to prevent this from being enclosed by the getter coating to the same extent as in prior devices. The getter coating 4 is spaced from lead 1 by a distance calculated to decrease those stray capacities which may arise between lead 1 and getter coating 4 on the one hand and between getter coating and the shielding means 2 on the other hand. Furthermore, the evaporation process by which the getter material is applied to the bulb cannot cause this material to reach the lead 1, a fairly large part of the bulb remaining uncovered. The insulating capacity between the grid and the other electrodes will thus not be impaired. Also, the getter coating may be made large without fear of any drawback. For instance, an annular getter coating may be produced by evaporating getter pills suitably distributed in the bulb.

Dotted lines in the drawing illustrate the difference in shape between tubes of prior construction and tubes as provided by the invention, and it will be seen that the latter are smaller in height than the former.

What is claimed is:

1. In an electron discharge tube of the grid controlled type, an end wall for said tube having a portion forming an outwardly pointed projection forming a sealed-off exhaust tube, said end wall being bulged inwardly to form a depression having said outwardly pointed projection located therein, a grid lead sealed into said projection, a getter within said tube in the form of a coating on said bulged end wall, said coating being spaced from said grid lead a sufficient distance to decrease substantially the stray capacitance between said coating and said grid lead.

2. A tube according to claim 1, in which said getter is in the form of an annular coating on said bulged end portion.

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