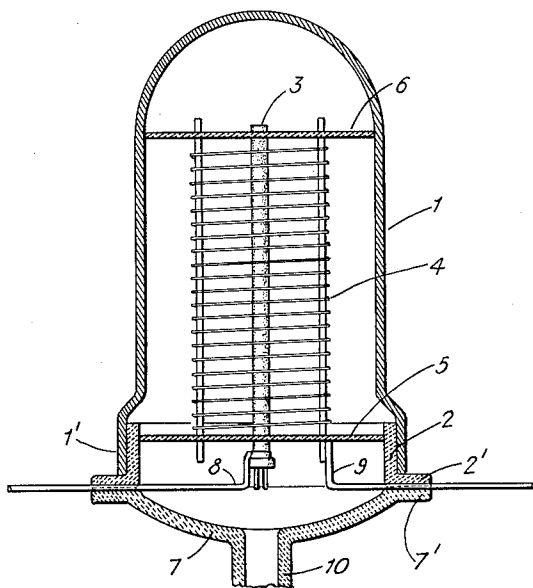


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ELECTRON DISCHARGE DEVICE

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ELECTRON DISCHARGE DEVICE

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3 Claims. (Cl. 250—27.5)

This invention relates to electron discharge tubes and particularly to improvements in the mount and stem construction of electron discharge tubes having metal envelopes.

5 Certain conventional types of high power tubes are so constructed that a part of the wall of the envelope of the tube is of metal and serves as the anode. This construction may also be used in low power tubes intended for use in receivers and amplifiers, and favorable results have been obtained with these low power tubes, particularly with respect to their ability to radiate heat and thus handle greater loads. In this type of low power tube, however, difficulties in construction exist in connection with the current lead-ins for the electrodes. Heretofore the electrodes were usually assembled in substantially the same way as for tubes having glass envelopes. The electrode system was mounted on a stem having a conventional press and extending downwards into a plate shaped bottom. The seal between the metal envelope and the stem was made by means of a glass ring fused to the envelope and in turn fused to the plate shaped bottom of the stem. The manufacture of such a metal wall tube was thus carried out in substantially the same manner and involved the same cost as in the case of glass envelope tubes. The outer dimensions of the tube were not materially changed, and as the height of the tube as well as its largest diameter was determined by the press and the plate bottom of the stem, these tubes have not been any smaller than glass envelope tubes.

15 The object of our invention is to provide an electron discharge tube which has a metal envelope, and which is simpler in construction, cheaper to manufacture, and substantially smaller and lighter than the conventional metal envelope tube, making it more adaptable for portable apparatus.

20 In accordance with one form of our invention the metal envelope is fused to a glass extension which is joined with the other parts of the wall of the vessel by means of an annular press in which are embedded the electrode lead-ins.

25 The novel features which we believe to be characteristic of our invention are set forth with particularity in the appended claims, but the invention itself will best be understood by reference to the following description taken in connection with the accompanying drawing in which the figure in the drawing is a vertical section of an electron discharge device embodying our invention.

30 In the drawing the tubular metal envelope is

closed at the top and serving at the same time as an anode of the electrode system is somewhat flared or widened at the bottom and terminates in a flange 1' by means of which it is fused to an annular glass member or ring 2 provided with an outwardly extending flange or lip 2'. The electrode mount comprises an indirectly heated incandescent cathode 3 and a control electrode 4 properly spaced and supported within the anode by means of two insulating bridges or spacers 5 and 6. The vessel is closed by means of a glass disk shaped closure member 7 slightly concave and having an outwardly extending lip or flange 7' which registers with and is fused to lip 2' on the glass ring 2 by heating the lips and pressing them together in rotating sealing machines upon the electrode lead-ins 8, 9 positioned radially of the envelope and between the glass lips which form an outwardly extending annular press around the periphery of the tubular envelope. The lead-in wires are preferably so stiff that they position the inner electrode system longitudinally in the metal envelope. These lead-ins may also serve as the tube contacts. An exhaust tube 10 is provided on the glass plate or disk shaped closure member 7 in the usual manner and is sealed tight after the envelope is exhausted.

While we have indicated the preferred embodiment of our invention of which we are now aware and have also indicated only one specific application for which our invention may be employed, it will be apparent that our invention is by no means limited to the exact forms illustrated or the use indicated, but that many variations may be made in the particular structure used and the purpose for which it is employed without departing from the scope of our invention as set forth in the appended claims.

What we claim as new is:—

1. An electron discharge device having a tubular metal envelope closed at one end and having a portion of larger diameter at its open end, electrodes mounted within said envelope, a glass member sealed to the open end of said envelope and provided with an outwardly extending lip, a glass closure member having an outwardly extending lip in registry with the lip on said glass member, said lips being sealed together to form an outwardly extending annular press and lead-ins sealed in said press and connected to the electrodes within said metal envelope.

2. An electron discharge device having a tubular metal envelope closed at one end, and a flange at the open end of larger diameter than the tubular portion of said envelope, electrodes posi-

tioned and supported within said envelope, a glass ring secured to said flange and having an outwardly extending lip and a disk-shaped glass closure member having an outwardly extending lip registering with the lip on said glass ring, said lips being sealed together to form an outwardly extending annular press and lead-ins extending thru said press and connected to the electrodes within said metal envelope.

3. An electron discharge device having a tubular metal envelope closed at one end and provided with a flange of larger diameter than the tubular portion of the envelope at the open end,

an electrode mount within said metal envelope, a glass ring having an outwardly extending lip sealed to said flange, a disk-shaped closure member having an outwardly extending lip registering with the lip on said ring member, said lips being sealed together to provide an annular press, stiff lead-in wires extending thru said press for longitudinally positioning said electrode mount within the envelope and electrically connected to said electrode mount, and an exhaust tube provided in said disk-shaped closure member.

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