Nov. 18, 1947. A. BINNEWEG, JR 2,431,020

ASSEMBLY MEANS FOR RADIO TUBES

Filed Sept. 11, 1944

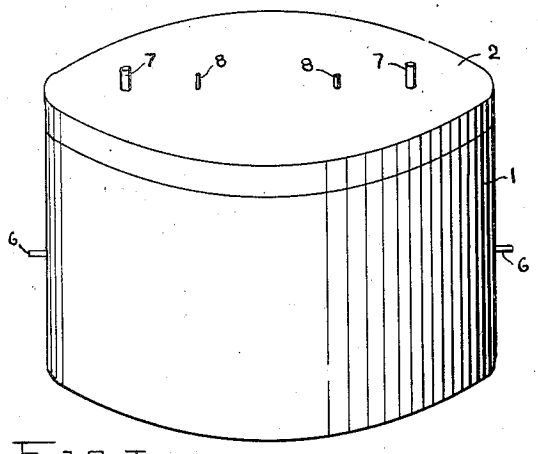


Fig. I.

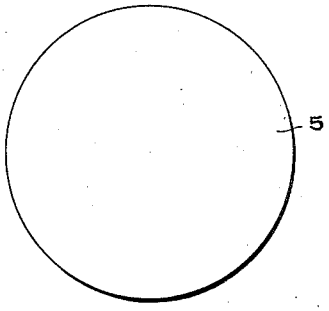


Fig. II.

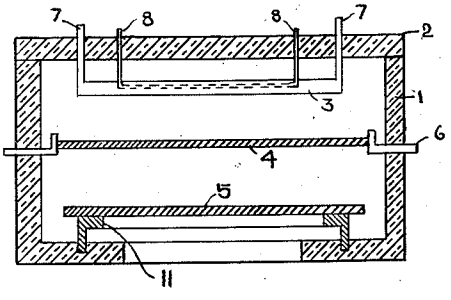


Fig. 3.

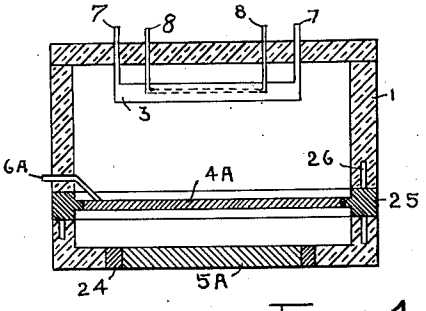


Fig. 4.

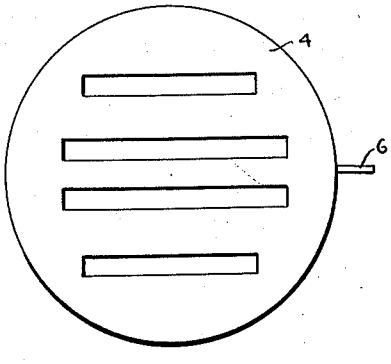


Fig. V.

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Patented Nov. 18, 1947

2,431,020

UNITED STATES PATENT OFFICE

2,431,020

ASSEMBLY MEANS FOR RADIO TUBES

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Application September 11, 1944, Serial No. 553,506

8 Claims. (Cl. 250—27.5)

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The present invention relates to improvements in radio tubes and in particular to means for assembling the elements in electron discharge tubes, especially those made of glass, porcelain or similar materials.

An object of the invention is to provide simple means of supporting, holding, and fastening the elements of an electron discharge tube in the vessel in which the electrodes operate. The construction is also applicable in cathode-ray tubes, neon tubes and other similar electronic tubes.

Another object of the invention is to arrange convenient means so that the separate parts of the receptacle and the elements can be conveniently and permanently fixed together.

Another object of this invention is to arrange means so that each individual element can be separately supported and attached to its containing receptacle.

Another object of the invention is to arrange means whereby electrodes are supported from the walls of the containing receptacle.

Fig. 1 is a perspective view of the tube.

Fig. 2 is a plan of the anode.

Fig. 3 is a vertical section of my tube showing inserts in a dielectric case to which the elements can be fastened when the tube is assembled.

Fig. 4 is a vertical section of a modification showing how an imbedded ring can be used to support an element or be the element itself if of ring form. Plate 5A is a circular plate held to the ring 24. Pins 26 in the ring 25 hold the grid 4A to, or in, the case, although no pins need be used if the piece 25 is of the proper shape.

Fig. 5 is a plan of the grid.

Concrete examples of my invention are illustrated in Figures 1 through 5. In all cases, 1, in the drawing is a cylindrical vessel. Figure 1 has such a case 1, having cover 2, grid lead 6, cathode support leads 7, heater leads 8.

Fig. 3 shows a sectioned ring 11. This ring is imbedded in the case 1, or is arranged in a slot in case 1. The plate 5 is welded or soldered to it. The grid 4 of Fig. 3 can be supported from leads like 6. A cathode could also be so supported since it is similar to a grid.

Fig. 4 shows an imbedded ring 24 extending around the bottom of the case. 5A is a metal plate flat disc which fits into this ring and is there welded or soldered in place. Similarly,

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25, is a ring having pins extending from it into the material in which it is held, if necessary, as shown by 26.

In any of the cases, the leads can be brought out as desired; for example, the grid leads 6 can be brought out as shown, and there can be more than one such grid lead if this is desired.

In Fig. 4, the plate 5A could be moved in and out, up and down, in the ring 24 and could even be welded over it on the inside or on the outside of the case. Grid 4 and ring 25 could be in one piece, in Fig. 4.

There are of course, many practical modifications of the ideas herein set forth, and it is desired to protect these in any combination.

Terminals 6 could take the shape of soldering terminals, or have other similar shape. The elements could be fastened to holes in these terminals with machine screws, bolts, solder, or other means. The terminals, 6, can be bent or straight, as desired.

Having described the invention, I claim:

1. An electron tube having a dielectric receptacle, a cover for said receptacle, a cathode suspended from said cover, metal inserts in the side wall of said receptacle, a grid athwart the receptacle supported by said inserts, an opening in the bottom of said dielectric receptacle, and a metal anode closing said opening.

2. An electron tube having a dielectric receptacle, a dielectric cover therefor, a cathode suspended from said cover, leads for said cathode penetrating said cover, a grid athwart said receptacle below said cathode and spaced therefrom, an aperture in the bottom of said receptacle, a groove encircling said aperture, an annular member fitting within said groove, and a flat anode attached to said annular member and closing said aperture.

3. An electron tube having a dielectric envelope, cathode and grid members within said envelope, an orifice in the bottom of said envelope, a groove encircling said orifice, a flat annular member having a vertical integral flange fitting within said groove, and an anode attached to said annular member and closing said opening.

4. A radio tube having an envelope, a flanged ring attached to the base of said tube, a flat anode supported by said ring, leads penetrating the cylindrical wall of said envelope, a ring sup-

ported by said leads, a grid athwart said ring, and a cathode suspended from the top of said envelope above said grid.

5. A radio tube having an envelope, an aperture in the base of said envelope, a ring encircling said aperture and attached to said envelope base, an anode supported by said ring and closing said aperture, leads penetrating the side wall of said envelope, a grid supported by said leads, and a cathode above said grid within the envelope.

6. A radio tube comprising a dielectric receptacle, a dielectric cover for said receptacle, a cathode suspended from said cover, a grid supported athwart the receptacle midway between top and bottom thereof, a ring attached to the bottom of said receptacle, and an anode supported by said ring.

7. A radio tube having an upright cylindrical envelope, a cathode supported by the top of said envelope, leads penetrating the opposite sides of said cylindrical envelope, a grid supported by said leads, an aperture in the base of said envelope, and an anode of greater diameter than said aperture serving as a closure therefor.

8. An electron discharge tube having an envelope, an aperture in the bottom of said envelope,

a ring of greater diameter than said aperture encircling it and attached to the bottom of the envelope, an anode of greater diameter than said ring attached to said ring, a grid athwart the tube above said anode, and a cathode above said grid attached to the top of said envelope.

ABRAHAM BINNEWEG, JR.

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