Dec. 3, 1935. D. Y. SMITH 2,022,984

MOUNT FOR ELECTRON DISCHARGE DEVICES

Filed Feb. 27, 1934

Fig. 1

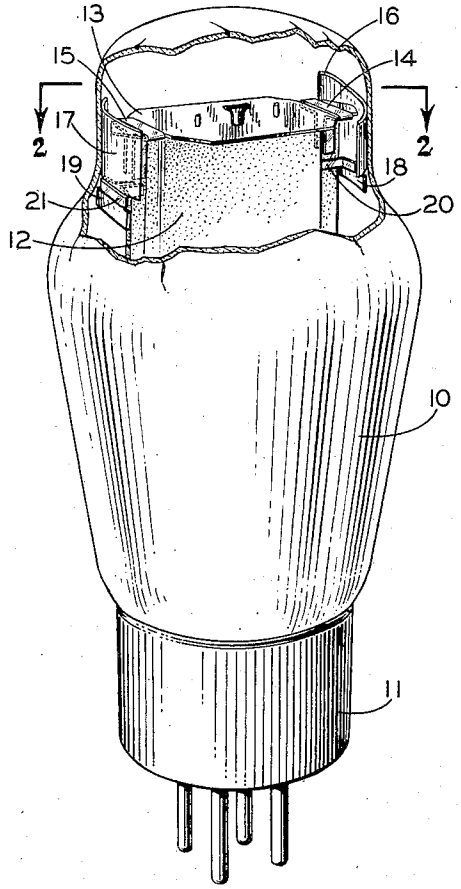
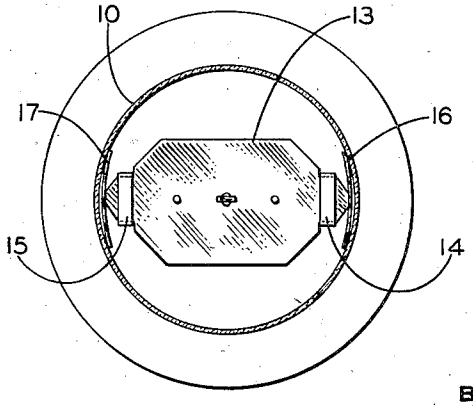


Fig. 2



INVENTOR
DOUGLAS Y. SMITH

BY
Charles McClair
ATTORNEY

Patented Dec. 3, 1935 2,022,984

UNITED STATES PATENT OFFICE

2,022,984

MOUNT FOR ELECTRON DISCHARGE DEVICES

Douglas Y. Smith, East Orange, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Application February 27, 1934, Serial No. 713,089

4 Claims. (Cl. 250—27.5)

My invention relates to improvements in electron discharge devices and more particularly to a mount construction by which the electrode assembly is firmly held in position in the envelope of the tube.

In radio tubes the electrode assembly should be supported firmly so that it cannot move transversely of the envelope. To this end the dome or constricted portion of the bulb used in tubes made with the dome type of bulb is often utilized to steady the upper end of the electrode assembly and to prevent the electrode assembly from vibrating transversely of the bulb. The electrode assembly should be steadied sufficiently to avoid noises, such as clicking, which may develop in operation, and which are due to contact between the electrode assembly and the envelope when the tube is jarred or vibrated while in use. Attempts to steady the mount by metal braces which touch the bulb have not been successful as such braces tend to produce strain cracks in the glass at the point where the metal touches the glass.

The object of my invention is to steady a tube mount from the wall of the bulb by resilient spacers interposed between the mount and the walls of the bulb and of such a character that the walls of the bulb are not strained or injured when heated during the manufacture of the tube.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims but the invention itself will be best understood by reference to the following description taken in connection with the accompanying drawing in which:

Figure 1 is a view in perspective and partly broken away of an electron discharge device embodying my invention.

Figure 2 is a sectional view taken along the line 2—2 of Figure 1.

The electron discharge device shown in Figure 1 has a dome type envelope or bulb 10 and the usual base 11. The mount 12 which comprises the electrode assembly and the supports by which the electrode assembly is carried on the stem, extends into the tubular portion or dome of bulb 10. On the upper end of the mount is a sheet insulator such as a top mica 13 shown somewhat rectangular in shape, but which obviously could be circular or of some other shape. The top mica, which is rigidly fastened to the upper end of the mount by straps 14 and 15, extends transversely of the mount, and is of such size that its ends are near the walls of the tubular portion or dome of the bulb 10.

In acordance with my invention the mount is steadied by resilient spacers which cooperate with the bulb and with the mount. In the specific construction shown the opposite ends of the horizontal top mica 13 engage elongated spring spacers 16 and 17, which are set vertically and, therefore, perpendicularly to the top mica, which engages the vertical spring micas intermediate their ends. These vertical micas or spring spacers are preferably made of resilient non-metallic material such as sheet mica which will not cause cracking of glass bulbs when in contact with the glass. The mica spacers 16 and 17 are provided with tongues 18 and 19 and are fastened to the mount and held in contact with the ends of the top mica by means of straps 20 and 21, which encircle the tongues and fit into side slots in the tongues, and are fastened, preferably by welding, to some part of the mount, usually the plate electrode.

In assembling the tube, bulb 10 is dropped down over the mount 12 until the top mica and the spring spacers are in position shown in the drawing. The spring spacers which are substantially rectangular and which bear on opposite edges of the top mica are slightly bowed vertically near the middle so that the spring spacers are resiliently pressed against the walls of the bulb with such pressure as to hold the upper end of the mount concentrically within the dome and to prevent vibration of the mount or injury by handling of the tube.

The type of spring mica spacer which is used and the specific form of which is shown in the figures is most suitable for use in tubes having large mounts which extend close to the inner wall of the tubular portion of the bulb and in tubes where it is difficult to fasten the vertical spacer directly to the mount. Since the spring spacers are secured to the plate electrode and overlap the ends of the top mica, there is no drag or tilting action on the top mica spacer when the bulb is lowered over the mount during assembly of the tube, so that tilting or distortion of the top mica or mount is prevented.

While I have indicated the preferred embodiments of my invention of which I am now aware, it will be apparent that my 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 de-

parting from the scope of my invention as set forth in the appended claims.

What I claim as new is,

1. An electron discharge device provided with an envelope having a tubular portion, a mount comprising an electrode assembly positioned in said envelope and extending at least partially within said tubular portion, an insulating spacer secured to said mount to extend transversely of the tubular portion of said envelope, and a strip of resilient insulation set perpendicularly to said insulating spacer with a portion intermediate its ends engaged by said insulating spacer and in contact with the walls of the tubular portion of said envelope to resiliently steady said mount from the walls of the tubular portion of said envelope, and a strap securing said strip of resilient insulation to the mount.

2. An electron discharge device provided with an envelope having a tubular portion, a mount enclosed by said envelope and comprising an electrode assembly positioned to be at least partially within said tubular portion, a sheet insulator secured to said mount to extend transversely of the tubular portion of said envelope, substantially elongated sheet mica spring spacers mounted perpendicularly to the transverse axis of said tubular portion to engage the walls of the tubular portion of said bulb, said sheet insulator engaging said sheet mica spring spacers intermediate their ends to resiliently support said mount in a predetermined relation to the tubular portion of said envelope and straps fastened to said mount and engaging said sheet mica spring spacers to hold said mica spring spacers in position.

3. An electron discharge device provided with an envelope having a tubular portion, a mount comprising an electrode assembly positioned in said envelope and extending within said tubular portion, a flat mica spacer secured to said mount to extend transversely of the tubular portion of said envelope elongated resilient mica spring spacers mounted perpendicularly to the transverse axis of said tubular portion of the envelope with their ends in engagement with the walls of said tubular portion and engaging the edges of said flat mica spacer intermediate their ends to resiliently support said mount in a predetermined relation to the tubular portion of said bulb, a tongue extending from one side of said resilient mica spring spacers and a strap secured to said tongue and fastened to the mount for fixedly maintaining said resilient sheet mica spring spacers in engagement with said flat mica spacer.

4. An electron discharge device provided with an envelope having a tubular portion, a mount comprising an electrode assembly positioned in said envelope and extending within said tubular portion, a flat mica spacer secured to said mount to extend transversely of said tubular portion, spring spacers of resilient sheet insulation set perpendicular to said flat spacer with their ends in contact with the walls of the tubular portion of said envelope and engaging the edges of said flat mica spring spacer intermediate their ends to resiliently support the end of said mount in a predetermined position in said envelope, tongues on said spring spacers extending longitudinally of the tubular portion of said envelope and straps engaging said tongues and secured to the mount for maintaining said sheet mica spring spacers in cooperating relationship with said flat mica spacer.

DOUGLAS Y. SMITH.