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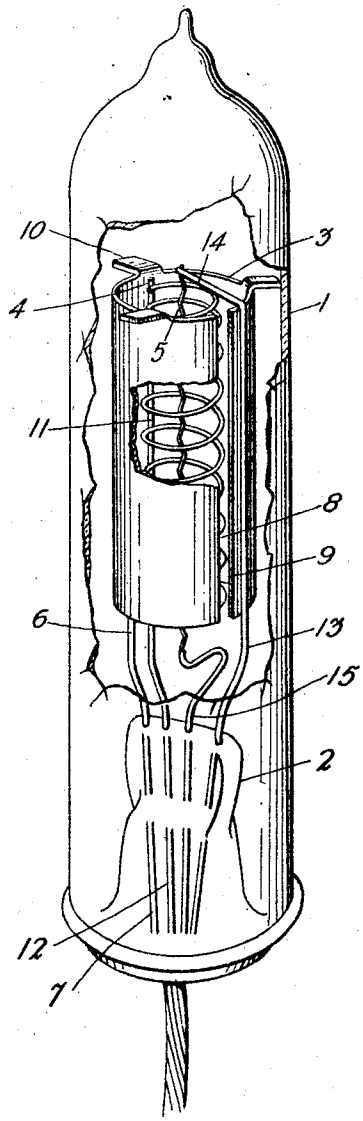
Draftsman

Aug. 25, 1925. 1,550,768

H. W. WEINHART

ELECTRIC DISCHARGE DEVICE

Filed July 14, 1919



Inventor:
Howard W. Weinhart.
by J. K. Roberts Atty.

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UNITED STATES PATENT OFFICE.

HOWARD W. WEINHART, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELECTRIC DISCHARGE DEVICE.

Application filed July 14, 1919. Serial No. 310,597.

To all whom it may concern:

Be it known that I, HOWARD W. WEINHART, a citizen of the United States, residing at Elizabeth, in the county of Union, State of New Jersey, have invented certain new and useful Improvements in Electric Discharge Devices, of which the following is a full, clear, concise, and exact description.

The invention relates to an electron discharge device such as may be employed for an amplifier, repeater, detector, modulator, oscillator, etc. Such a device may be of the two or more than two-electrode type.

An object of the present invention is to improve the construction of devices of this type by preventing injury thereto due to the breakage of the glass arbor which has commonly been employed for supporting one or more of the electrodes. This object is accomplished by employing metallic connections between the press and the ends of the electrodes there-adjacent. The anode in this case, which may take the form of a hollow anode extending along the axis of the tube, may be prevented from moving laterally within the tube by the use of projections integral with the anode and extending therefrom to the walls of the tube. The grid may take the form of a helical electrode supported by a single relatively heavy wire which extends from the press.

For further details of the invention, reference may be made to the drawing which shows in perspective an electron discharge device embodying the features of this invention.

Referring to the drawing, the cylindrical vacuum tube 1 has therein a press 2 adjacent which are mounted a hollow cylindrical anode 3, a helical grid 4 and a filament or cathode 5. The anode is supported at a point near the press by the relatively heavy wire 6 which may form an extension of the lead wire 7. The adjacent edges 8 and 9 of the anode may conveniently be left separated as shown or may be fastened as desired. At the end of the anode remote from the press are provided one or more spacers or projections 10 which serve to restrict the lateral movement of the anode within the vacuum tube. The grid 4 may be supported by a single wire or rod 11 which may form an extension of the lead wire 12. The filament or cathode is supported from the wire 13 which extends along the outside of the anode and projects over the center of the grid as shown at 14. The filament is strung between the portion 14 and a wire 15, the resiliency of the latter serving to maintain the filament taut, both while it is heated by operating current, as well as when it is cold and not in operation.

What is claimed is:

1. An electron discharge device comprising a vessel, a leading-in wire, an anode, a supporting connection between said leading-in wire and said anode and a spacer carried by said anode and contacting with the wall of said vessel.

2. An electron discharge device comprising a vessel, a leading-in wire, an electrode, a supporting connection between said leading-in wire and said electrode and a projection extending from said electrode and contacting with the interior surface of said vessel.

3. An electron discharge device comprising a vessel, a leading-in wire, an electrode and a supporting connection between said leading-in wire and said electrode, said electrode having an integral portion projecting therefrom and contacting with the inner surface of said vessel.

4. A vacuum tube comprising a press, a hollow anode, a metallic support between said press and said anode, and integral lugs extending from said anode and contacting with said tube to reduce lateral movement of said anode.

5. A vacuum tube comprising a press, a helical electrode, and a single metal support extending from said press and to which each turn of said electrode is fastened.

6. A vacuum tube comprising a press, an anode, a cathode, a grid, metallic supporting connections between said electrodes and said press, said anode being a hollow cylinder surrounding the other electrodes and having projections extending from the end thereof remote from said press to the wall of said tube, said grid being helical in form and the supporting connection therefor comprising a single wire, said cathode lying along the axis of said grid and the supporting connection for said cathode lying outside of said anode.

7. A vacuum tube comprising an electrode, a lead wire therefor, a supporting connection between said lead wire and said

electrode, and spacing means interposed between the electrode and the inner surface of the tube.

8. A vacuum tube comprising a press, lead wires extending through said press, electrodes supported solely by said lead wires, and spacing means between one of said electrodes and the wall of the tube.

9. A vacuum tube comprising a single press, concentric cathode, grid and anode electrodes coaxial with said press, and leading-in wires in said press for said electrodes, said leading-in wires being the sole supporting means for said electrodes from said press.

10. A vacuum tube comprising a press, a cylindrical anode coaxial therewith, a leading-in wire extending through said press, said leading-in wire being the sole supporting means for said anode, a cathode, a grid electrode, and means for supporting said grid and cathode within said anode.

In witness whereof I hereunto subscribe my name this 9th day of July, A. D., 1919.

HOWARD W. WEINHART.