

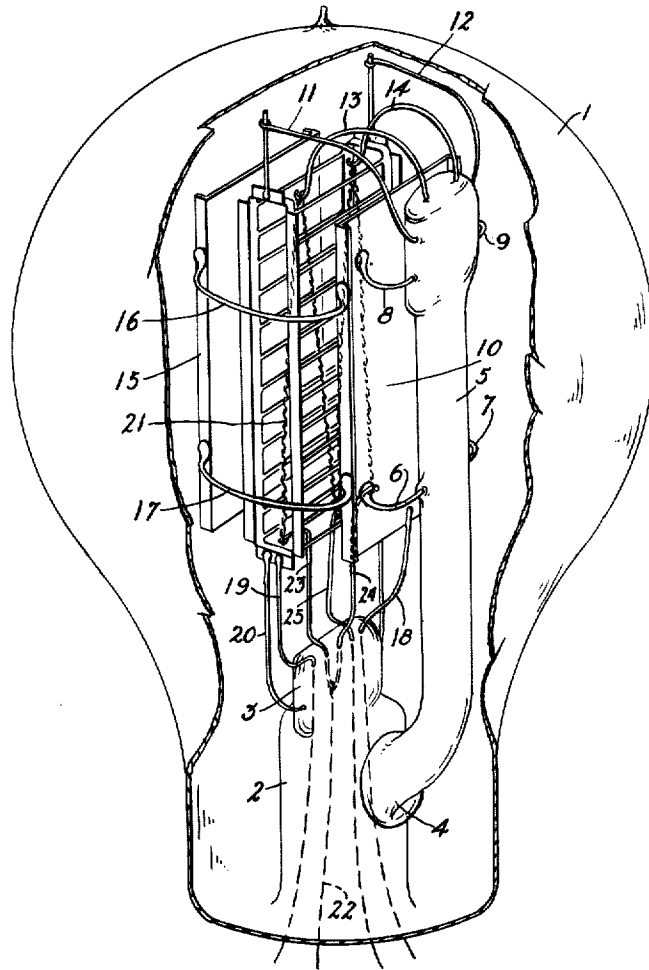
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H. J. VAN DER BIJL

VACUUM TUBE DEVICE

Filed Sept. 30, 1918



Inventor:

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by *J. Roberts* Att'y.

UNITED STATES PATENT OFFICE.

HENDRIK J. VAN DER BIJL, OF NEW YORK, N. Y., ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VACUUM-TUBE DEVICE.

Application filed September 30, 1918. Serial No. 256,240.

To all whom it may concern:

Be it known that I, HENDRIK JOHANNES VAN DER BIJL, a subject of the King of Great Britain, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Vacuum-Tube Devices, of which the following is a full, clear, concise, and exact description.

The invention relates to vacuum tubes of the audion type, such as are commonly employed for repeaters, amplifiers, detectors, oscillators, etc.

Such devices may have only two electrodes, an anode and a cathode when used as rectifiers, or they may have three electrodes, the additional electrode being usually in the form of a grid which is adapted to control the space current between the cathode and the anode. Such devices, whether of the two or of the three electrode type, have been commonly provided with a pair of anode electrodes which are usually in the form of plates.

The present invention relates to improvements in mounting the electrodes and provides means whereby one of the electrodes is adapted to support the other. In one specific form that this invention may take, a single arbor is provided for supporting—(a) one of the plate electrodes, (b) the cathode and (c) the grid; the remaining plate electrode being supported by the other plate electrode by means of supporting wires which are welded at their extremities to these electrodes.

For further details of the invention reference may be made to the drawings in which the figure illustrates in perspective, one embodiment of the invention.

Referring in detail to the drawings, the vacuum tube 1 contains within it the inwardly projecting tubular portion 2, the top of which forms the usual press 3 in which the various leading-in wires are sealed. Anchored to the tubular portion 2, at the point 4, is an arbor 5 from which supporting wires 6, 7, 8 and 9 extend to the plate electrode 10. From the arbor 5 also extend supporting wires 11 and 12 for the grid, and wires 13 and 14 for the filament 21. The plate electrode 15 is parallel to the plate electrode 10 and is supported thereby by means of four supporting wires, only two

of which, 16 and 17, are shown, the other two being at the other side of the plate electrodes and being similar to those illustrated. The plate electrodes 10 and 15, which are preferably planary in form, but not necessarily so, are provided with upturned edges, as shown, the supporting wires 16 and 17 and the other two not shown, being fastened, for instance, welded at their ends to these edges. These edges have the advantage that they strengthen the plate electrodes and maintain them planary in shape, thereby preventing buckling which might otherwise take place when the electrodes are heated in the operation of the device due to the passage of current through the electrodes, or during evacuation when the electrodes are heated to a high temperature.

Plates 10 and 15 are electrically connected by means of the wires 16 and 17. Lead wire 18 is provided for the plates, lead 19 for the grid, the bottom of which is supported in position by wire 20 welded to the grid and sealed in the press 3. The two halves of the filament may be connected in parallel, its ends being connected to the wire 22 by the lead wires 23 and 24 which support the ends of the filament in their proper positions. The middle of the filament is supported and electrical connection is made thereto by lead wire 25.

This invention is not restricted to any particular manner of connecting the electrodes of the vacuum tube but these may be connected, if the tube is to operate as an amplifier, as shown in the patent to Arnold, No. 1,129,942, March 2, 1915.

What is claimed is:

1. A vacuum tube device comprising a pair of plane parallel continuous electrode surfaces, and means whereby one of said surfaces is supported substantially entirely by the other of said surfaces.

2. A vacuum tube device comprising a cathode, a pair of parallel anode surfaces, and means whereby one of said surfaces is supported substantially entirely by the other of said surfaces.

3. A vacuum tube device comprising a plurality of anode elements, a cathode therebetween, an arbor, a supporting connection between said arbor and one of said elements, a supporting connection between said arbor and said cathode, and an electrically

conductive connection between said elements for supporting a second of said elements through the intermediary of that anode element supported by said arbor.

5 4. A vacuum tube device comprising a pair of spaced plate electrode elements, an auxiliary electrode therebetween, and means whereby one of said plate elements is supported substantially entirely by the other of
10 said elements.

5. A vacuum tube device comprising a cathode, a control electrode, and a plurality of plate electrode elements one of said plates being supported substantially entirely by
15 another of said plates.

6. A vacuum tube device comprising a plurality of electrodes one of which is conductively supported substantially entirely
by another.

20 7. A vacuum tube device comprising a plate electrode having an integral flange extending at an angle from the body of said electrode, and a supporting metallic connection fastened to said flange.

25 8. A vacuum tube device comprising a pair of parallel plate electrode elements each having a flange extending at an angle to the body of said electrodes, and a metallic connection welded to said flanges whereby
30 one of said elements is supported substantially entirely by the other of said elements.

9. A vacuum tube device comprising a pair of parallel plate electrode elements each having an integral flange extending at
35 an angle to the body of said elements, and a wire having one end welded to one flange and the other end to the other flange.

10. A vacuum tube device comprising an arbor, a plate electrode element supported
40 thereby, and another plate electrode element supported by said first mentioned plate electrode element.

11. A vacuum tube device comprising an inwardly projecting tubular portion, an arbor arising therefrom, a plate electrode element supported by said arbor, a second
45 plate electrode element supported by said first mentioned plate electrode element, and

an auxiliary electrode located between said elements. 50

12. A vacuum tube device comprising an arbor, a plate electrode element supported thereby, a second plate electrode element electrically conductively supported by said
55 first mentioned plate electrode element, a cathode and a control electrode between said elements.

13. A vacuum tube device comprising an arbor, a plate electrode element supported thereby, a second plate electrode element
60 supported by said first mentioned plate electrode element, cathode and control electrodes supported by said arbor.

14. A vacuum tube device comprising a pair of parallel plate electrode elements
65 each having a flange extending at an angle to the body of said electrode elements, a cathode and a control electrode between said plate electrode elements, and a plurality of wires connecting the flanges of said
70 plate electrodes.

15. A vacuum tube device comprising a pair of parallel plate electrode elements each having a flange extending at an angle
75 to the body of said electrode elements, a cathode and a control electrode between said plate electrode elements, and a plurality of wires extending from one of said flanges to the other and welded thereto, whereby one
80 of said plate electrode elements is supported by the other.

16. A vacuum tube comprising an arbor, a plate electrode element, supporting connections from said arbor to the upper and
85 lower portions of said electrode element, a second electrode element, flanges extending from two sides of each electrode element at an angle to the body portion and supporting members extending from said first electrode element to said second electrode element,
90 said members being connected to said flanges.

In witness whereof, I hereunto subscribe my name this 25th day of September A. D.,
1918.

HENDRIK J. VAN DER BIJL.