

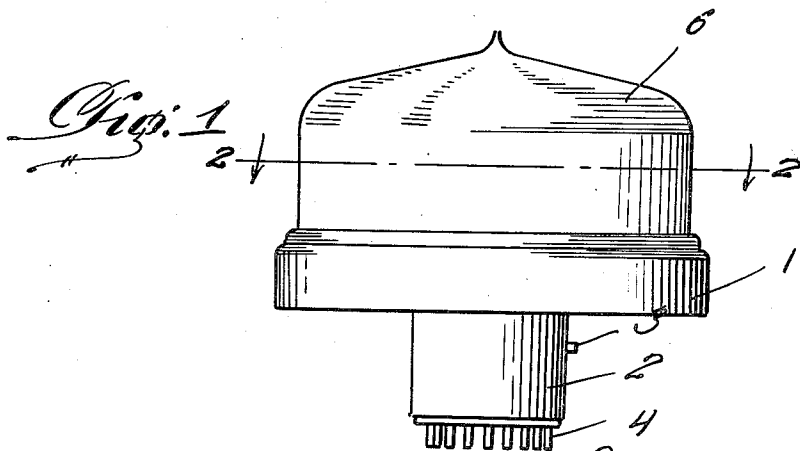
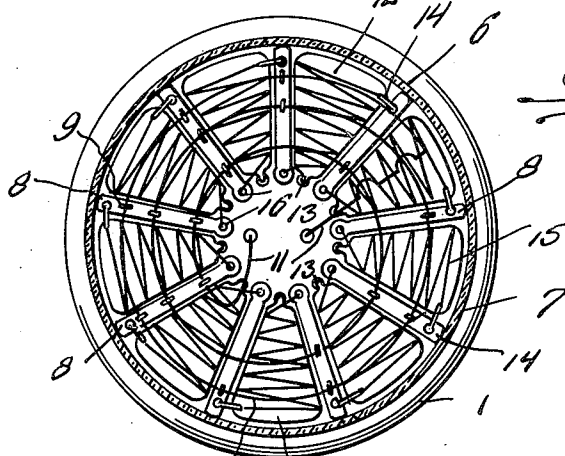
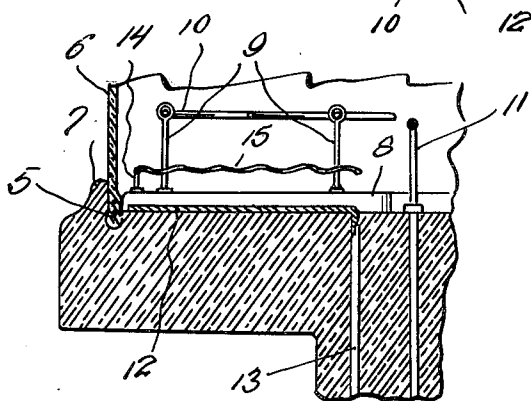
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ELECTRON TUBE

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ELECTRON TUBE.

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This invention relates to improvements in electron discharge tubes, for use in connection with radio receiving apparatus.

An object of the invention resides in constructing an electron tube adapted to combine the cooperative parts of a plurality of tubes in one, for reducing the cost of manufacture and sale of the tube, and permitting the use of a single tube, with a detector, and both radio and audio frequency amplifying units of the receiving set.

Another object of the invention is to provide an electron discharge tube adapted for use in radio receiving sets, with a single filament, adapted for cooperation with a plurality of independent sets of grids and plates mounted therein, in order that a single tube may be used with a radio receiving set having a detector circuit, and a plurality of either or both radio and audio amplifying circuits for eliminating the use of a plurality of tubes, and thereby reducing the current consumption of the filaments, the cost of protection of tubes for radio receiving sets, and the compactness of the set, at the same time eliminating and centralizing considerable wiring of such receiving sets.

The invention includes other objects and advantages in the details of construction and arrangement of the parts, which are more particularly pointed out in the following description and claims, directed to a preferred form of the invention, it being understood that various changes may be made in the specific construction, size and number of the parts used, without departing from the spirit and scope of the invention as described and claimed.

In the drawing, forming a part of this application:

Figure 1 is a side elevation of an electron discharge pipe constructed according to the invention.

Figure 2 is a horizontal sectional view, taken on the line 2—2 of Figure 1.

Figure 3 is a partial vertical sectional view, through the tube.

The electron tubes forming the subject of this invention has an annular base 1, provided in the central portion with a depending cylindrical extension 2, adapted to fit in a socket provided therefor, in predetermined relation, by means of a pin 3, cooperating with a slot in the socket. A plurality of contacts indicated generally at 4, are mounted in the cylindrical extension 2 and

adapted to contact with corresponding contacts in a socket provided for the purpose, in predetermined relation, in a manner which will presently appear. The upper face of the base 1 of the tube is formed adjacent the outer periphery with an annular recess 5, which is adapted to receive the lower annular end of a glass tube 6, which is sealed in air tight relation therewith, thru the forming of a base member, around the tube, with an annular upstanding flange 7, contacting with the outer face of the lower end of said tube 6. The air may be exhausted from the interior of the tube, in any usual and desired manner, for the purpose of creating a substantial vacuum within the same. The upper face of the base within the tube, is formed with a plurality of radial extending ribs 8, in equal spaced relation. Pairs of uprights 9 are mounted adjacent the inner and outer ends of each of these ribs 8, and are provided with eyes in the upper end for receiving and mounting the spirally arranged filament 10, in a horizontal plane above the upper face of the base. The ends of the filament 10 extend to the upper portion of the base, as indicated at 11, and are directed downwardly through the base, for connection with contacts on the bottom thereof, in order that the filaments may be interposed in a suitable circuit, adapted to energize the same. A plurality of plates 12, corresponding in number to the number of spaces between the ribs 8 are arranged between said ribs, in annular relation, as clearly disclosed in Figure 2, and are adapted to form the anodes for cooperation with the filament which forms the cathode of the tube. These plates 12 are connected with predetermined contacts $\pm$, on the base 2, by wires 13, connected with the inner ends of the plates and extending in spaced relation downwardly through the base.

A plurality of grid supports are indicated at 14 and are secured or mounted on the ribs 8 for supporting a plurality of grids corresponding in number to the number of plates, and formed of wire, arranged in zigzag relation, as indicated in Figure 2, one grid being mounted in spaced relation above each plate, and below the filament 10. The grids are positioned in substantially the same horizontal plane and arranged in radial relation with respect to the base over the plates 12 and have their inner ends extended

downwardly as indicated at 16, through the base, for electrical connection with predetermined points of the contacts 4.

In using this tube, it will be apparent that when the cylindrical extension 2 is inserted in a socket provided for the purpose, having a plurality of contacts corresponding in number to the contacts on the cylindrical extension, the respective plates and grids may be connected in desired circuits of the receiving set, so that one grid and plate may be used in a detector circuit, other grids and plates used in independent amplifying sets for radio frequency amplification, while the remaining grids and plates may be used in separate amplifying sets for audio frequency amplification, the filaments extending over all of the grids and plates, serving to provide a common cathode element for discharging electron in the operation of the tube in the several circuits with which corresponding grids and plates are connected. By this arrangement, current consumption is reduced to a minimum, over that present where several tubes are used, in that one filament serves the purpose of all of the filaments where a plurality of tubes are used. In addition, only a single filament control is necessary, which centralizes this adjustment with respect to all of the circuits. A more compact radio receiving set, embodying several steps of amplification, can be constructed with the use of this tube, which can also be manufactured at a substantially smaller cost, than the plurality of tubes necessary to replace the same.

It is to be understood that while a special number of plates and grids are shown, arranged under a spiral filament, it is within the scope of this invention to use any desired number of corresponding plates and grids, of a desirable form and shape, with a single filament, also of any desirable shape, for carrying out the proper function, in use, for which it is desired.

What is claimed is:

1. An electron discharge device, comprising an evacuated receptacle having a flat base portion, a plurality of flat anodes mounted in spaced circumferential relation in the same plane on said base portion, a plurality of grids in spaced circumferential

relation in the same plane, said plane of the grids being in spaced parallel relation to the plane of the anodes, and a filamentary cathode mounted in a plane parallel to and spaced from the plane of the grids and anodes, said grids, and cathode lying in substantially aligned relation in their respective planes.

2. An electron discharge device comprising an evacuated receptacle having a flat base portion, a plurality of flat anodes mounted in spaced circumferential relation in the same plane on the base portion, a plurality of grids in spaced circumferential relation in the same plane, said plane of the grids being in spaced parallel relation with the plane of the anodes, and a filamentary cathode formed of a spiral wire mounted in a plane parallel and spaced relative to the anodes and grids, said anodes, grids, and cathode being positioned in respective planes in substantially aligned areas.

3. An electron discharge device comprising an evacuated receptacle having a flat base portion on the interior thereof, a plurality of flat segmental anodes mounted on the base portion in a predetermined circumferential zone within the same plane, a plurality of grids of flat segmental contour supported in spaced relation to the base and each other and mounted in a corresponding circumferential zone to the anodes and in the same plane parallel with the plane of the anodes, and a filamentary cathode mounted in spaced relation to the base beyond the grids in a plane parallel to the planes of the grids and anodes, and extending through a zone overlying the zones of the grids and plates.

4. An electron discharge device, comprising an evacuated container having a base portion provided with a zone formed in a predetermined manner, a plurality of anodes mounted in spaced relation in the same zone similar to the zone of the base portion, a plurality of grids mounted in the same zone similar to the zone of the anodes and spaced therefrom, and a filamentary cathode mounted in a zone similar to the zones of the anodes and grids and spaced therefrom.

In testimony whereof I affix my signature.
BERNARD BRUSKIN.