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THERMIONIC VALVE
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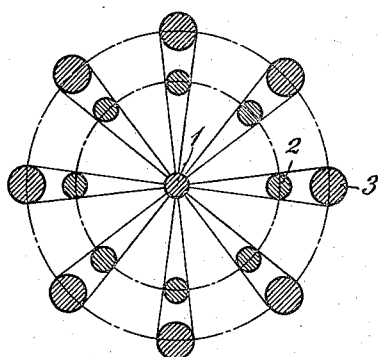


Fig. 1

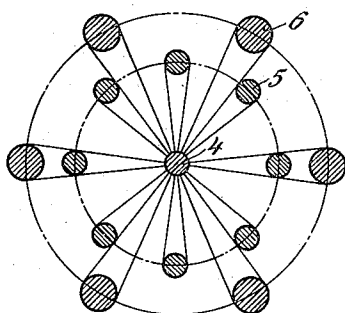


Fig. 2

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THERMIONIC VALVE

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2 Claims. (Cl. 250—27.5)

The present invention relates to thermionic valves and more specifically to improvements upon the structure of the type of valves having their various electrodes arranged concentrically with respect to a central cathode.

Thermionic valves having a number of electrodes arranged coaxially with respect to the cathode generally present different operating characteristics on account of the non-uniformity of the electron stream distribution to the individual electrodes of the tube, said lack of uniformity being introduced by the inevitable inaccuracies of the manufacturing process. Such differences are particularly observed in connection with tubes employing the so-called cage type of grids, that is, grids which consist of a plurality of individual rods or wires arranged parallel to one another and to the filament.

The invention which consists in certain features of novelty over the known designs of the type of thermionic valves heretofore referred to and will be more readily understood from the following description taken in conjunction with the accompanying drawing in which

Fig. 1 diagrammatically illustrates an ideal multi-grid structure, while Fig. 2 shows one embodiment of a grid arrangement according to the invention.

One might be inclined to provide the grid rods or wires so as to obtain a shading effect in such manner that the rods of the outer grid are shaded from the electron stream by the rods of the inner grid, as shown in Fig. 1, in which 1 designates the cathode encircled by two coaxial grids having their rods or wires related in parallel to the cathode. Reference numeral 2 designates the inner grid and 3 the outer grid. However, the ideal control grid to screen grid relation illustrated in this figure is not realizable in manufacturing small tubes of the type particularly required for the generation of high frequency oscillations, from which follows that the individual tubes of the same type present electrical characteristics which considerably differ from one another and this relates particularly to the current distribution.

The present invention has for its object to avoid this disadvantage by providing the elec-

trodes in such manner that the shading effect is maintained constant even if the grid is accidentally subjected to an angular displacement.

One embodiment of a thermionic valve constructed in accordance with the invention is shown in Fig. 2 in which 4 is the cathode, 5 the control grid and 6 a screen grid of a pentode, for example. These grids are so arranged that in each case despite an angular displacement of one grid relative to the other always the same area of the screen grid is covered by the control grid with respect to the cathode so that the screen grid current is rendered independent of the relative position between the electrodes of the individual tubes.

In manufacturing thermionic valves having helical grids surrounding a central filament or cathode in the axis of the helix, the diameter and the pitch of the various grids must be so chosen that the shading effect with respect to the cathode remains constant although the grid might be displaced in any manner.

What is claimed is:

1. A thermionic valve having a central cathode, an anode, and a plurality of grids concentrically encircling the cathode, each grid being composed of a number of individual rods, the angle between two adjacent rods of one grid and the said cathode being different from the corresponding angle between any two rods of the other grid and said cathode whereby the area of the outer grid shaded by the inner grid with respect to the cathode remains constant independently of relative displacements between said grids.

2. A thermionic valve having a central cathode, an anode, and a plurality of grids concentrically encircling the cathode, each grid being composed of a number of individual rods arranged parallel with respect to the cathode, the number of rods in one grid being different from the number of rods in the other grid, the diameter of the individual rods being so chosen that the area of the outer grid shaded by the inner grid with respect to the cathode remains constant independently of a relative angular displacement between said grids.

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