Sept. 27, 1949. R. CHAMBERLIN 2,482,839

RESILIENT CONTACT STRUCTURE FOR ELECTRON TUBES

Filed May 4, 1948 2 Sheets-Sheet 1

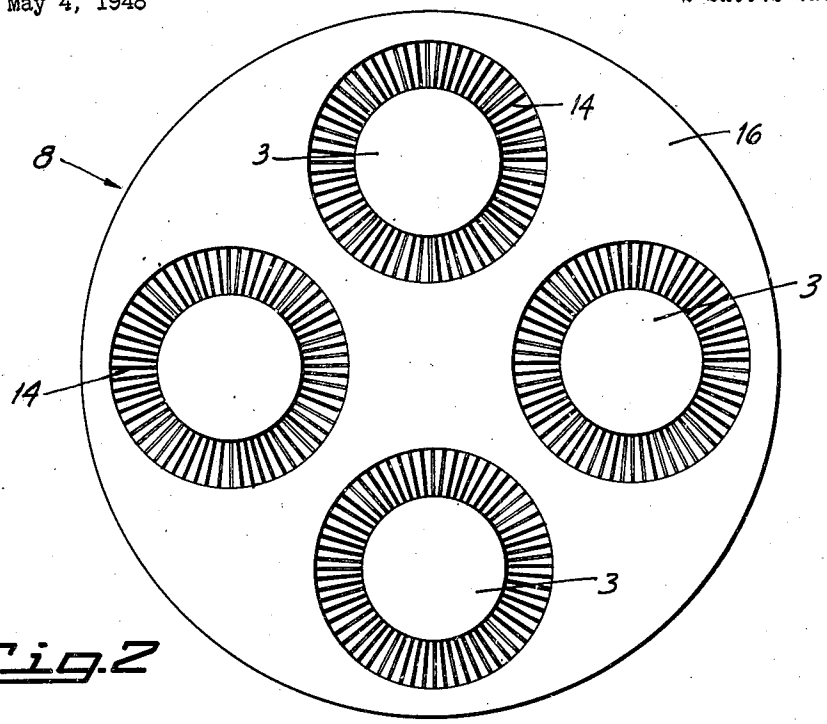


Fig. 2

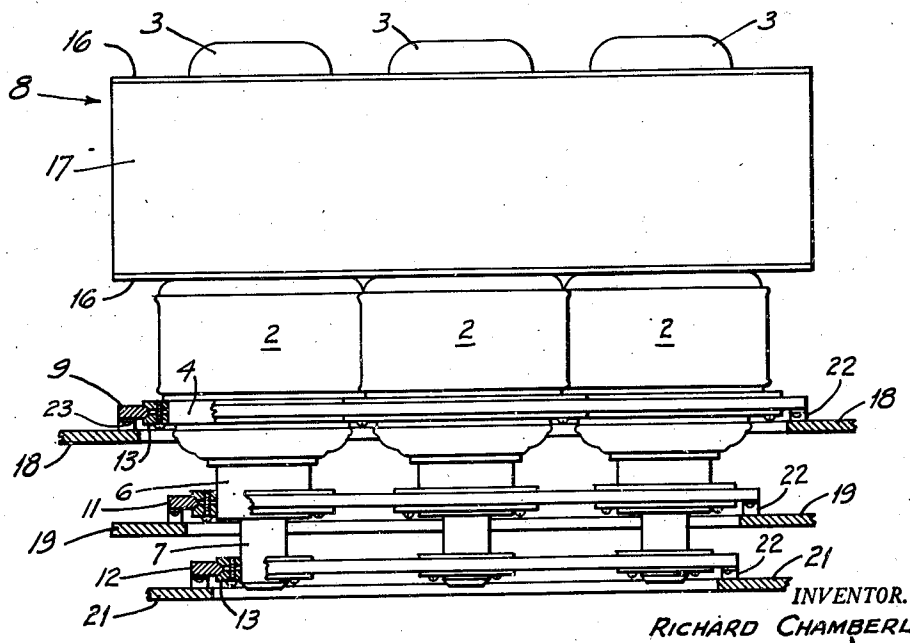


Fig. 1

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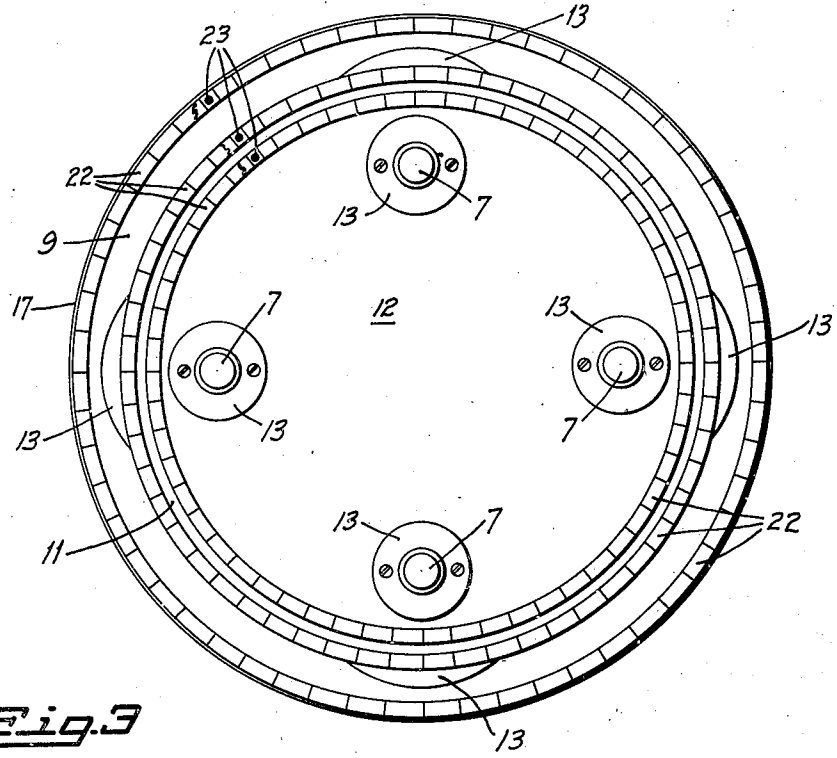


Fig.3



Fig.4

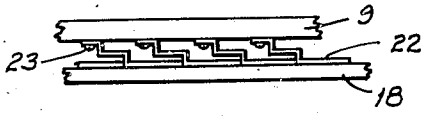


Fig.5

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UNITED STATES PATENT OFFICE

2,482,839

RESILIENT CONTACT STRUCTURE FOR ELECTRON TUBES

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Application May 4, 1948, Serial No. 24,939

3 Claims. (Cl. 250—27.5)

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My invention relates to an electron tube structure having a terminal member, and more particularly to an improved contact arrangement for such member.

It is among the objects of my invention to provide a construction which affords a better and more dependable electrical connection between the electron tube terminal member and an external circuit member.

Another object is to provide a resilient contact arrangement which takes advantage of the weight of the tube structure for maintaining a thrust connection with an underlying circuit member.

Still another object is to accomplish the desired objectives without interfering with ready removal of the tube structure from its operating position.

A further object is to provide a contact arrangement of the character described adapted for multi-unit tube structures such as disclosed in the copending application Serial No. 753,494 of William W. Eitel and Jack A. McCullough which matured as Patent No. 2,468,433 on April 26, 1949.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawing:

Figure 1 is an elevational view, partly in section, showing a multi-unit tube embodying the improvements of my invention.

Figure 2 is a top view of the tube; and

Figure 3 is a bottom view of the same.

Figure 4 is a detail side view illustrating the contact fingers; and

Figure 5 is a similar view showing the fingers engaged with a circuit member.

In terms of broad inclusion my electron tube structure comprises a terminal member engageable with an underlying circuit member, and a resilient contact on the underside of the terminal member arranged to bear against the circuit member under the weight of the tube structure. In my preferred tube structure embodying a circular terminal member, a series of contacts are provided about the peripheral portions of the terminal member, which contacts are preferably arcuately-shaped overlapping fingers of spring metal.

In greater detail, and referring to the drawing, a multi-unit tube embodying my improvements comprises four triode tube units 2 each having an

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individual envelope with upper portions forming an external anode 3 and lower portions carrying electrode contactor parts such as the grid contactor ring 4 and cathode contactor prongs 6 and 7. These tube units are rigidly connected together as a single structural body by a cooler structure 8 embracing the anodes 3 and by transverse disk-like terminal members 9, 11 and 12 which are secured to the grid ring 4 and cathode prongs 6 and 7 by clamping devices 13. The cooler structure 8 is made up of sets of radial fins 14 on the anodes, all connected together by a circular housing having end plates 16 and a cylindrical side wall 17.

The grid terminal member 9 thus forms a common terminal for the grids of the several tube units, and the cathode terminal members 11 and 12 form common terminals for the cathodes or filaments of the tube units. The outer peripheral portions of these terminal members provide projecting edges for engaging underlying circuit parts such as the grid circuit member 18, and cathode circuit members 19 and 21. These circuit members may conveniently be apertured metal plates or rings having inner edges underlying the projecting edges of the terminal members 9, 11 and 12. The problem then is to provide good electrical connection between the terminal members of the tube structure and the corresponding circuit members, while at the same time permitting ready removal of the tube structure from its operating position.

This is accomplished by a resilient contact arrangement on the underside of the terminal members adapted to be pressed against the circuit members by the weight of the tube structure. In the preferred contact arrangement a series of interengaging resilient contacts is provided, comprising overlapping contact strips or fingers 22 of spring metal fastened to the terminal members by screws 23. These fingers are arcuately shaped to match the curvature of the terminal member, and are each fastened at one end only so that they normally tend to spring out as shown in Figure 4. Offsets in the fingers 22 provide seats for the overlapping portions so that they present flat ring-like engaging surface to the circuit member 18 when in the operating position as seen in Figure 5. The weight of the tube structure is thus utilized to thrust the contact fingers against the circuit member, and the resilient pressure of the multiplicity of fingers insures good electrical contact in spite of irregularities existing along the surfaces of the circuit members. Likewise, good contact is insured with each of the superposed

circuit members 18, 19 and 21 even though variations may exist in the spacings between the circuit members. Furthermore, the desired results are achieved without interfering with ready removal of the tube as a whole from its operating position, since the contact arrangement operates with the aid of gravity force and leaves the tube structure free to be lifted from its operating position when removal or replacement is desired.

I claim:

1. An electron tube structure comprising a terminal member engageable with an underlying circuit member, and interengaging resilient contacts on the underside of the terminal member adapted to bear against said circuit member under the weight of the tube structure.

2. An electron tube structure comprising a terminal member engageable with an underlying circuit member, and overlapping contact fingers of spring metal on the underside of the terminal

member adapted to bear against said circuit member under the weight of the tube structure.

3. An electron tube structure comprising a circular terminal member engageable with an underlying circuit member, and a series of overlapping arcuate fingers of spring metal on the underside of the peripheral portions of the terminal member adapted to bear against said circuit member under the weight of the tube structure.

RICHARD CHAMBERLIN.

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