Nov. 20, 1951 E. POHLE 2,575,835

CATHODE-RAY TUBE CENTERING DEVICE

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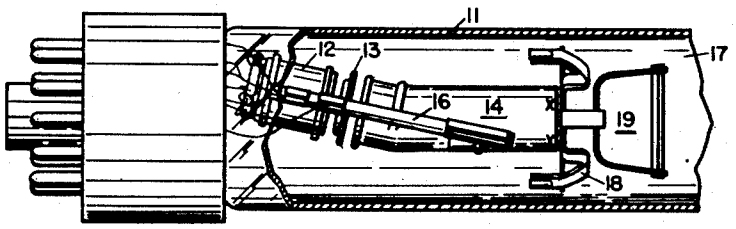

Fig. 1

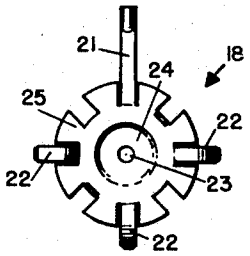

Fig. 2

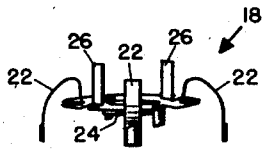

Fig. 3

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CATHODE-RAY TUBE CENTERING DEVICE

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4 Claims. (Cl. 313—86)

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This invention relates to cathode ray tubes and more particularly to the centering devices for the electron gun portions of cathode ray tubes.

In the manufacture of cathode ray tubes it is desirable to combine separate parts of the electron gun into a single piece if this can be done without complicating the structure unduly. It has been the practice heretofore to assemble the limiting aperture and centering devices and getter mount, from two or three separate pieces of metal using spot welding to hold them together.

It is one object of this invention to provide an improved centering device.

Other objects are to provide a centering device which is more easily joined to the electron gun than has been possible heretofore, to provide a combination limiting aperture and centering device for cathode ray tubes, to provide an easily manufactured, inexpensive centering device and limiting aperture for cathode ray tubes, to provide a centering device and getter mount for cathode ray tubes.

Other objects will be apparent to those skilled in the art after studying the following specification and drawings in which:

Figure 1 is a cutaway view of a portion of a cathode ray tube making use of the invention; and

Figures 2 and 3 are plan and side views respectively of the centering device limiting aperture in the electron gun shown in Figure 1.

In Figure 1 a cathode ray tube 11 contains an electron gun comprising a grid 12, a second grid 13, and an anode 14, all mounted on insulating rods, one of which is indicated by a reference character 16. The inside wall of the tube 11 is coated with a conducting material 17 which may be, for instance, dixonac. The centering device 18, generally known as a spider, is spot welded to the forward end of the anode 14 and a getter loop 19 is secured to a projection extending from the spider 18.

Figures 2 and 3 respectively, show front and side views of the spider 18. In Figure 2 the spring tension leg 21 of the spider 18 is shown extended as are all the legs when the spider is first cut and before bending. The leg 21 is, of course, bent in the same way as legs 22, in the finished product.

In Figure 3 the legs 22 are shown with the necessary bends to produce a lateral force on the side walls of the cathode ray tube 11. The legs 22, besides being bent first up, then out and down, are also creased lengthwise at the portions near their extremities. These creases cause the extremities of the legs 22 to fit more closely the near wall of the tube 11 and prevent the legs from scraping the dixonac coating 17 off of the wall of tube 11.

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A cup shaped depression 24 is formed at the center of the spider 18. This depression 24 conforms in size with and fits inside the open front end of the cylindrical anode 14 and preferably is welded thereto as shown in Figure 1. An aperture 23 is located centrally of the depression 24. This aperture 23, shown in Figure 2, serves as the limiting aperture for the electron beam as understood by those skilled in the art.

A large skirt portion 25 of the centering device 18 surrounding the depression 24 and extending laterally from the anode 14 is desirable in order to prevent any stray emission or stray light emanating from the region of the grid or the filament from reaching the screen of the cathode ray tube. This light reaching the screen of the cathode ray tube would decrease the contrast ratio of the pictures on said screen.

One or more fingers 26 may be stamped out of and extend forwardly of the skirt portion 25 of the spider 18. The gettering loop 19 is secured to the outer end of finger 26 in any suitable manner as for instance by welding, and is positioned to be at the side of the aperture 23 so as not to interfere with the electron beam. Alternatively, the gettering loop 19 may be attached directly to the skirt portion 25 of the spider 18.

Although I have shown and described this invention by a particular example, it will be obvious to those skilled in the art that modifications may be made without departing from the scope of the following claims.

What is claimed is:

1. A cathode ray tube electron gun centering device comprising a resilient metallic plate having projections extending radially therefrom, said radially extending projections having a C-shaped bend between the extremities thereof, said bend acting to give said projections a spring like resistance to forces applied radially inward along the plane of said plate, a cup shaped depression in the center of said plate and a central aperture in said cup shaped depression, said electron gun having at one end an electrode having a hollow cylindrical end, said cup shaped depression fitting in said hollow cylindrical end and being secured thereto.

2. A cathode ray tube electron gun centering device comprising a resilient metallic plate having projections extending radially therefrom, said radially extending projections having a C-shaped

bend between said plate and the outer extremities thereof, said bend acting to give said projections a spring like resistance to forces applied radially inward along the plane of said plate, a cup shaped depression in the center of said plate and a central aperture in said cup shaped depression, said electron gun having at one end an electrode having a hollow cylindrical end, said cup shaped depression fitting in said hollow cylindrical end and being secured thereto, and a further projection extending perpendicularly from said plate, said last named projection having a getter loop secured thereto.

3. An electron gun structure for a cathode ray tube comprising a cylindrical anode and a cup shaped member inserted in the open end thereof, said member having a central aperture, a skirt portion extending transversely beyond the sides of said anode, and a plurality of resilient fingers extending outwardly and downwardly from said skirt portion and being radially resilient to press against the sides of the cathode ray tube.

4. The apparatus of claim 3 including additional fingers extending forwardly normal to said skirt portion and having a gettering loop secured to the outer end thereof.

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