

Jan. 3, 1950

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2,493,539

TARGET FOR PICKUP TUBES

Filed June 13, 1946

FIG. 1

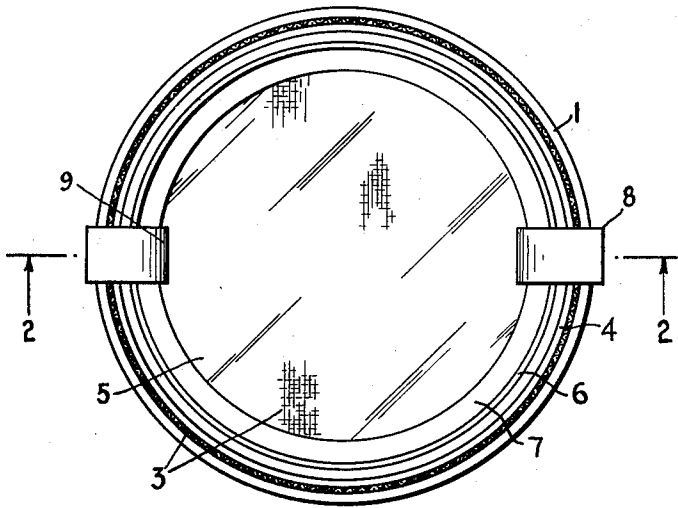
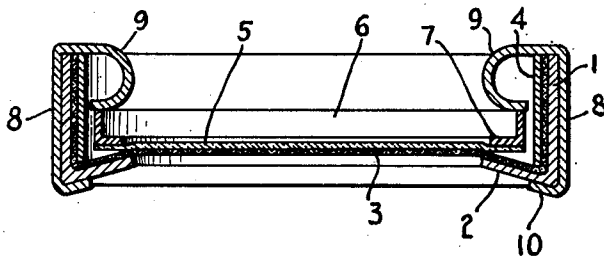


FIG. 2



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2,493,539

TARGET FOR PICKUP TUBES

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Application June 13, 1946, Serial No. 676,391

5 Claims. (Cl. 250—164)

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This invention relates to targets for cathode ray tubes.

In cathode ray tubes having low landing velocity of the beam electrons at the target, it has been found advantageous to use two-sided targets in which the charge image is formed on one side and the beam lands on the other. The target is preferably made of semi-conducting glass, so the electrons landing on the target can move through the glass to discharge the image produced by secondary emission collected by an adjacent screen. When the conductivity is such that the electrons traverse the thin glass in a frame time, there is sufficiently high resistance to prevent noticeable movement of the electrons longitudinally of the glass. Targets of this kind are disclosed in the application of Albert Rose, filed November 28, 1945, Serial No. 631,441, and reference is made thereto for further details of the target and its function.

In certain uses it is an advantage to space the collecting screen from the glass target from several mills up to distances as great as one-half inch or more, as disclosed in my application filed April 9, 1945, Serial No. 589,241, now U. S. Patent 2,460,093 issued January 25, 1949. In other uses it is desirable to place the collecting screen as close as possible to the glass while keeping the area of contact a minimum, so that the charges on the glass cannot leak to the screen.

It is an object of the invention to mount a glass film target in direct engagement with a fine mesh screen, but with minimum contact area between film and screen.

Another object of this invention is to mount the glass film on the screen by clamping it tightly thereagainst only at the periphery and stretching it taut thereacross, so that it touches the screen only at random points inside the periphery.

Other objects of the invention will appear in the following description, reference being had to the drawings, in which:

Figure 1 is a plan view of the improved target and collecting screen.

Figure 2 is a cross-section of the target of Figure 1, being taken on the line 2—2.

Referring to the drawing, the target frame comprises a circular ring or band 1 having an intumed flange 2, the inside angle between the flange and ring being a few degrees less than ninety degrees. The fine mesh screen 3 is stretched across the circular inside edge of flange 2 and is pressed thereagainst by ring 4, with the screen sandwiched between the two rings. The rings and screen are spot-welded at a number

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of points to hold them together. The manner of mounting the screen in taut position is not claimed herein and it need not be further described. Reference is made to my application filed March 31, 1945, Serial No. 585,925, for a description of the method of mounting and stretching the screen in taut position in the frame.

A thin target 5 comprising a glass film is mounted in a ring 6 having a flange 7 extending substantially at right angles to the ring. The glass target is sealed to the flange in a manner well known in the art. In joining the glass target and ring together, the glass is not stretched taut across the screen at this stage of the method.

After the glass target is mounted, the target and ring are placed inside the inner screen ring 4, so that the glass rests on the screen at the inner edge of the flange 2. To hold the glass and its frame in position inside the screen mounting, spring clips 8, two being shown, are snapped over the assembled parts. Each of these clips has an extension 9 which passes over the top of rings 1 and 4 and engages the ring 6. The ends 10 of the spring clips are then snapped over the flange 2 and the spring pressure exerted by the extensions 9 presses the ring 6 downwards in Figure 2 and causes the inner edge of flange 2 to press the screen into the glass. After these steps have been taken in the assembling method, the glass remains somewhat loose and crinkled. The assembly is then baked to about 400° C. and surface tension and density of the glass causes it to flow until the glass film is stretched taut substantially in the plane of the inner edge of flange 2 with random contact between the screen and glass film inside the periphery of firm contact.

Since cathode ray tubes are baked in the exhaust process to about 400° C., the separate baking of the target may be dispensed with and the glass may be stretched taut by the final baking of the tube in the exhaust process.

I claim:

1. A target for cathode ray tubes comprising, a ring having a flange inclined away from its periphery, a planar fine mesh screen, a planar glass film resting on said screen and means clamping said film and screen against the edge of said flange.

2. A target for cathode ray tubes comprising, a ring having a flange inclined away from its periphery, a planar fine mesh screen resting on the inner edge of the flange, a planar glass film resting on said screen and means pressing said film and screen against said edge.

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3. A target for cathode ray tubes comprising, a ring having a flange inclined away from its outer periphery, a fine mesh screen resting on the inner edge of the flange, a glass film resting on said screen and means bending said film and screen over the edge of said flange and against the side thereof.

4. A target for cathode ray tubes comprising, a circular band having one end portion bent inwardly more than ninety degrees, a fine mesh screen, a second band pressing the peripheral portion of said screen against the inside surface of the first band and against the edge of said inwardly bent end portion, a third band having a glass film extending across one end and means pressing said third band within the second band to form intimate contact between the glass film and the screen over said peripheral edge.

5. A target for cathode ray tubes comprising, a circular frame having a flange bent inwardly

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at an angle greater than ninety degrees, a fine mesh screen resting on said flange, a ring inside said frame pressing the screen against the flange, a band inside said ring, a glass film secured to said band and means pressing said band toward said flange and forcing said glass film and screen into close contact opposite the edge of the flange.

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REFERENCES CITED

The following references are of record in the file of this patent:

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2,347,556	Griffith	Apr. 25, 1944
2,401,044	Brandt	May 28, 1946