

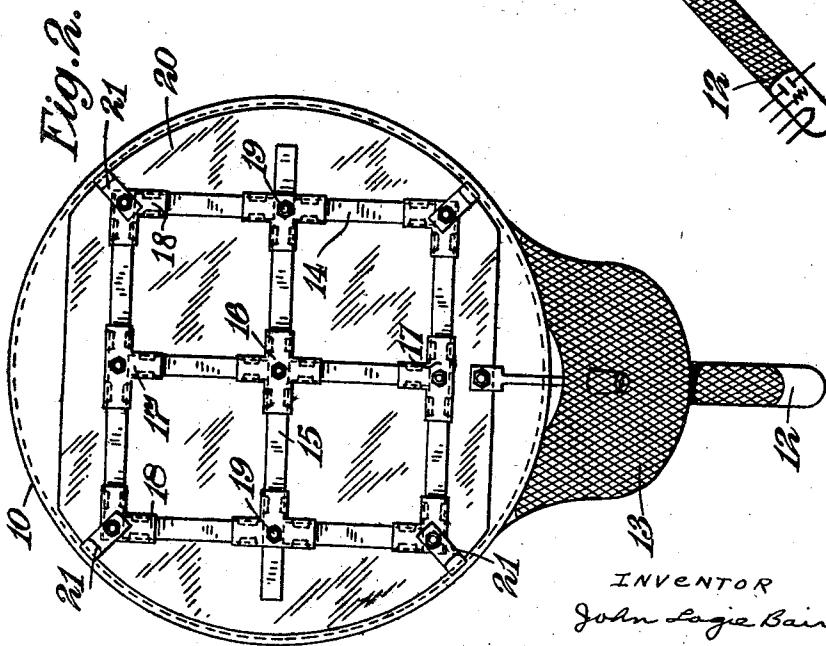
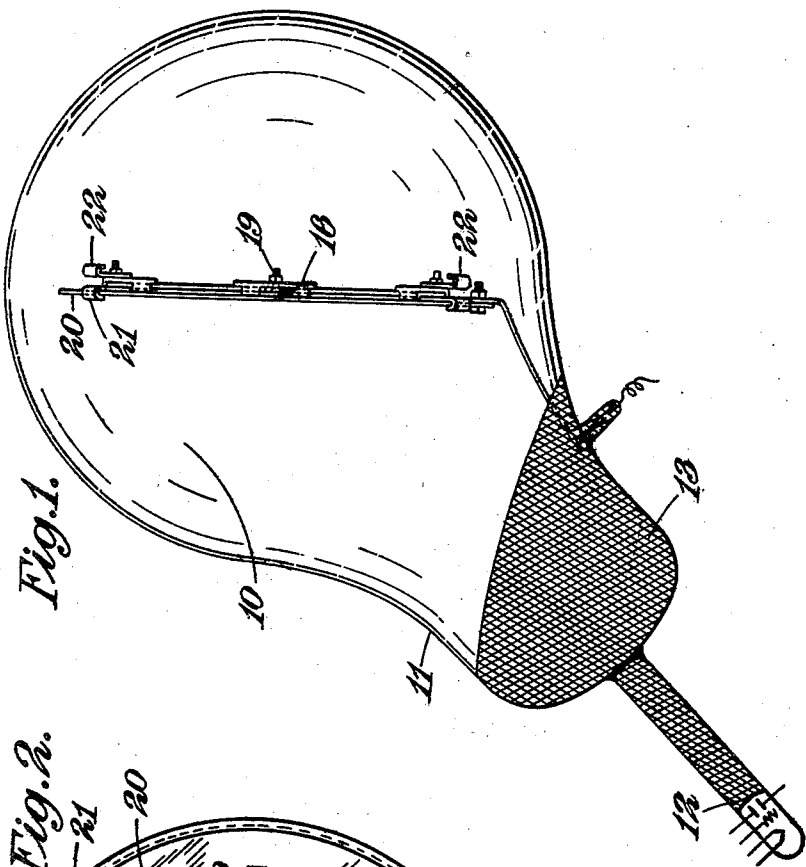
Aug. 19, 1947.

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2,425,980

SCREEN FOR TELEVISION

Filed July 2, 1945



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UNITED STATES PATENT OFFICE

2,425,980

SCREEN FOR TELEVISION

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Application July 2, 1945, Serial No. 602,919
In Great Britain April 28, 1944

Section 1, Public Law 690, August 8, 1946.
Patent expires April 28, 1964

5 Claims. (Cl. 250-164)

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This invention relates to screens for television of the kind that are illuminated by direct bombardment from a cathode ray gun. It is normal practice to form such a screen by suitably coating the flattened end of the cathode ray tube, but the size of such a screen is limited by the possible size of the tube.

If it is desired to provide a large screen, say for example, of the order of two feet square or more, the flattened end of the tube must be made very thick to avoid breakage under atmospheric pressure when the tube is exhausted, and since the image is viewed through the glass, distortion of the image results. For still larger sizes it becomes quite impracticable to provide a flat glass surface which will withstand the atmospheric pressure.

If a spherical bulb is used in the cathode ray tube, and the screen is formed by coating part of the spherical surface, distortion of the image again results. The object of this invention is to provide a construction whereby a large screen of the type above described can be satisfactorily made.

According to this invention, a cathode ray tube for television is provided with a screen consisting of a built-up structure rigidly secured within a transparent containing vessel, the component parts of the screen being so constructed as to pass through a relatively small opening in the containing vessel.

According to another feature of this invention, a spherical vessel is used and the screen is introduced in a folded or rolled condition through a small opening in the vessel and then expanded and flattened by fixing it to a rigid structure which also is introduced in a contracted form or in sections and built up within the vessel. Alternatively, the screen may be introduced in sections, each small enough to pass through the small opening aforesaid.

According to another feature of the invention, the screen-supporting structure is maintained in position by springs pressing against the sides of the containing vessel.

In the accompanying drawings which illustrate the invention diagrammatically,

Figure 1 is a side elevation of the cathode ray tube, and

Figure 2 is an elevation looking from the right in Figure 1.

Referring to these figures, the vessel 10 which is to contain the screen is of substantially spherical form and may be a glass bulb of the type commercially in use in mercury arc rectifiers. These

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bulbs are available in a size to receive within them a screen which measures approximately 2' by 2'. The spherical portion of the vessel is formed with an extension 11 where to the cathode ray gun indicated generally by the reference 12 is secured, together with the conducting coating 13.

A screen-supporting structure is built up of bars or rods 14, 15 and clips constituting angle pieces as shown at 16, 17, 18. All these parts are individually sufficiently small to be passed through a small opening in the vessel 10, 11, and they are assembled after insertion so as to form a rigid rectangular structure; the bars 14, 15 are secured by lips on the various clips, and bolts 19 may also be used to secure the various parts rigidly together.

Thus for example the clips 16, 17, 18 may be of plate-like form provided with upstanding tongues which can be bent over to engage a rod. Thus after one rod has been inserted, the two right-angled clips to be used with it are inserted and manipulated by suitable calipers or gripping devices inserted through the opening in the bulb so as to secure these two clips on the ends of the rod. Another rod is then inserted and one end of it secured in a clip already secured to the first rod, and a third clip is secured on the free end of the second rod. The other two rods forming the square outline of the frame are similarly inserted and secured in place. Each of these four rods then has secured on it a T-shaped clip 17 at about the middle of its length, and the two rods forming the cross in the middle of the square are engaged with these T-shaped clips and finally the central clip indicated at 16 in Figure 2 is added to lock the two last-mentioned rods together.

As mentioned above the bolts 19 may be used to secure the parts together additionally, suitable holes having been drilled in the rods to accommodate them. In the case of the four bolts 19 on the corners of the square outlining the structure the clips 21 to engage the screen are secured on them prior to being screwed up, and if the extensions 22 are separate, they also are secured by these same bolts.

The screen 20 which is of a foldable or pliable nature such that it can be introduced through the same small opening is flattened out after being introduced and secured to the structure aforesaid, conveniently by means of clips 21, which clips are also carried by the structure. These clips are preferably resilient to grip the screen, and they may be formed with additional resilient

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portions 22 which abut the inner surface of the vessel 10 so as to locate the whole structure and screen within it. Alternatively the members 22 may be secured to the structure by bolts, and extend radially so as to engage the inner surface of the vessel 10 by a turned-over resilient end. After the screen has been mounted in the vessel the latter is sealed off and exhausted in the usual manner.

It has been found that the picture produced on a comparatively large flat screen mounted in a spherical vessel in the manner above described is not dimmed or distorted to any objectionable extent when viewed through the spherically curved glass of the vessel.

I claim:

1. In a cathode-ray tube the combination of a bulb of substantially spherical form to withstand the external pressure due to its evacuation, and provided with a small opening through which it can be evacuated, a fabricated flat frame occupying a substantially diametral plane of said bulb comprising a plurality of parts inserted through said opening in the bulb and assembled together therein, a flexible fluorescent screen secured on said flat frame, and a closure applied to said opening in the bulb after it has been evacuated.

2. In a cathode-ray tube, the combination of a bulb of substantially spherical form to withstand the external pressure due to its evacuation and provided with a small opening through which it

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can be evacuated, metal rods inserted through said small opening, clips also inserted through said small opening and shaped to engage a plurality of said rods and securing them together as a flat fabricated frame occupying a substantially diametral plane of the bulb, and a flexible fluorescent screen also inserted through the small opening secured on said flat frame.

3. A cathode-ray tube according to claim 2 comprising clips each engaging the said flat frame and securing the screen to it, and resilient extensions on said clips engaging the wall of the bulb.

4. A cathode-ray tube according to claim 2 wherein at least some of the rods approximate in length to the diameter of the bulb.

5. A cathode-ray tube according to claim 2 comprising clips respectively of right-angle form, T-form and cross-form, each engaging a plurality of rods.

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