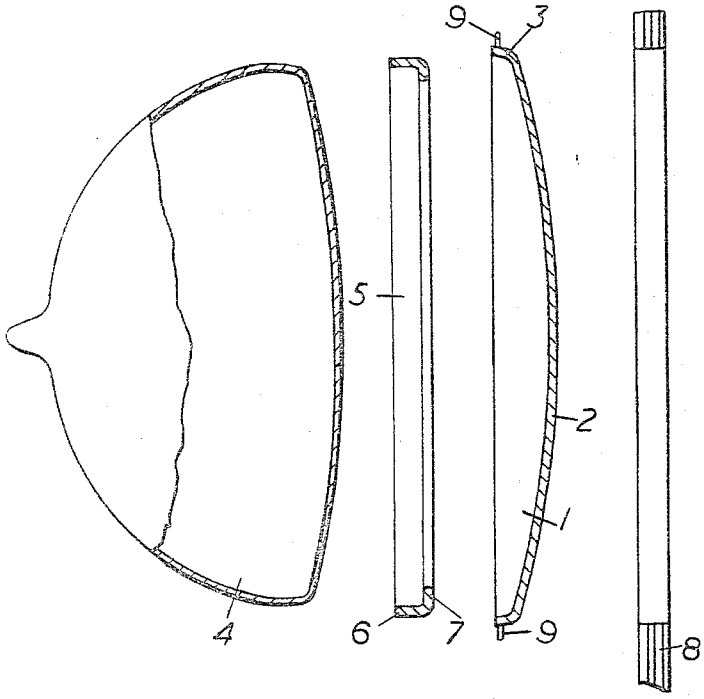
March 28, 1967 W. R. BULCRAIG ET AL 3,311,700

TELEVISION TUBE ASSEMBLIES, METHODS OF FORMING SUCH ASSEMBLIES AND IMPLOSION GUARDS THEREFOR

Filed June 6, 1963 3 Sheets-Sheet 1

FIG. 1.



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FIG. 2.

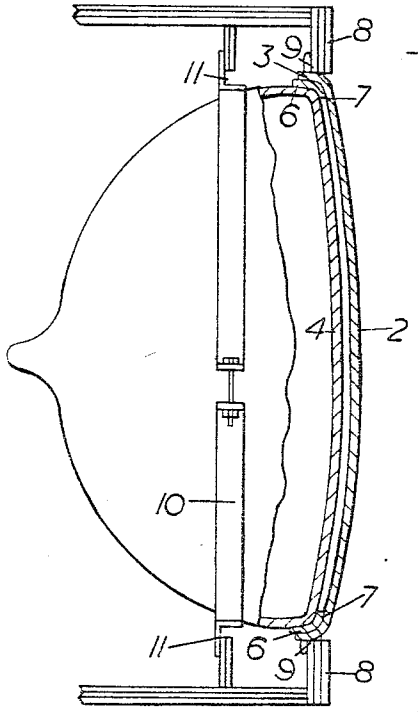
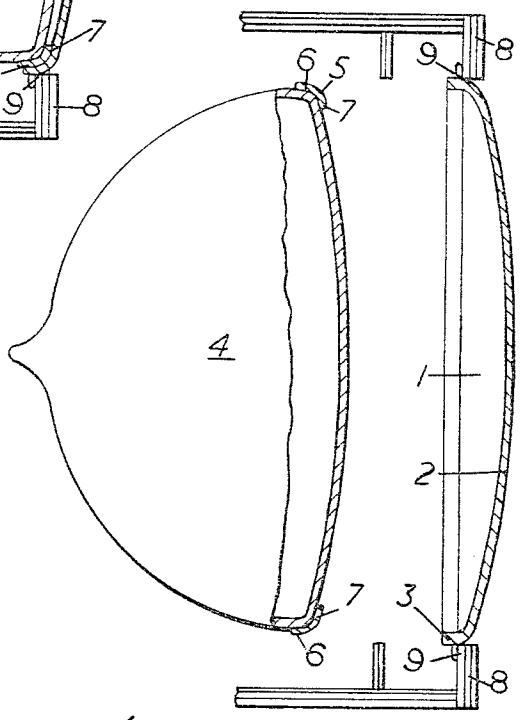


FIG. 5.



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FIG. 3.

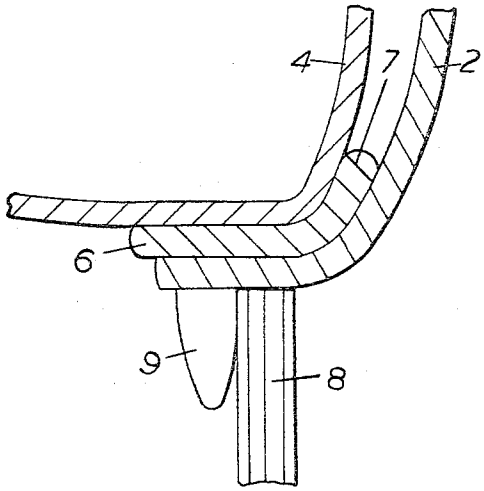
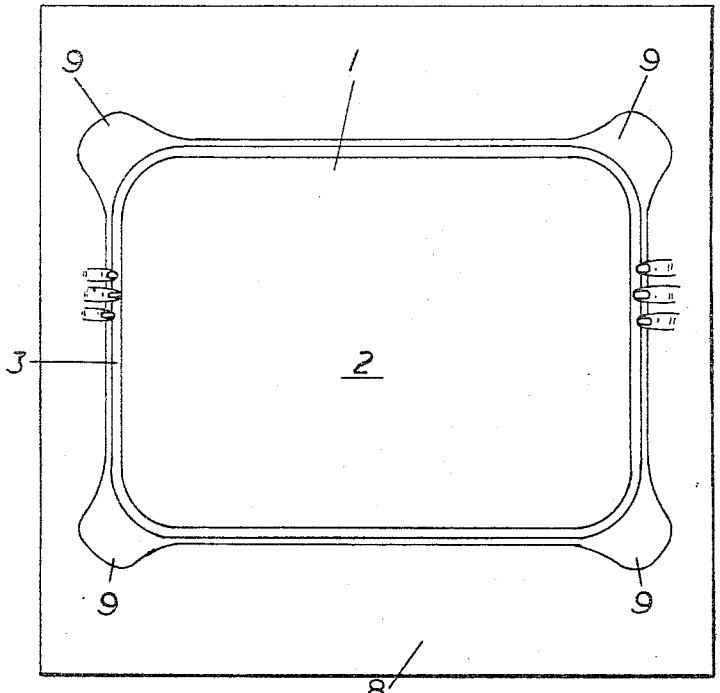


FIG. 4.



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TELEVISION TUBE ASSEMBLIES, METHODS OF FORMING SUCH ASSEMBLIES AND IMPLOSION GUARDS THEREFOR

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1 Claim. (Cl. 178—7.82)

This invention relates to television tube assemblies.

As a protection to a viewer of a television set, there is normally provided in the front of the set cabinet and between the cathode ray tube, which is the television tube, and the viewer, a transparent screen which prevents flying fragments, which will occur when the tube implodes, from leaving the set in the direction of any viewer. Such a transparent screen is known as an implosion guard, and is conveniently a glass screen or guard.

By shaping the implosion guard to the shape of the tube, the depth of the cabinet may be decreased, and various methods have hitherto been employed for locating a shaped implosion guard in position in the television set. One method has been to clamp a glass screen in spaced relation from the face or screen of the television tube, and this clamping has been effected by using a metal harness. However, a special harness of this kind has required expensive escutcheon pressings, and also provides an exposed metal surface which is liable to obtain a high potential, and consequently special earthing arrangements have to be added or special covering arrangements used in order to protect the operator.

Another method which has been used is to separate the implosion guard from the surface of the cathode ray tube by forming in the gap between the guard and the tube a sandwich layer of polymerised resin material. The polymerised resin thus holds the guard in a desired relationship to the tube, but the assembly of a guard and a tube using a resin is an expensive and messy operation.

It is a main object of the present invention to provide a television tube assembly and a method of assembling a tube and an implosion guard in a desired relationship, which substantially avoids the main disadvantages of the methods and arrangements used hitherto.

According to the present invention, there is provided a television tube assembly comprising a television tube, and an implosion guard of toughened transparent glass consisting of a tray formation, including a double curvature base matching the end formation of the tube, and a continuous boundary wall adapted to surround the end of the tube and provide an annular space between the wall and the corresponding wall at the end of the tube, said space being furnished with a gasket formed to provide lateral and axial cushioning of the end of the tube on the tray.

Preferably the gasket comprises a band portion fitted over the peripheral wall of the end of the tube and an integral beading lying between the margin of the front face of the tube and the base of the tray.

The present invention also comprehends an implosion guard of toughened transparent glass for use in a television tube assembly according to the invention, the implosion guard comprising a tray formation including a double curvature base matching the end formation of the tube and a continuous boundary wall adapted to surround the end of the tube.

The implosion guard includes locating means on the continuous boundary wall thereof and preferably the locating means is comprised by a lug at each of the four

corners of the continuous boundary wall, each lug being adapted to engage the interior of a cabinet to locate the implosion guard therein, the guard protruding through the cabinet by a distance determined by the position of the lugs on the said continuous boundary wall.

Experiments have shown that a television tube assembly according to the invention and having an implosion guard with the characteristics indicated may be assembled by a method which is very simple and straightforward and comparatively quick to operate.

According to this aspect of the invention, therefore, there is provided a method of assembling a television tube in a television set, comprising fitting into the set cabinet an implosion guard of toughened glass which protrudes through the cabinet by a distance determined by locating means on the guard bearing against the inside of the cabinet, and nesting the face of the tube in the back of the guard through a spacer gasket surrounding the sides of the face of the television tube.

The invention will be more clearly understood from the following detailed description of one embodiment thereof, which is made by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is an exploded view in part section showing the integers of a television tube assembly and part of the front of a cabinet in which the assembly will be located,

FIGURE 2 also shows in part section the television tube assembly of FIGURE 1 in position in a television set cabinet,

FIGURE 3 is an enlarged sectional view of a portion of the television tube assembly of FIGURE 2, showing the configuration of the gasket portion, and

FIGURES 4 and 5 show the method of assembling the television tube assembly according to FIGURE 2.

In the drawings like reference numerals designate the same or similar parts.

Referring to the drawings, there is indicated generally at 1 an implosion guard of toughened transparent glass which comprises a portion 2 of a tray formation and a continuous boundary wall 3. The tray formation 2 is a double curvature base, that is to say a base having axes of curvature in two dimensions at right angles and the double curvature of the base matches the end formation of the television tube 4. Consequently the double curvature of the base corresponds to the double curvature of the screen of the television tube 4.

The continuous boundary wall 3 has a radius from the centre of the implosion guard 1 in excess of the outer radius of the television tube 4 so that the continuous boundary wall of the implosion guard is adapted to surround the end of the tube.

The implosion guard 1 is made of toughened glass, and the degree of toughening of the implosion guard is such as to enable the guard to withstand the forces to which the guard is subjected when implosion of a television tube occurs. These forces are the pressure wave directed from the outside of the television set towards the interior of the television tube and impacts which will occur on the side of the implosion guard next to the television tube from flying fragments of the television tube.

Consequently the degree of toughening of the implosion guard must be such as to give strength against a force bending the implosion guard against the curvature of the tray formation 2 and also to give strenth against flying fragments striking the concave surface of the tray formation 2 when a television tube implodes.

The gasket 5 is provided to maintain the implosion guard 1 in a desired relationship to a television tube 4 when the members are assembled to form the television tube assembly. The gasket 5 may be of rubber or of

foamed synthetic resin material, for example foamed polystyrene, and the gasket comprises a band portion 6 of such size as to fit over the peripheral wall of the end of the television tube 4 and within the continuous boundary wall 3 of the implosion guard 1. The gasket 5 further comprises a beading 7 integral with the band portion and which, in the assembled position, lies between the margin of the front face of the tube 4 and the base of the tray formation 2 of the implosion guard 1. The configuration of the gasket 5 can be seen in greater detail from FIGURE 3.

There is also shown in FIGURE 1 a portion 8 of the front of the cabinet in which the television tube assembly is mounted.

FIGURE 2 shows the television tube assembly comprising the implosion guard 1, the television tube 4 and the gasket 5 in position in the cabinet with the implosion guard protruding through the cabinet 8. The gasket 5 provides lateral and axial cushioning of the end of the tube 4 on the tray portion 2 of the guard 1 and also acts to prevent dust penetrating into the space between the implosion guard and the tube 4. The distance by which the implosion guard 1 protrudes through the cabinet 8 is determined by the position of lugs 9 on the implosion guard 1, there being a lug 9 at each of the four corners of the continuous boundary wall of the implosion guard 1.

The television tube assembly is maintained in position in the cabinet by a support band 10 which extends around the television tube 4 and also engages locating members 11 mounted on the inside of the set cabinet.

The method by which a television tube assembly is assembled in a set cabinet will now be described, with particular reference to FIGURES 4 and 5.

FIGURE 4 is a view of the portion of the interior of the set cabinet 8, showing the implosion guard 1 being located in position. This is done simply by the operator pushing the implosion guard through the opening in the front wall of the cabinet 8 until the lugs 9 bear against the inside of the front cabinet 8.

The television tube 4 has the gasket 5 positioned thereon so that the band portion 6 of the gasket is fitted over the peripheral wall of the end of the television tube 4 and the integral beading 7 lying on the margin of the front face of the tube 4 as indicated in FIGURE 5. The television tube 4 with the gasket 5 fitted thereto is then introduced into the cabinet in the assembled position indicated in FIGURE 2 of the drawings with the gasket 5 surrounding the sides of the face of the tube 4, until the face of the tube is nested in the back of the guard through the gasket 5, and the support band 10 shown in FIGURE 2 is then secured to maintain the television tube assembly in position.

The method of assembling a television tube in a cabinet according to the present invention is much more economical in time as well as in the materials used. The necessity for special earthing arrangements is avoided and at the same time, the appearance of the projection of the front of the television tube 4 through the front of the cabinet 8 is provided and a fashionable appearance of the television set is obtained.

Furthermore, the arrangement according to the invention is such that the beading 7 of the gasket 5 provides a mask which covers the objectionable distortion which occurs at the edges of the raster of the television tube 4, such that in the normal operation of the set, the picture presented to the viewer may be free of distortion other than that arising from interference.

In addition, the television tube assembly is lighter than previous assemblies, in view of the smaller number of components involved, and the natural tendency of a television set to be top heavy is reduced by the use of an assembly according to the invention. In addition, the implosion characteristic of the implosion guard according to the invention is of a very satisfactory nature on account of the double curvature of the tray formation of the guard 1, which gives added mechanical strength against the pressure wave naturally set up on implosion of the tube.

We claim:

A television tube assembly comprising a television tube, an implosion guard of toughened transparent glass consisting of a tray formation including a double curvature base matching the end formation of the said tube and a continuous integral boundary wall adapted to surround the end of the tube and having lugs extending outwardly from each corner thereof, and a cushioning gasket comprising a band portion fitted over the peripheral wall of the tube and lying between and in contact with the tube wall and the boundary wall of the guard, the gasket further comprising an integral beading lying between and in contact with the margins of the front face of the tube and the base of the guard, the gasket being formed of a strip of resilient material having a thickness equal to the desired space between the television tube front face and the base of the said guard.

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