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3,240,979

VACUUM TUBE ENVELOPE WITH TERMINAL LOCATING MEANS

Filed June 22, 1962

2 Sheets-Sheet 1

FIG. 1.

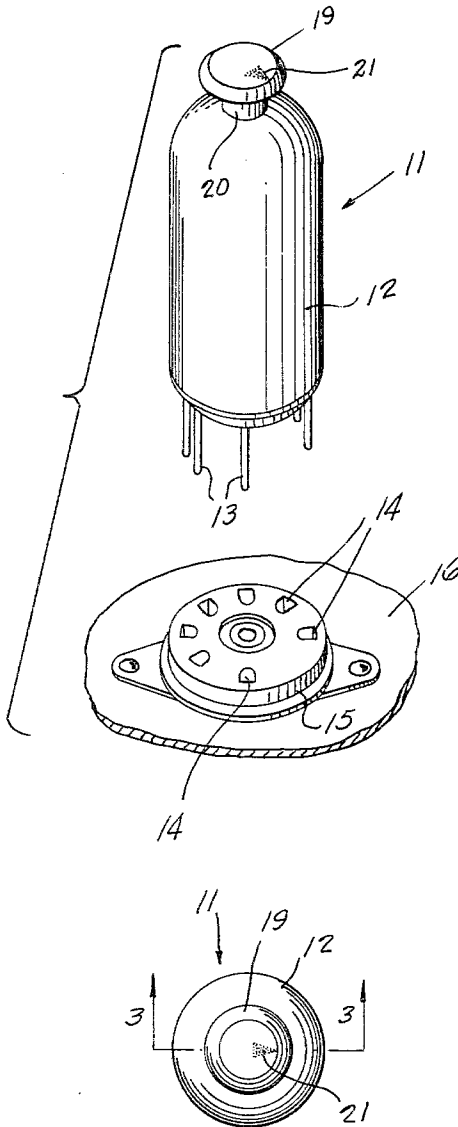


FIG. 2.

FIG. 3.

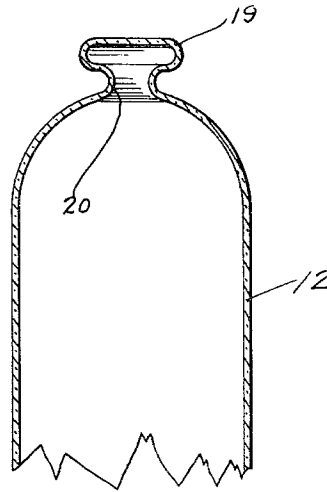
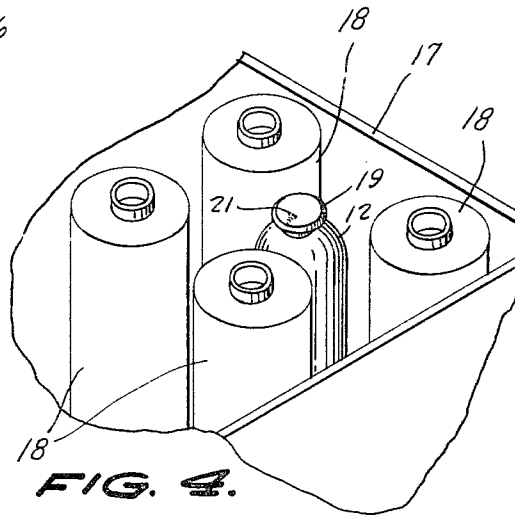


FIG. 4.

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FIG. 5.

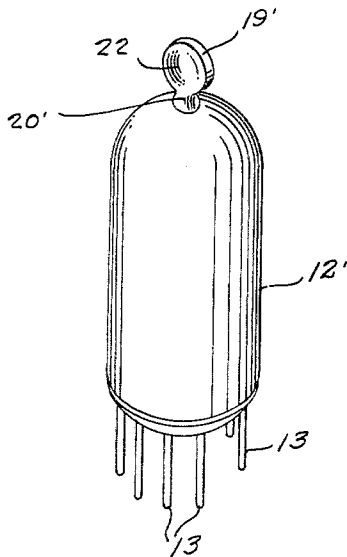


FIG. 8.

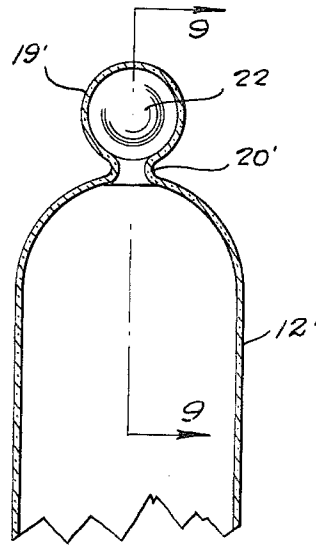


FIG. 6.

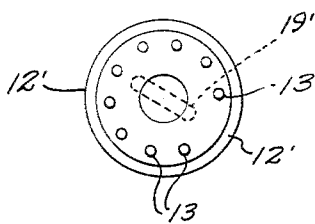


FIG. 7.

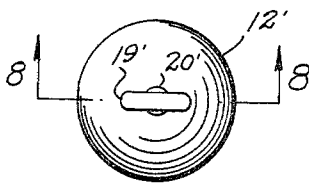
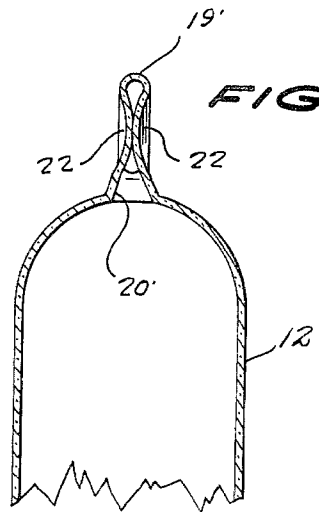


FIG. 9.



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VACUUM TUBE ENVELOPE WITH TERMINAL LOCATING MEANS

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6 Claims. (Cl. 313—317)

This invention relates to vacuum tubes, and more particularly to an improved vacuum tube envelope construction especially adapted for the relatively small vacuum tubes commonly employed in television receivers, communication receivers, and other electronic equipment wherein the vacuum tubes and other components of the equipment are frequently confined in a very limited space.

A main object of the invention is to provide a novel and improved vacuum tube envelope which is arranged to facilitate the removal or replacement of a vacuum tube from a socket located in a relatively crowded portion of the chassis of a television receiver, communication receiver, or similar electronic apparatus, the improved vacuum tube envelope being provided with means for easily grasping same and for properly orienting same so that the prongs of the tube will properly engage in the prong-receiving apertures of the associated tube socket.

A further object of the invention is to provide an improved vacuum tube envelope construction which does not basically change the mode of manufacture thereof but which merely provides a handle element on the top of the tube to facilitate the removal or replacement of the tube from a crowded portion of the chassis of a television receiver or similar electronic apparatus.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIGURE 1 is a perspective view of a vacuum tube of the miniature type provided with an improved envelope construction according to the present invention, shown arranged over a socket adapted to receive the prongs of the tube.

FIGURE 2 is a top plan view of the vacuum tube illustrated in FIGURE 1.

FIGURE 3 is a fragmentary enlarged vertical cross sectional view taken substantially on the line 3—3 of FIGURE 2.

FIGURE 4 is a fragmentary perspective view of a typical crowded communication receiver chassis illustrating the manner in which a vacuum tube is surrounded by other components, ordinarily making it very difficult to reach the tubes for removal thereof, and to replace the tube, the chassis portion being shown with a tube constructed according to the present invention which is provided with a grasping head on its top portion and which carries an index marker on said head for facilitating the proper orientation of the tube when it is being replaced in its socket.

FIGURE 5 is a perspective view of another form of improved vacuum tube constructed in accordance with the present invention.

FIGURE 6 is a bottom plan view of the vacuum tube of FIGURE 5.

FIGURE 7 is a top plan view of the vacuum tube of FIGURE 5.

FIGURE 8 is an enlarged fragmentary vertical cross sectional view taken substantially on the line 8—8 of FIGURE 7.

FIGURE 9 is a vertical cross sectional view taken substantially on the line 9—9 of FIGURE 8.

Referring to the drawings, and more particularly to FIGURES 1 to 4, 11 designates a typical vacuum tube constructed according to the present invention. The vacuum tube 11 comprises a main glass envelope 12 contain-

ing the components of the tube, said components being electrically connected to depending prongs 13 adapted to be engaged in the prong-receiving apertures 14 of a conventional tube socket 15 mounted on a chassis 16. The chassis 16 may be part of a typical communication receiver 17, illustrated in fragmentary form in FIGURE 4, wherein the tube socket is closely surrounded by various other receiver components, such as the upstanding cylindrical coil shields 18 shown in FIGURE 4. Other components, such as filter condensers, transformers, or the like, are frequently placed so close to the tube sockets that, due to the height of such components, it is relatively difficult to reach a tube in such a tube socket, and it is frequently impossible to replace such a tube without removing the chassis, since it is impossible to properly orient the prongs of the tube in attempting to replace the tube in its socket.

In accordance with the present invention, the tube envelope 12 is integrally formed at its top end with a horizontal head or knob 19 which may be of any suitable shape, for example which may be of circular shape as shown in FIGURES 1, 2 and 4. The head or knob 19 is offset vertically a short distance above the main body of the envelope 12, being connected to said main body by a reduced neck portion 20.

The prongs 13 in a typical conventional tube are arranged in a circular pattern concentrically with the tube, being evenly spaced except for the two end prongs which are separated by a spacing which is twice that of the spacing between the successive prongs in the circular series. The end tube prong-receiving apertures 14 of the associated socket are similarly spaced, so that it is only possible to insert the tube in the socket in its proper orientation. However, since the socket is frequently impossible to see, it is difficult to properly orient an ordinary tube so that the prongs 13 thereof will be received in the corresponding socket apertures 14. In accordance with the present invention, the top knob 19 is inscribed with a radially directed index pointer or triangular mark 21 which is located on a radial line midway between the locations of the two end prongs of the circular series of prongs 13, so that it serves as an indication of the location of the center of the space between said two end prongs. When the tube is to be removed from the chassis 16, forming part of an apparatus such as the receiver 17 shown in FIGURE 4, the direction of the index pointer 21 is first noted, and a suitable mark may be made on an adjacent portion of the chassis, to enable the index mark to be similarly oriented when the tube is to be replaced. The knob 19 serves as a convenient and readily accessible means of grasping the tube envelope, so that it may be easily lifted out of its socket, and similarly may be returned to its socket or replaced by a new tube of the same construction.

Referring now to the form of the invention illustrated in FIGURES 5 to 9, the tube envelope is designated at 12', the tube being provided with the depending prongs 13, as in the previously described form of the invention. Integrally formed with the top of the envelope 12' is the upstanding vertical circular disc-shaped grasping handle 19' which is arranged in a vertical diametral plane which extends midway between the end prongs of the circular series of prongs 13, so that the circular grasping handle 19' also serves as an orientation marker, accomplishing a result similar to that achieved by the index marker 21 employed in the form of the invention shown in FIGURES 1 to 4.

As shown in FIGURE 9, the upstanding grasping handle 19' is integrally connected to the top portion of the tube envelope 12' by a neck portion 20', and the circular grasping handle 19' is formed with the outwardly concave side walls 22, 22 which substantially engage each other internally at their center portions, as shown in FIGURE

9. The provision of the concave side walls 22, 22 on the grasping handle 19' provides a firmer grip on said grasping handle and provides better control of the angular orientation of the tube envelope when inserting the tube into its socket.

Conventional vacuum tubes of the type employed in television receiver and similar electronic equipment, namely, of the type employing relatively small tube envelopes are formed at their top ends with tapered tip portions. Said tapered tip portions in no way provide a means for grasping the tubes for removing or replacing same, since said tip portions are very small in size and relatively short, being thus difficult to grasp. The present invention employs substantially the same amount of material to form the integral grasping handles, as was previously employed to form the tapered top tips, but provides a greatly improved means for manipulating and orienting the tubes.

While certain specific embodiments of an improved vacuum tube envelope construction have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a vacuum tube, a vertical glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a head member substantially in the form of an upright relatively thin disc integrally formed on the top of said envelope, and orientation guide means on said head member directed to correspond with the location of said differently spaced prongs.

2. In a vacuum tube, an elongated glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a neck portion integrally formed on and rising from the top end of said envelope, an enlarged head member substantially in the form of an upright relatively thin disc formed integrally with the top of said neck portion, and orientation guide means on said head member directed to correspond with the location of said differently spaced prongs.

3. In a vacuum tube, a vertical glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a neck portion integrally formed on and rising from the top end of said envelope, a gen-

erally circular enlarged head member formed integrally with and extending vertically upwardly from the top of said neck portion, and orientation guide means on said head member directed to correspond with the location of said differently spaced prongs.

4. In a vacuum tube, an elongated vertical glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a neck portion integrally formed on and rising from the top end of said envelope, a generally circular enlarged hollow head member formed coaxially with and integrally with and extending vertically upwardly from the top of said neck portion, and orientation guide means on said head member directed to correspond with the location of said differently spaced prongs.

5. In a vacuum tube, a vertical elongated glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a neck portion integrally formed on and rising from the top end of said envelope, and a generally circular enlarged head member formed integrally with and extending vertically upwardly from the top of said neck portion, the plane of said head member being directed to correspond with the location of said differently spaced prongs.

6. In a vacuum tube, a vertical elongated glass envelope, a plurality of depending contact prongs on the bottom of said envelope, said prongs being located on a circle coaxial with the envelope and being arranged in a circular series with certain prongs spaced differently from other prongs, requiring specific orientation when the tube is inserted in an associated socket, a neck portion integrally formed on and rising from the top end of said envelope, and a generally circular enlarged hollow vertical head member formed coaxially with and integrally with the top of said neck portion, said head member being directed in a vertical plane corresponding with the location of said differently spaced prongs and having outwardly concave opposite faces.

References Cited by the Examiner

UNITED STATES PATENTS

1,807,427	5/1931	Moblard	339—113
1,997,478	4/1935	White	313—48
2,049,099	7/1936	Axelas	313—48
2,406,422	8/1946	Wood	313—298
2,594,069	4/1952	Poehlmann	339—113
2,641,726	6/1953	Cisne	313—317
3,020,450	2/1962	Shafer	339—113

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