Oct. 31, 1933. F. HAFECOST 1,933,109

VACUUM TUBE ELECTRODE

Filed March 26, 1930

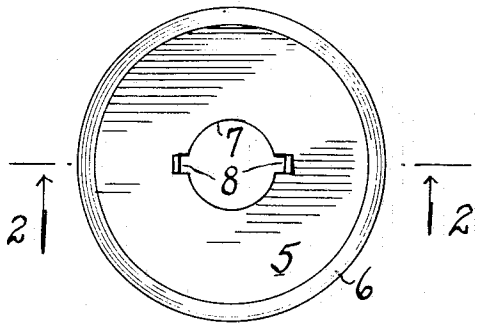


Fig. 1

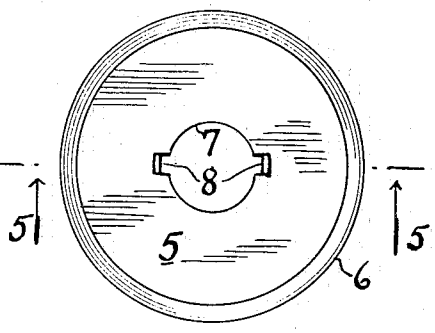


Fig. 4

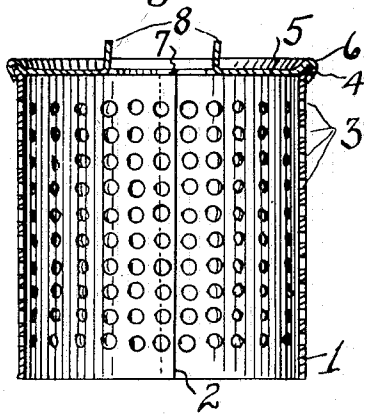


Fig. 2.

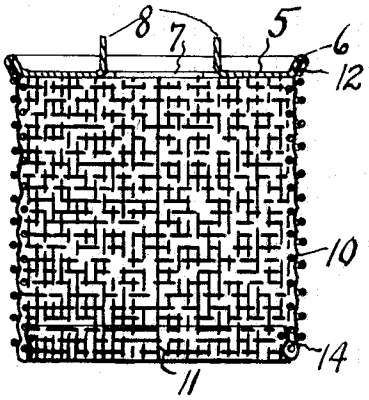


Fig. 5.

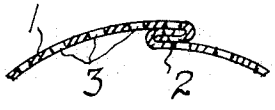


Fig. 3.



Fig 6.

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VACUUM TUBE ELECTRODE

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Application March 26, 1930. Serial No. 439,027

2 Claims. (Cl. 250—27.5)

This invention relates in general to improvements in electrodes for vacuum tubes, such as audions as used in radio apparatus.

More particularly the invention is directed to the so-called screen grid of a screen grid audion.

One of the objects of this invention is the provision of a screen grid electrode of this type which is exceedingly simple in structure, easy to manufacture, and adapted for rapid and cheap reproduction of quantities.

A further object of this invention is the construction of a screen grid which is exceedingly strong mechanically, which is neat in appearance, and adapted for uniform manufacture.

A further object of this invention is the provision of an electrode of this type which may be constructed without the necessity of welding the parts together.

These and other objects, as will appear from the following disclosure, are secured by means of this invention.

This invention resides substantially in the combination, construction, arrangement, and relative location of parts, all as will be described below.

Referring to the drawing—

Figure 1 is a top plan view of one form of electrode made in accordance with this invention;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view through the cylindrical body of the electrode at the seam;

Fig. 4 is a top plan view of a modified form of electrode;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 4; and

Fig. 6 is a section through the seam on the cylindrical body.

At the present time it is usual to make the screen grid as used in screen grid audions of a mesh or perforate material in the form of a cylinder open at both ends and to then fit in one end a metal disc to close it and finally to weld it in place. This method of construction is exceedingly crude and is not adapted to rapid and accurate manufacture of the electrodes in large quantities. In addition the electrodes as now constructed are relatively expensive and are not regular and uniform. There is considerable difficulty encountered in placing the end plate in proper position within the end of the cylindrical body and welding it in place. As a result the grids as now made are expensive, must be made by hand, and are not uniform in shape and as strong as they might be. When the cylinder is a mesh grid the wire ends are exposed at the disc.

One form of electrode as constructed in accordance with this invention is shown as comprising in Figs. 1 to 3, inclusive, a cylindrical body member 1 joined along a longitudinal line to complete the cylinder by means of a double seam 2. The cylindrical body member is perforated with holes as shown at 3. One edge of the cylinder is flared outwardly, as shown at 4. An end closure member is made of a metal disc 5 which is provided with a bead or flange complementary shaped with respect to the flange 4 on the body portion. The disc 5 is slipped into place and the beaded or flanged edge is compressed over the flanged portion 4 to form a good joint mechanically and electrically. The center of the disc is punched out as at 7 and small tabs 8 are struck up by means of which the electrode is mounted upon suitable supports within the audion.

The modified form in Figs. 4 to 6, inclusive, only differs from the form previously described in that the main cylindrical body portion 10 is made of wire mesh or screen. The lower edge of the screen is doubled back on itself, as shown at 14, to give a smooth finished edge, such as a reinforced one. The other end is flared out, as shown at 12, in a manner to fit with the bead 6 on the top 5, and need not be finished, reinforced, or selvedged, because it is protectively received and housed by the channel of the top disc.

By means of this construction the electrode may be made truly cylindrical and the end disc 5 may be accurately and firmly secured in place without welding. By means of the construction employed the electrode is exceedingly strong even when made of light metal or wire mesh.

From the foregoing it will be apparent that this invention resides in certain principles of construction, which principles may be embodied in other physical forms without departing from the principles of this invention and I do not, therefore, desire to be strictly limited to the disclosure as given in an illustrative sense but rather to the scope of the appended claims.

In the appended claims the term "perforate sheet" is intended to apply to either the perforated sheet shown in Figs. 1, 2, and 3, or the wire mesh or woven sheet shown in Figs. 4, 5, and 6. The term "cylinder" is understood to apply to an electrode, whether circular in cross section or not.

What I seek to secure by United States Letters Patent is:

1. A vacuum tube electrode comprising a per-

forate sheet metal cylinder, and a metal plate or closure member the surface of which is shaped to form a peripheral shoulder and an edge flange, the outermost portion of the edge being reversely bent upon itself to form a channel, one end of the cylinder being received and protectively housed by the aforesaid channel, and said channel being compressed to securely clinch and grip the cylinder to form a complete unitary electrode.

2. A vacuum tube electrode comprising a perforate sheet of metal rolled into the form of a cylinder, one end of said cylinder being flared outwardly, and a generally circular metal closure plate member the surface of which is shaped to form a peripherally shouldered and flanged edge, the outermost portion of the edge being reversely bent upon itself to form an outwardly flared channel, the outwardly flared end of the cylinder being received by the aforesaid channel, and said channel being compressed to insure a good mechanical and electrical joint between the cylinder and closure plate entirely around the periphery of said plate.

FREDERICK HAFECOST.