Jan. 2, 1945. A. G. ROSA 2,366,459

ELECTRODE

Filed Oct. 26, 1943

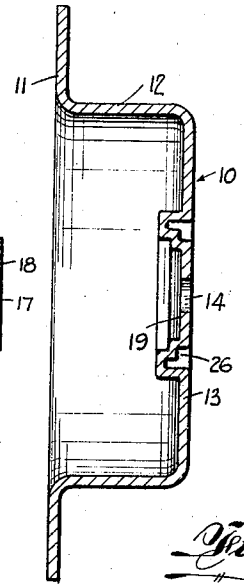


Fig. 4.

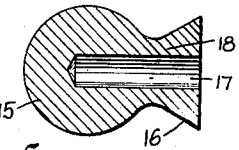


Fig. 5.

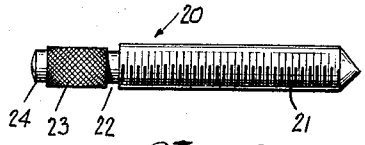


Fig. 6.

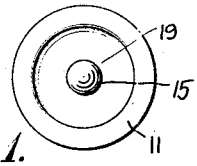


Fig. 1.

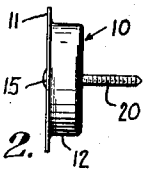


Fig. 2.

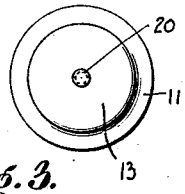


Fig. 3.

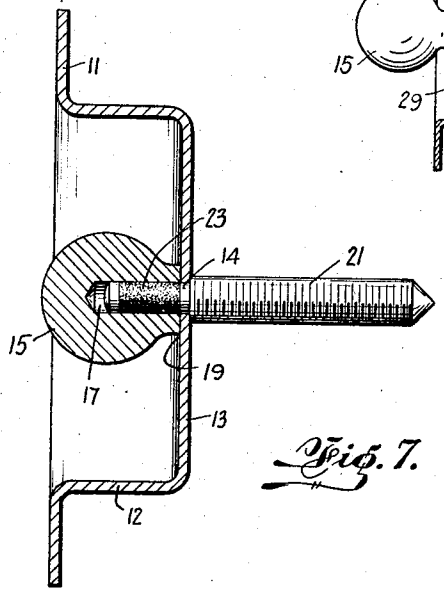


Fig. 7.

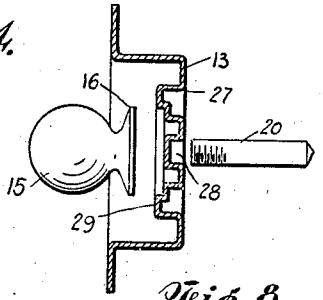


Fig. 8.

INVENTOR.
ANTHONY G. ROSA.

BY Peter W. Boesen

ATTORNEY.

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2,366,459

ELECTRODE

Anthony G. Rosa, Lyndhurst, N. J.

Application October 26, 1943, Serial No. 507,681

6 Claims. (Cl. 250—27.5)

This invention relates to new and useful improvements in the manufacture and application of electrodes or contacts, and more particularly to electrodes applied to precision instruments, such as electric ray tubes used in the radar and other radio apparatus, power tubes, or the like.

The present electrodes may thus be used in vacuum tubes for producing radio waves of extremely short wave length, such as used in connection with radar equipment; these tubes are made of metal, and the flange and cup-member illustrated herein form one end of the tube.

In one particular form of the invention, the electrode is applied to a cup shaped part, having a screw-threaded pin on the opposite side of the electrode. Heretofore, this was done by providing flanges on both the electrode and the pin, which were then welded to the bottom of the cup. This involved complicated machinery to produce an accurate assembly, as well as waste of essential material, as the flange on the pin was produced by cutting the pin from a longer diameter rod and leaving the flange.

It is an object of this invention to provide for electrode or contact units consisting of the electrode within a cup shaped member, and a threaded pin extending therefrom from the opposite side.

It is a further object of this invention to provide such electrode units with means whereby the electrode member will be held securely to the cup shaped member by the threaded pin protruding through said cup shaped member, and into the electrode proper.

It is another object of this invention to provide the threaded pin with a suitable friction surface, which on assembly will securely grip the electrode, or contact.

It is a still further object of this invention to simplify the assembly by avoiding extra flanges on the various parts, for instance in cases where the electrodes are assembled back to back without the presence of a cup-shaped member. The high pressure and smooth surface of the assembly tool may be used to provide a smooth surface on the electrode.

These and other objects will be more apparent from the following description, taken in connection with the accompanying drawing, which illustrates the preferred embodiment of the invention, in which:

Figure 1 is a front elevational view of the complete electrode unit from the electrode or front end.

Figure 2 is a side elevational view of Figure 1.

Figure 3 is a rear view of the part shown in Figure 1.

Figure 4 is an enlarged sectional view of the cup.

Figure 5 is an enlarged sectional view of the electrode.

Figure 6 is an enlarged view of the pin.

Figure 7 is an enlarged sectional view of the various parts in assembled position; while

Figure 8 is also a sectional view, in part, showing a modification of the construction in Figure 7.

In a typical embodiment of this invention which forms one end of a tube, as set forth, a cup member 10 has a flange 11, a wall portion 12, and a bottom portion 13, in which is provided centrally a hole 14, and upon the inner side a seat. The electrode 15 is preferably globular in shape, having a short-flanged extension 16, in the center of which is a bore 17. The extension 16 ends in a perfectly flat surface 18 to provide a perfect seat against the inside 19, by means of the seat 26, of the bottom 13. A pin 20 has the threaded portion 21, an annular recess 22 to fit into the hole 14, the knurled friction seat 23, and the slightly reduced portion 24, which is provided to assist in the assembly of the various parts. As illustrated in Figure 7, the knurled friction surface 23 is destroyed during the press-fit assembly, thus holding the various parts securely in their respective location or position.

In Figure 8 is shown a depressed embossment 27 in the cup-shaped bottom 13.

The purpose thereof being to accurately centralize the contact, that is, the pin 20, which fits into the depression 28, and will be kept straight, while the embossed portion 29, inside the cup-shaped member serves as a close-fitting seat for the top flanged portion 16 of the electrode 15.

The parts in Figure 8 are shown a short distance from each other, at what may be termed an exploded view, in order to clearly illustrate their relative connection, when assembled and welded together.

The advantages of my device, as shown especially in Figure 8, are obvious, as said construction serves to facilitate the concentricity in assembling all three parts, that is, the two electrodes, or contacts, and the auxiliary cup-shaped member, thus the seats provided by the embossed sections assure a perfect fitting of the parts when the fusing or welding takes place, while eliminating the hole 14, as shown in Figure 4, will guarantee it to be airtight.

It is obvious that changes may be made in the form, construction, and arrangement of several parts, as shown within the scope of the appended claims, without departing from the spirit of the invention, and I do not, therefore, wish to limit myself to the exact construction and arrangement shown and described herein.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An assembly comprising a cup shaped element, having therein an aperture and providing thereat inner and outer seats, an electrical conductor member having a shoulder engaged on the outer seat, an inner electrode member including a bore and having a surface engaged on the inner seat, and an extension leading from the conductor member through said aperture and permanently engaged in said bore.

2. An assembly comprising a cup shaped element, having therein an aperture and providing thereat opposed seats, an electrical conductor including a pin and having an annular shoulder on one of said seats, an electrode member including a bore and having a surface engaged on the other seat, and an extension passing from said pin through the aperture and having a knurled surface fixedly engaged in said bore.

3. An assembly comprising a cup shaped element, including a flange and having a flat base, said base having a central aperture and providing thereat inner and outer seats, a threaded pin forming an electrical conductor and having a knurled extension, the latter being passed through the aperture, said pin having a shoulder on the outer seat, and an inner electrical contact member having a shoulder on the inner seat, said member having therein a central bore, the extension of the pin having its knurled surface mutilated by being forced for fixed engagement into said bore.

4. An assembly comprising a substantially cup shaped element of electrically conductive material having in the base thereof an outwardly facing recess and an inwardly facing enlarged recess, a pin forming an electrical conductor and having its inner end engaged in the outer recess, an internal electrode including a globular terminal portion, and an expanded portion extending from the first portion and fixedly engaged in said enlarged recess.

5. In a device of the class described, an electrode formed with a bore therein, an orificed second electrode, the latter being of a pin-shape and having a friction surface at one end thereof, the friction surface of said pin engaging said bore, and a member securely held between said electrodes, whereby a perfect alignment between the electrodes is accomplished.

6. In a device of the class described, an electrode formed with a bore, and an electrode terminating in a pin, having a friction surface, adapted to engage said bore, a cup shaped-member provided with a central aperture therein, said pin extending through said aperture, and engaging the electrode, whereby to provide a perfect alignment between the electrodes.

ANTHONY G. ROSA.