July 5, 1949. A. BESSON 2,475,369

BASE STRUCTURE FOR ELECTRON DISCHARGE DEVICES

Filed Oct. 4, 1945 2 Sheets-Sheet 1

Fig. 1

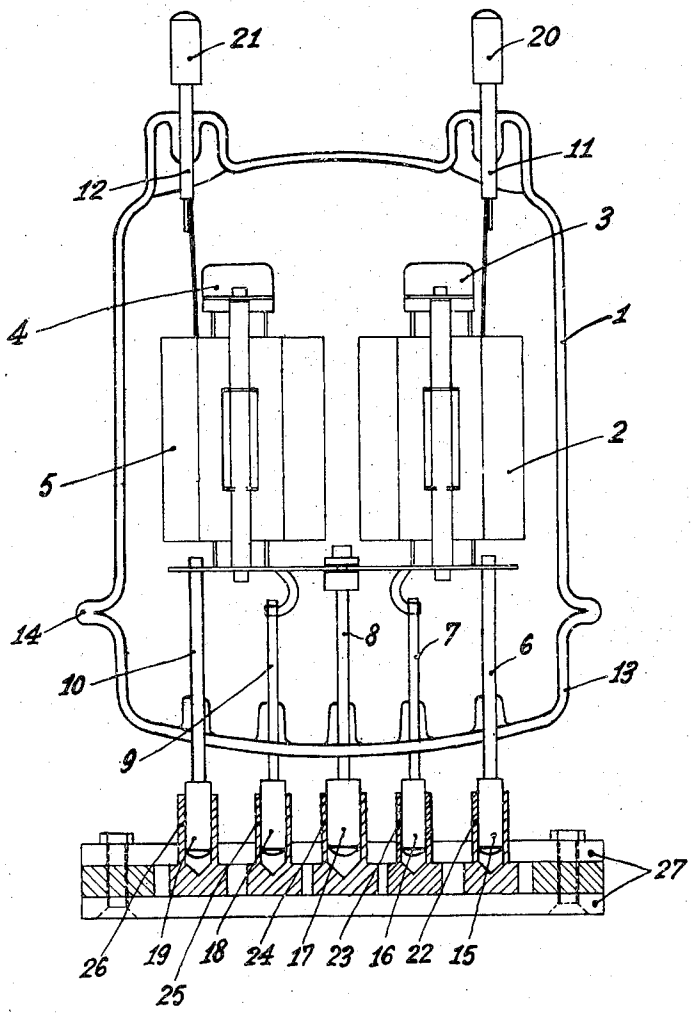

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Fig.3

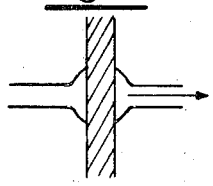


Fig.4

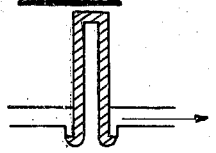
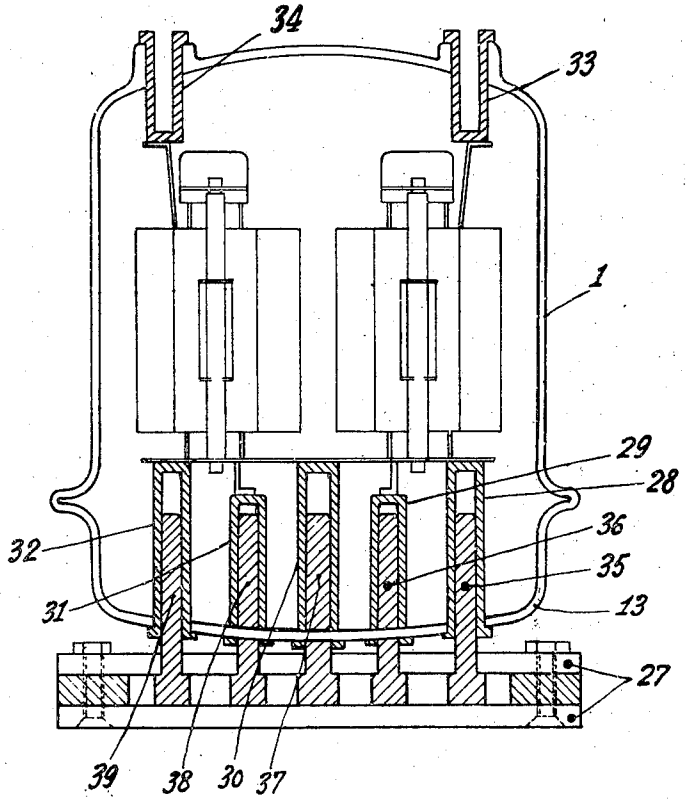


Fig.2



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2,475,369

UNITED STATES PATENT OFFICE

2,475,369

BASE STRUCTURE FOR ELECTRON DISCHARGE DEVICES

André Besson, Paris, France, assignor to Societe Française Radio Electrique, a corporation of France

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Patent expires November 19, 1963

3 Claims. (Cl. 250—27.5)

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This invention is for improvements in or relating to electric discharge valves and more particularly to the connections extending between the electrodes and the exterior of the valve.

The tendency to try and obtain generators operating on ever shorter wave lengths has led constructors to reduce the dimensions of the connections, namely the outgoing connections, as also those of the generators themselves, in order to obtain connections having extremely small impedance. For this reason, the base of the valve has been dispensed with and the so-called "pinched" feet have been replaced by feet called glass header of the kind illustrated in Figure 1.

The present invention has for its object to reduce still further the length of the connections of the electrodes housed in bulbs having feet called glass header. The reduction is achieved by means of a novel construction which is very robust.

According to the present invention, the outgoing connections comprise metallic tubes closed at one end. The open ends are welded in the glass bulb in such manner that the tubes extend inside the bulb. The electrodes are connected directly to the tubes in any desired manner, for example by soldering.

The connection of the bulb with the installation is effected by a support the metallic pins of which extend into the tubes, thus ensuring good electrical contact.

The above arrangement is not restricted only to the outgoing connections which are disposed in the base of the bulb but may be employed at any suitable point of its envelope.

The invention will be hereinafter described with reference to the accompanying drawings, in which:

Figure 1 illustrates a construction of valve hitherto proposed;

Figure 2 illustrates an arrangement constructed in accordance with the present invention; and

Figures 3 and 4 illustrate details showing one of the advantages of the present invention.

Referring to the drawings, Figure 1 illustrates the elementary arrangement of a valve without feet or cup, such as is now constructed. The glass bulb 1 is arranged to house the electrodes 2, 3, 4 and 5 which are connected to outgoing connections 6, 7, 8, 9, 10, 11 and 12. The bulb 1 is sealed by means of the cup-shaped base 13 which is welded to the bulb 1 along the bead 14. The connections 6 to 10 extend through the cup-shaped base 13 so as to form an hermetic seal therewith. The connections 11 and 12 also extend through the wall of the bulb forming an hermetic seal therewith. All the above connections form at the exterior of the bulb supporting pins 15 to 21 intended to fit into sockets. The sockets 22 to 26 of the main connections are mounted upon a base piece of insulating material 27 forming a support for the valve.

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According to the present invention, the outgoing connections comprise metallic tubes closed at one end and open at the other, such as illustrated at 28 to 34 of Figure 2. The tubes 28 to 34 are connected at their closed ends to the electrodes of the valve and they are connected at their open end into the wall of the cup-shaped base 13 or of the bulb 1 so as to form an hermetic seal therewith.

According to the present invention, the tubular connections are connected in the circuits in which the valve operates, by means of pins, such as 35 to 39. These pins are made of a good conducting metal (phosphorous bronze) possessing a certain degree of flexibility. If the diameter of the pins is such that the pins become too rigid they may be slotted or otherwise recessed or shaped, to impart to them the necessary flexibility. The pins are mounted upon a base of insulating material 27 mounted in a pedestal which constitutes the support of the valve. The valves are mounted on the pedestal so as to permit if necessary a certain degree of play or flexibility, thereby ensuring a degree of orientation in accordance with recognised practice in the construction of valve pedestals having a base of cup form and intended to avoid extreme stresses where outgoing connections extend through the bulb. It will be further appreciated that one of the objects of the invention is to reduce the stresses of this nature. The arrangements in question may thus be reduced to a minimum, which facilitates carrying them out. Naturally, any means of adjustment may be added to the valve and to the base in order to avoid errors of fitting the bulb on the support for example, by some pins larger than others, variations in the spacings, etc.

Among the advantages derived from the present invention are the following:

(1) The reduction in the length of the connections which connect the electrodes of the valve to the station installation of Figures 1 and 2. The reduction causes a diminution of inductance and makes the valve more efficient at the higher frequencies.

(2) The space in general taken up by the bulb is considerably reduced especially where there are connections at the upper part of the bulb.

In the examples illustrated in Figures 1 and 2, the reduction is 22%.

(3) The ordinary glass-header of Figure 1 is too fragile, particularly during transport and the mounting of the valve. This is due to the fact that the outgoing connections project from the bulb. This cause is entirely eliminated according to the present invention as no part welded to the glass extends beyond the contour of the bulb and consequently cannot accidentally be hit by anything.

(4) In the ordinary cup feet of Figure 1 there are frequently found cracks due to the difference of expansion existing between the connection, which is a rod and the glass. The tubes serving as connection according to the present invention are slightly yielding and thus give way to the different stresses arising in the glass. Figures 3 and 4 illustrate this phenomenon; a stress from the glass in the direction of the arrow causes a breakage or a crack in the case of the connection comprising a rod of Figure 3 whereas a slight yielding of the tube without any inconvenience results, according to the present proposed solution of Figure 4.

(5) The system permits the feet to be made more efficiently upon an industrial scale. Actually, the welding or soldering of the rod connection in the glass is usually effected by hand. The replacement of the rod connection by tubes permits the connections to be easily welded by high frequency induction.

What I claim is:

1. An electron discharge device for use with a support having at least one pin thereon, said device comprising an envelope wall, at least one electrode within the envelope, and at least one tube having an open end and a closed end and located within the envelope between the electrode and the wall, said tube being sealed to the wall at its open end and open toward the exterior of the device providing a recess for receiving a pin of said support.

2. An electron discharge device as set forth in claim 1, in which the envelope wall is of glass, the open outer end of said tube being in register with the wall at the point of sealing.

3. An electron discharge device as set forth in claim 1, wherein the inner end of said tube constitutes a support for the electrode.

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The following references are of record in the file of this patent:

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