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J. F. HENDRY

1,758,833

THERMO ELECTRONIC DEVICE

Filed Aug. 28, 1924

Fig.1.

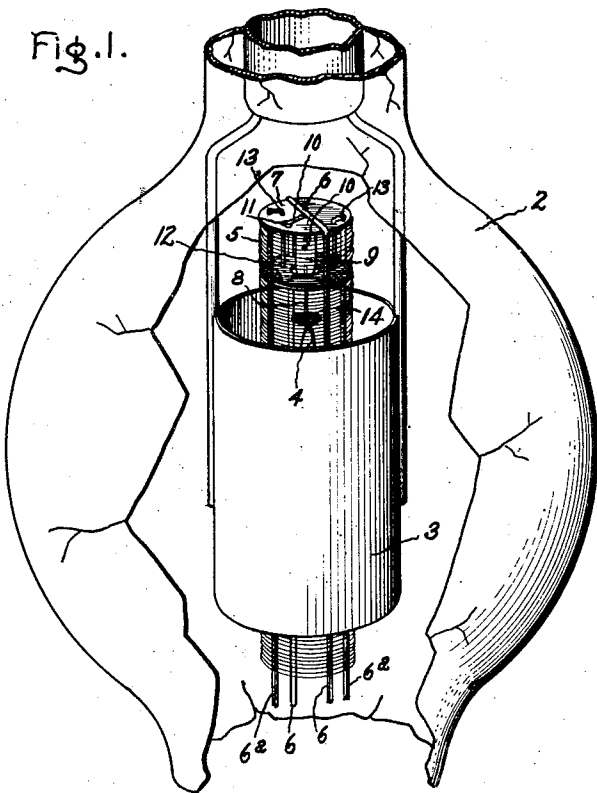
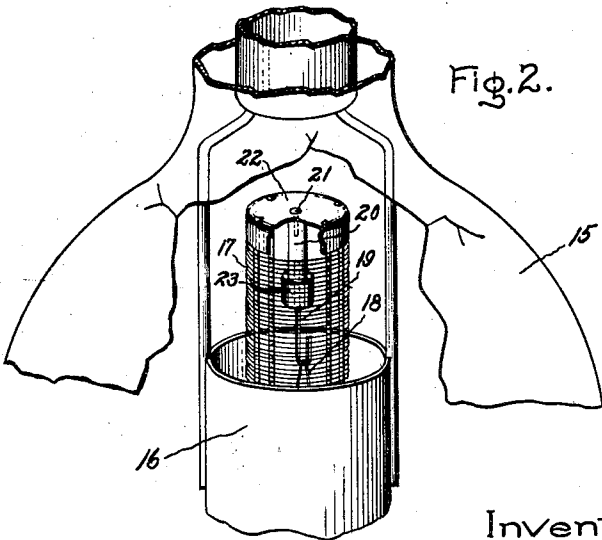


Fig.2.



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UNITED STATES PATENT OFFICE

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THERMOELECTRONIC DEVICE

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In thermo-electronic devices in which a filament element and an anode element are associated, it is very desirable to have the elements rigidly mounted with respect to each other in order to avoid elements coming in contact. Various devices have been used for supporting the filament and for holding it in place at a point along its length. In one arrangement, the filament is held in place by a metallic element which is embedded in a piece of quartz. I have found, however, that very often the quartz for some reason becomes affected so that its insulating properties are impaired, its physical appearance changed, and the quartz itself finally shattered. It is very probable that this is due to the electronic bombardment of the quartz. One of the objects of my invention is to provide means for protecting the quartz in order to preserve its electrical and physical characteristics and thereby preserve the efficiency of the device.

The means for accomplishing the foregoing are hereinafter more fully set forth and claimed, reference being had to the accompanying drawing in which Fig. 1 is a perspective view of one form of the thermo-electronic device with sections broken away in order that the details of construction may be more clearly illustrated; Fig. 2 is a similar view of another form of the device which may be considered as the preferred form.

Referring more in detail to the drawing, the device in Fig. 1 represents a type of device known as a pliotron with a glass envelope 2, within which are located the plate or anode 3, the filament or cathode 4, and the grid 5. The grid frame consists of a series of rods 6 and 6^a suitably held together, the upper ends of which are capped by the plate 7. As indicated in the figure, the filament 4 is shown supported by a hook on the end of a rod 8, the upper end of which is embedded in an elongated piece of quartz 9 which projects centrally from plate 7. The quartz in turn is provided with a metallic stem 10, one end of which is embedded in the upper side of the quartz and is secured to the disc 7 in any suitable manner. As shown, the upper section of the rod 10 projects through the disc 7 and is folded over and welded to the disc 7 at the point 11. As shown in the figure, the rod 6 is folded to form an inverted U. The bottom of the U as shown passes above the disc 7. The bottom of the U into which the rod 6^a is formed on the other hand passes under the disc 7. Therefore, the disc is held in place between the bottom sections of the rods 6 and 6^a. In the form of construction as shown in Fig. 1, I provide a shield 12 within the grid which is secured to the disc 7 in any suitable manner as, for example, by means of supporting rods 13, which project through the disc 7 and are folded over as shown on the top side of the disc. These folded sections may be spot welded in place, for example, to the top side of the disc 7. It will be seen that the shield 12 has a central perforation through which the quartz element 9 projects, and which perforation stands in juxtaposition to the lower end of the quartz. As a result of this opening, I provide an additional shield in the form of the disc 14 on the rod 8 between the filament 4 and the quartz 9. By this arrangement I find that the quartz is effectively shielded against the deterioration indicated in the foregoing.

In the construction shown in Fig. 2 the enclosing envelope 15, the plate 16, the grid 17 and the filament 18, the filament hook 19, and the quartz 20 are substantially the same as the corresponding elements in Fig. 1, except that the grid construction is modified to the extent that there is no disc such as disc 12. Instead I provide a cup 23, into which the lower end of the quartz projects. Furthermore, the cap piece has a little different form from the cap piece 7, Fig. 1, inasmuch as in the form of construction in Fig. 2, the cap piece 22 is in the shape of a cup into which the upper end of the quartz 20 projects and to which the stem 21 is secured to support the quartz. With either arrangement, I find that the quartz rod is effectively protected from damage.

It will be understood that in view of the disclosure, my invention may be varied by adopting modifications which readily suggest themselves without departing from the spirit

of the invention or from the scope of the claims herein.

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

- 5 1. An electric discharge device comprising a receptacle, a pair of electrodes mounted therein, means connected with one of said electrodes for supporting the other of said electrodes, said means including a flat metal
10 plate and an elongated insulator connected at one end to said plate, said insulator projecting into said one electrode, a hook shaped member connected to said other electrode and to the other end of said insulator, and a metallic sheath mounted on said member between the insulator and said other electrode.
- 15 2. An electric discharge device including a grid, a plate member mounted at one end of the grid, a cathode, means for supporting the cathode comprising an elongated insulator connected at one end to the plate member and at the other end to the cathode and
20 a cup-shaped member enclosing the end of the insulator to which the cathode is connected.

25 In witness whereof, I have hereunto set my hand this 27th day of August, 1924.

JOHNSON F. HENDRY.

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