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ELECTRIC DISCHARGE TUBE OR INCANDESCENT LAMP

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Fig. 1.

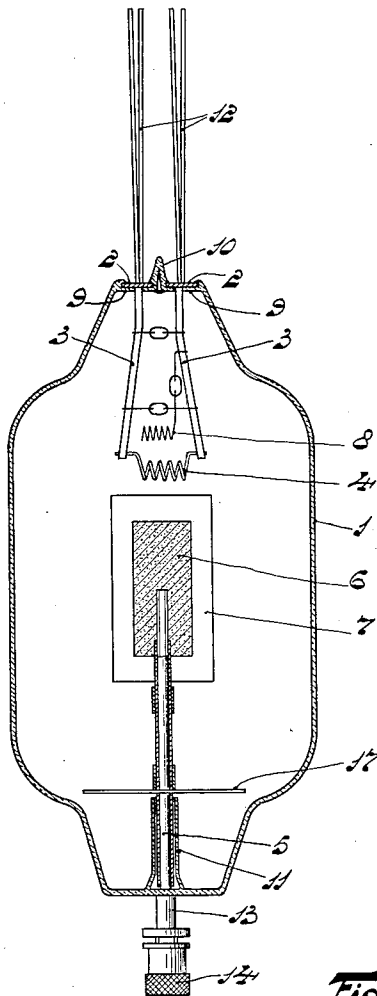


Fig. 2.

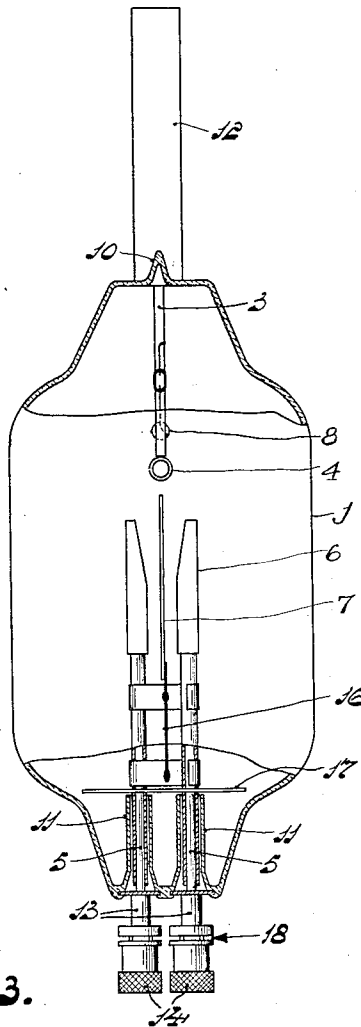
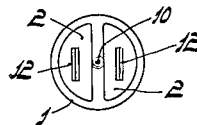


Fig. 3.



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ELECTRIC DISCHARGE TUBE OR
INCANDESCENT LAMP

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2 Claims. (Cl. 250—27.5)

The present invention relates to electric devices like discharge tubes and incandescent lamps in which a sealed envelope is provided within which are disposed electrodes, filaments etc., and for the electric connection of which leads are vacuum-tightly introduced through the envelope.

In the usual construction of such devices the electrodes, filaments, etc., hereafter referred to as electrodes, are supported on a glass stem through which are vacuum-tightly sealed the leads, which latter are connected to or act as the supports of the electrodes. The stem is sealed to the envelope by means of a flared portion and the leading-in wires are surrounded by and connected to a base or cap which is cemented or otherwise secured to the envelope.

A construction as above described has various drawbacks, especially in connection with the larger types of such devices. In such cases the sealing-in operation involves various difficulties, a comparatively large percentage of shrinkage occurs, the parts used are comparatively expensive, and the construction is relatively weak.

The requirement of a separate base has further objections. As such large discharge tubes are made in a large number of various types and sizes with a comparatively small production for each type, the use of a best-suited special base for each type renders such bases expensive. On the other hand if the same bases are used for the different types, objectionable constructional limitations of the tubes may be introduced.

The basing operation in the case of large tubes is also inconvenient and in addition the connection between the base and the envelope is mechanically weak and may be affected by the heat developed during the operation of the device.

The present invention has for its object to obviate all of the above difficulties and to provide a novel construction which is especially adapted for the larger sizes of such electric devices, although it can be advantageously applied also to smaller sizes.

Our present invention utilizes a type of seal construction as described in the U. S. Patent 1,734,809 to Gilles Holst, Jan Bergmans, and Cornelis Bol, according to which one or more metal discs, preferably of ferrochrome, are airtightly sealed into a corresponding opening or openings of the envelope of the device and the leads and supports of the electrodes are connected to such metal discs.

According to the present invention, which is especially applicable when at least two leads are inserted from the same side of the envelope, the

metal discs are provided on their outer face with contact pieces or contact pins by means of which the device can be directly secured to and electrically connected with suitable fixed contact pieces, for instance, those of a socket for the device.

In a preferred embodiment of our invention at least two metal discs are fused into an open-ended vitreous end portion of the envelope, so that they close the opening and are substantially flush with the end of the envelope. The discs extend into or are provided on their outer face with individual contact members or contact-pins by means of which the device can be plugged into corresponding fixed contact pieces. On their inner face the discs carry supports for the electrodes, which also act as electric conductors for same.

It will be noted that with the above construction no base or cap is required for the device and all the expenses and drawbacks connected with the use of bases are eliminated; and at the same time the mechanically weak connection between base and envelope is replaced by a construction of great strength and rigidity; also there is less chance of breaks or objectionable high resistance contacts in the electric connection between the electrodes and the socket contacts. A further important advantage is that of better heat dissipation of the device, especially around the lead-in wires or supports.

In order that the invention may be clearly understood and readily carried into effect, a discharge tube in accordance with our invention will now be described more fully by way of example with reference to the accompanying drawing in which:

Figure 1 is a partly sectionized front elevation of a device embodying our invention.

Figure 2 is a partly sectionized side view of the device shown in Fig. 1 taken at right angles to the position seen in Fig. 1, whereas Fig. 3 is a top view of the end portion of the device according to Figs. 1 and 2.

The device illustrated in the drawing is shown as a rectifier tube, although it should be well understood that the invention may be equally well applied to any other type of discharge tubes, incandescent lamps or the like, whether of the gas-filled or vacuum type.

The device comprises an envelope 1 of vitreous material, for instance, of glass. The two ends of the envelope are reduced in diameter and have openings into which are sealed on each end a pair of metal discs 2 consisting preferably of ferrochrome, which is an alloy especially well

sulted for this purpose, said discs being separated from each other by glass. On the upper end of the tube one support 3 is connected to each disc 2, the two supports 3—3 carrying an incandescent cathode 4.

The discs 2 at the lower end of the device carry supports 5—5 carrying in turn graphite anodes 6—6, which anodes are preferably separated from each other by a protective screen 7, carried on a support 16.

One of the leads 3 of the cathode has secured to it a body 8 comprising a "getter" substance, which, to absorb the gas residues of the tube, is disintegrated into the tube.

The discs 2—2 on the lower end of the device carry contact-pieces or contact-pins 13—13 provided with nuts 14, whereas at 18—18 other contact members can be fixed.

The supports 5 and the contact pins 13 may be separate pieces which are secured to the two sides of the metal disc by welding or soldering. Or again, the support 5, metal discs 2, and contact-pin 13 may form a single integral piece. In most cases we prefer to form the support 5 and the contact piece 13 as an integral member and provide a hole in the discs 2 through which this member passes. The member is welded or soldered to the disc, whereby the welding or soldering also hermetically closes the hole of the disc.

Preferably the inner faces of the metal discs 2 are provided with a vitreous, for instance, glass layer 9, as described in the copending application Serial No. 659,382 filed March 2, 1933, of Dobben and Visser, whereby the glass layer at the cathode end of the tube extends outwardly to form an exhaust tube, which after the exhausting or gas filling of the tube, is sealed off to form the tip 10. On the anode end of the tube the glass layers 9 extend to form tubular sleeve members 11, which insulatingly surround the supports 5—5.

The purpose of the glass layers 9 and the provision of the sleeves 11, as fully described in said application, is to prevent the metal discs from giving off gas in operation and to prevent a dis-

charge or breakdown between the supports 5—5 and between said supports and the metal discs 2.

Preferably a protective disc 17 made of mica or other suitable material, is provided on top of the supports 5.

While we have described our invention in connection with a specific embodiment and as applied to a rectifier tube, we do not wish to be limited to such construction and application, but desire the appended claims to be construed as broadly as permissible in view of the prior art.

In the claims the term "electrodes" should also include the filament or filaments of an incandescent lamp.

What we claim is:

1. An electric device having an envelope comprising a vitreous end portion, an electrode disposed in said envelope, and a metal disc sealed to said vitreous end portion to form a substantially flat bottom for said envelope, an electric conductor directly connected to the inner side of said metal disc and supporting said electrode, and a contact-pin directly connected to the outer side of said disc, said contact pin serving for the mechanical support of said device and for the electrical connection of said electrode.

2. An electric device having an envelope consisting at least partly of an apertured vitreous portion, electrodes disposed in said envelope, at least two metal discs insulated from each other and sealed to said vitreous portion to close the aperture thereof and to form a substantially flat bottom for the envelope, an electric conductor directly connected to the inner side of each of said metal discs and to one of said electrodes, and a contact member welded directly to the outer side of each of said discs, said contact members serving for the support of said device and for the external electrical connection of said electrodes, said contact members being adapted to be plugged into a cooperating socket.

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