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GASEOUS DISCHARGE TUBE

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Fig. 1.

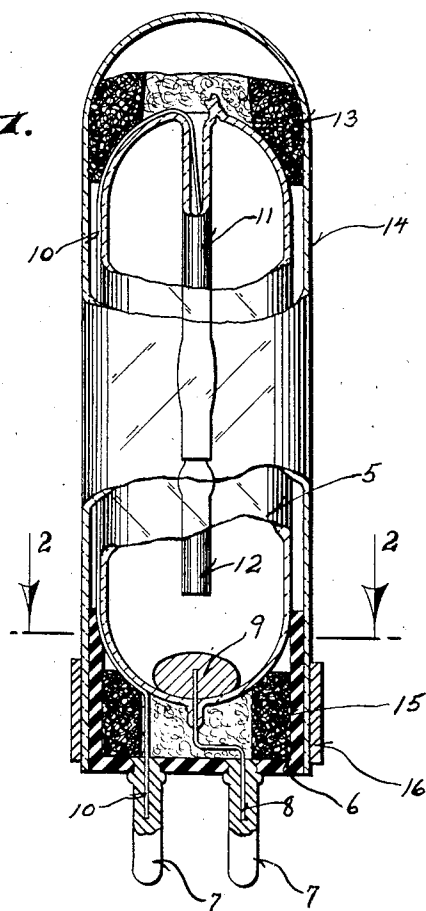
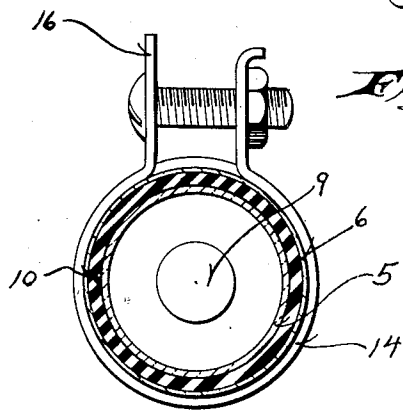


Fig. 2.



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GASEOUS DISCHARGE TUBE

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3 Claims. (Cl. 250—27.5)

This invention relates to gaseous discharge tubes and refers particularly to a tube designed primarily for use with electric fence chargers of the condenser discharge type. Such a tube constitutes the subject matter of Patent No. 2,352,841 issued July 4, 1944 to Stanley G. Klumb on an application, Serial No. 387,966, filed April 10, 1941.

Electric fence chargers are generally purchased and used by farmers, consequently, they are not handled delicately. All of their component parts must therefore be capable of withstanding rough handling. It is therefore an object of this invention to provide a discharge tube for fence chargers so constructed as to embody within its design adequate protection against breakage and disruption of its elements notwithstanding the rough handling to which such tubes are subjected.

In tubes of this kind, one of the lead-in wires by which the anode and cathode are connected with the prongs of the base extends along the exterior of the tube for substantially the entire length of the tube and is thus exposed. In the past, this lead-in wire has been insulated to preclude possible shock during insertion and removal of the tube from an electric fence charger, but the need for specifically insulating the lead-in wire, aside from the expense and inconvenience involved, resulted in a rather delicate structure in that the exposed wire would be very apt to be broken during handling.

It is therefore another object of this invention to provide an improved construction for tubes of this type wherein the exposed lead-in wire is covered and protected by an outer protecting shell which encloses the entire tube thus obviating the need for insulation of the lead-in wire and guarding against its being broken during handling.

Still another object of this invention resides in the provision of a discharge tube of the character described wherein the glass envelope is held down onto its base in a new and novel manner which obviates the customary cementing of the envelope in the base.

In this connection it is a further object of this invention to mount the glass envelope by means of cushion-like shock absorbers, one engaging each end of the envelope.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more par-

ticularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrate one complete example of the physical embodiment of the invention constructed in accordance with the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a view partially in elevation and partially in longitudinal section through a gaseous discharge tube constructed in accordance with this invention; and

Figure 2 is a cross-sectional view through Figure 1 on the plane of the line 2—2.

Referring now particularly to the accompanying drawing, in which like numerals indicate like parts, the numeral 5 designates a substantially cylindrical glass envelope closed at both ends and mounted upright in an insulating base 6. The tube has the air evacuated therefrom and like the tube of the aforesaid copending application contains helium.

The base 6 is equipped with the customary socket engaging prongs 7, one of which is connected by a lead-in wire 8 to a cathode 9 in the form of a ball or puddle of mercury resting in the bottom of the envelope. Another prong has a lead-in wire 10 extending therefrom up into the base and along the exterior of the envelope to pass down through a glass tube 11 carried by the closed top of the envelope. At its lower end this tube 11 supports an anode 12 which may be solid or tubular in cross-section. In any event the anode is composed of solid metal as distinguished from the liquid cathode and is suitably secured to the end of the lead-in within the tube 11, which is pinched to seal the same.

Contrary to past practice, the envelope is not cemented in the base, but instead, the base contains a cushion 13 of any suitable packing material, but more preferably in the form of a stamped felt washer of such size as to support the lower end of the envelope against shifting in the base without danger of disturbing the lead-in wires.

The envelope is held down onto the base by an outer protecting shell 14 having its upper end closed and its lower end open and telescoped over the base. In the closed upper end of this outer protecting shell which is preferably made of Cellophane or some similar suitable material is a cushion 15 similar to the cushion 13. A clamp 16 embracing the lower end of the protecting shell telescoped over the base clamps the shell to the base in a position at which the two cushions

13 and 15 are under slight compression to firmly but resiliently support the envelope.

From the foregoing description, taken in connection with the accompanying drawing, it will be readily apparent to those skilled in the art that this invention provides a novel construction for gaseous discharge tubes by which such tubes are especially well adapted for use with electric fence chargers and other similar installations subjected to rough handling.

What I claim as my invention is:

1. A gaseous discharge tube comprising: a sealed envelope having an anode and a cathode therein; lead-in wires entering the envelope at spaced points and connected with the cathode and anode; a base for the tube; prongs on the base to which the lead-in wires are attached, one of the lead-in wires extending along the exterior of the envelope and entering the same at a point remote from the base; an outer hood-like protecting shell of transparent non-frangible material telescoped over the envelope and said lead-in wire which extends along the exterior of the envelope; a cushion at each end of the envelope, one of which is seated on the base and the other in the closed end of the protecting shell; and means for clamping the protecting shell to the base with the shell pulled down onto the base far enough to slightly compress the cushions and thereby firmly but resiliently support the envelope.

2. A gaseous discharge tube comprising: an upright envelope having top and bottom ends and containing an anode and a cathode; lead-in wires entering the top and bottom ends of the envelope and connected with the anode and cathode; the lead-in wire which enters the top end of the envelope extending along the exterior thereof to terminate adjacent to the other lead-in wire; a base receiving the bottom end of the envelope; prongs on said base, to which the lead-in wires are attached; a tubular protecting shell

of non-frangible substantially resilient material closed at one end and open at the other telescoped over the envelope, the exposed lead-in wire and the base; shock absorbing cushions in the base and the closed end of said protecting shell engaging the ends of the envelope; and means for securing the open end portion of the protecting shell to the base with the base extending into the protecting shell an amount required to cause the cushions to firmly but resiliently support the envelope.

3. A gaseous discharge tube comprising: an elongated glass envelope; a glass tube extending into the envelope from one end thereof and opening to the exterior of the envelope; an electrode supported by the inner end of the glass tube, the glass tube being sealed adjacent to its connection with the electrode; a second electrode in the opposite end of the envelope; a lead-in wire passed through said last named end of the envelope and contacting said second electrode; a lead-in wire extending into the tube and attached to the first named electrode, said last named lead-in passing out through the tube and extending alongside the envelope to the end thereof from which the other lead-in wire projects; a base receiving said end of the envelope and having prongs to which the lead-in wires are attached; a hood-like protecting shell of substantially resilient non-frangible material telescoped over the envelope and the base; a cushion in the closed end of the protecting shell holding the envelope against shifting in the shell and holding the envelope down on the base; and means for clamping the open end of the protecting shell to the base with the base extending into the shell far enough to insure firm but resilient engagement between the cushion and the upper end of the envelope which distance is determined by the characteristics of the cushion.

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