

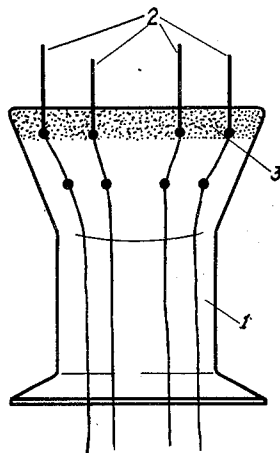
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REDUCING ELECTRICAL LEAKAGE IN DISCHARGE TUBES

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REDUCING ELECTRICAL LEAKAGE IN
DISCHARGE TUBES

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3 Claims. (Cl. 250—27.5)

This invention has reference to electric discharge tubes and similar devices. It is known that the correct working of these tubes is often harmfully influenced by defects in the insulation of that part of the tube which is comprised between the seals of the current conductors or lead wires of the electrodes. Thus, for example, electric leakage may occur between the leads by reason of the deposit on the pinched portion of the stem of the discharge tube between the seals of the lead wires, of metal particles, for example, magnesium which has been volatilized in the discharge tube, in order that a better vacuum may be obtained.

These disturbances in the insulation may be lessened by making the distances between the lead wires or the distances between their seals in the glass respectively as large as possible, for example by giving very large dimensions to the pinched portion of the stem. The proportions of the discharge tube are, however, a limitation so that it is not always possible to obtain satisfactory results in this manner.

The invention has for its object to provide means operative to efficiently obviate the said disadvantages.

According to the invention a more satisfactory insulation between the lead wires in discharge tubes is ensured by roughening and thereby enlarging the insulation surface of that part of the stem which is comprised between the seals of the lead wires.

This increase in surface may be ensured, for example, by mechanically roughening the glass surface of the pinch between the leads of the electrodes. This surface may preferably be roughened by applying a granular insulating substance such as an alkaline earth oxide to the pinched portion of the stem of the tube between the seals of the lead wires. When the said metal particles condense in the tube they will deposit in the pores of the roughened surface, the production of a smooth metal film being thus prevented and a more reliable insulation being thus obtained.

The process according to the invention may be carried out, for example, by starting with one of the alkaline earth carbonates, for example, calcium carbonate. For this purpose an aqueous suspension of calcium carbonate is applied to the pinched portion of the stem of the discharge tube between the seals of the lead wires. The stem thus prepared is dried for about 20 minutes at a temperature of 120° C., after which the stem is sealed in the lamp bulb and the latter is

exhausted whilst being heated on the pump to a temperature of 350 to 500° C. During this heating operation the calcium carbonate is decomposed into coarse calcium oxide and carbonic acid. The latter is pumped away and the former remains in a rough state on the press, the surface being thus so enlarged that a more satisfactory and more reliable insulation is produced.

Referring to the figure the stem 1 of a triode is provided between the seals of the lead wires or current conductors 2 with rough insulating material 3, for example, calcium oxide.

The calcium oxide thus introduced into the discharge tube is possessed of the favourable property of absorbing any trace of water-vapour present in the tube.

Having now described my invention what I claim is:

1. In an electrical discharge device, a glass stem comprising a flattened press, a plurality of conductors sealed into and projecting from said press, and a coating of coarse calcium oxide on the end of said press between the points where said conductors are sealed into said press and having a rough surface larger than the coated surface of said glass press.

2. The process of improving the insulation between current conductors sealed into the press of the glass stem of an evacuated glass bulb which comprises depositing calcium carbonate on said press between said conductors, sealing and evacuating said glass bulb, and heating said glass bulb while evacuated to a temperature between 350° C. and 500° C. to decompose the calcium carbonate on said press into a rough surface of calcium oxide.

3. The process of increasing the insulation between current conductors sealed into the wall of the glass bulb of an electrical discharge device which comprises applying to the inner surface of said wall between said conductors an aqueous suspension of calcium carbonate, warming said wall to dry said surface, sealing and evacuating said bulb, and heating said bulb while evacuated to a temperature between 350° C. and 500° C. to convert the calcium carbonate on said inner surface into calcium oxide.

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