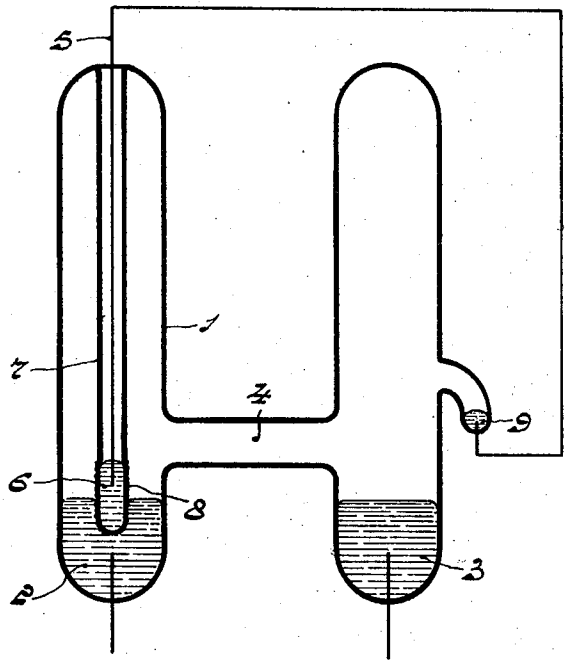
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DISCHARGE TUBE HAVING A FLUID OR SOLID CATHODE AND A CAPACITATIVE IGNITER

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DISCHARGE TUBE HAVING A FLUID OR SOLID CATHODE AND A CAPACITATIVE IGNITER

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3 Claims. (Cl. 250—27.5)

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This invention relates to discharge tubes having a fluid or solid cathode and a capacitative igniter, that is to say a conductor which is separated from the cathode by means of insulating material which, if desired, may be the wall of the tube. Tubes of this kind are sometimes referred to as "spark-ignition tubes." Applying a high voltage to the conductor has the effect of producing at the boundary line of the cathode surface and the insulator a spark which initiates the ignition of the tube.

An insulating material usually employed for the igniter is molten quartz or hard glass which afford the advantage of being free of impurities. Under certain operating conditions their period of life is, however, fairly short since after a few hundreds of hours a crack suddenly arises, more particularly at those points at which the quartz or the hard glass is chemically attacked as a result of the action of the discharge.

An electric discharge tube according to the invention contains a capacitative igniter which is separated from the cathode by means of molten quartz or hard glass coated with a thin layer of powdery quartz or powdery hard glass applied thereto by sintering. The thickness of the sintered layer is preferably from 0.1 to 0.2 mm. It is preferable to utilise as the powder to be applied by sintering, glass having a lower melting point than that of the tube on which it is sintered. A combination which is likewise very satisfactory is molten quartz with powdery quartz sintered on it.

It has been found by experiments that the period of life of tubes comprising igniters according to the invention is appreciably longer under the above-mentioned operating conditions than that of tubes which comprise the usual igniters of quartz or hard glass, despite the fact that the coating of powdery quartz or glass applied by sintering, at the area of the boundary line of the cathode surface, is slightly attacked rather soon.

The invention will now be explained more fully by reference to the accompanying drawing showing, by way of example, a discharge tube with capacitative igniter according thereto.

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In the sole figure reference numeral 1 designates the wall of the tube which is of glass, 2 is the cathode consisting of mercury, and 3 the anode which also consists of mercury. The communication between the anode and cathode spaces is formed by a comparatively narrow tube 4. The conductive portion of the igniter is designated 5 and is constituted by a molybdenum wire the bottom end of which extends into a quantity of mercury 6. The mercury and the molybdenum wire are surrounded by a quartz tube 7 having a wall thickness of 0.5 mm., which is coated at its bottom end with a thin layer of sintered quartz 8 of 0.15 mm. thick. An auxiliary anode 9 consisting of mercury is connected to the molybdenum wire of the igniter.

What I claim is:

1. A discharge tube having a fluid cathode and a capacitative igniter, consisting of a tube of glass having a closed end and engaging the fluid cathode, the closed end of the tube containing a body of mercury, and the outer surface of the glass tube having secured thereto a thin layer of powdery quartz or hard glass applied thereto by sintering, the thickness of which is preferably from 0.1 to 0.2 mm.

2. A discharge tube as claimed in claim 1, wherein the melting point of the glass contained in the sintered coating is lower than that of the tube material.

3. A discharge tube as claimed in claim 1, wherein the coating applied by sintering and the tube material both consist of quartz.

NICOLAAS WARMOLTZ.

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