

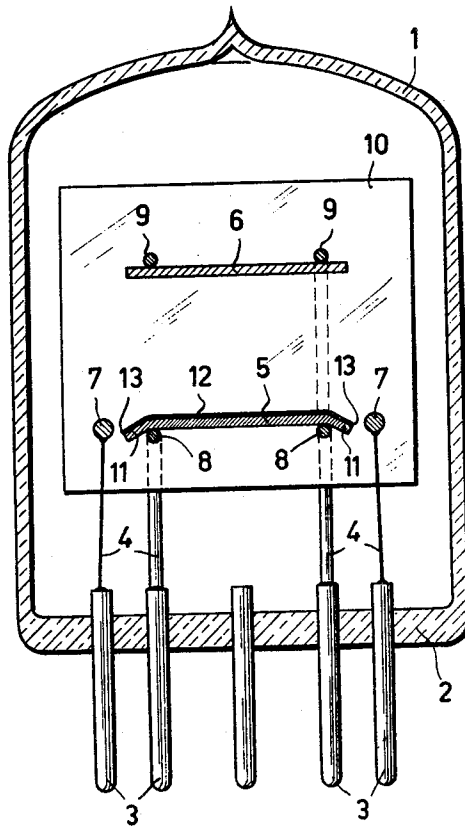
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GLOW-DISCHARGE TUBE HAVING A COLD ACTIVATED CATHODE

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GLOW-DISCHARGE TUBE HAVING A COLD ACTIVATED CATHODE

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2 Claims. (Cl. 313-198)

This invention relates to glow-discharge tubes having a cold activated cathode, wherein two auxiliary anodes extend in parallel with two edges of the cathode plate and the anode is likewise parallel to the cathode.

In a glow-discharge tube of known type, the anode comprises a rod which extends in parallel with the surface of the cathode. However, a rod-shaped anode has the disadvantage that a drop in anode potential is liable to occur and may give rise to oscillations. Such oscillations are impermissible in glow-discharge tubes used in telephone current circuits of telephone exchanges.

It is known that a drop of anode potential and oscillations are inhibited by enlarging the surface of the anode. However, if the anode and the cathode are formed as two parallel flat plates slightly spaced from each other, difficulties are involved in positioning the igniting anodes, since if arranged in the space between the anode and the cathode, these anodes may give rise to unwanted ignitions directly between the anode and the igniting anodes, if the latter are brought to cathode potential, as is the case in the majority of circuits. An arrangement at the side of the cathode plate has the disadvantage that the discharge between the igniting anodes and the cathode might also apply to that side of the cathode which is remote from the anode, since the presence of activating material on this side cannot usually be avoided completely, more particularly after operation for a longer period.

According to the invention, in a glow-discharge tube having a cold activated cathode, in which two auxiliary anodes extend in parallel with two edges of the cathode plate and the anode is likewise parallel to the cathode, the anode has the form of a plate extending parallel to the cathode and the two edges of the cathode, which extend in parallel with the igniting anodes, are slightly bent away from the anode, the two igniting anodes being arranged relative to the cathode plate so that they do not project from an imaginary extension of the active surface of the cathode, the shortest distances between the igniting anodes and the cathode being formed by the connecting lines that may be drawn from the igniting anodes to the edges of the active surface of the cathode.

By the structure according to the invention it is ensured that, when the igniting anodes acquire cathode potential, spontaneous ignitions towards the anode cannot occur.

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In addition, the place where the auxiliary discharge brought about by the igniting anodes applies to the cathode is fully determined so that the igniting-anode current at which the main discharge is ignited does not show arbitrary variations.

In order that the invention may be readily carried into effect, it will now be described in detail, by way of example, with reference to the accompanying diagrammatic drawing, showing a glow-discharge tube according thereto.

In the sole FIGURE, a tube envelope 1 terminates at its upper side in an exhaust tube that has been sealed-off. A base 2 of the tube has sealed into it pins 3 from which supporting wires 4 lead to an electrode arrangement comprising a cathode 5, an anode 6 and two igniting anodes 7. The igniting anodes 7 and supporting wires 8 and 9, respectively, on the cathode and the anode are fixed in position in small apertures of two mica plates 10. The cathode and the anode have a width of 4.5 mms. each and a dimension of 8.5 mms. at right angles to the plane of the drawing, whilst both consist of nickel sheet. Two edges 11 each 0.5 mm. wide of the cathode are bent over through an angle of about 30°. The cathode 5 is covered with a layer of activating material 12 which consists substantially of alkaline-earth oxides. The distance between the 0.5 mm. thick igniting anodes 7 and the sharp edges 13 of the cathode plate is 0.2 mm. The distance between the anode and the cathode is 2.75 mms. The tube is filled with argon at a pressure of 24 mms. of mercury.

What is claimed is:

1. A glow-discharge device comprising an envelope containing an ionizable gaseous medium, spaced parallel substantially planar anode and cathode electrodes within said envelopes, said cathode having an active surface portion facing the anode, a pair of auxiliary anodes extending parallel to opposite edges of the cathodes, said cathode edges being slightly bent away from the anode and the auxiliary anodes being positioned on the side of the plane of the active surface portion of the cathode remote from the anode, the shortest distance between each of the auxiliary anodes and the cathode being a line drawn from said auxiliary anode to the corresponding edge of the active surface portion of the cathode.

2. A glow discharge device as claimed in claim 1 in which the active surface portion of the cathode is a layer of alkaline earth oxides.

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