

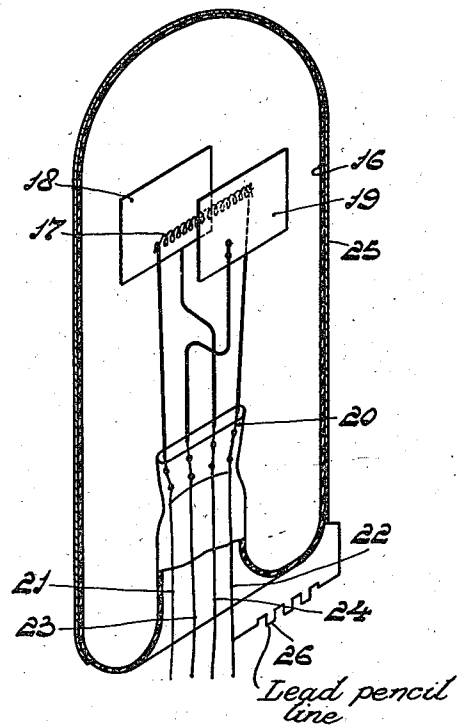
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DISCHARGE TUBE

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## UNITED STATES PATENT OFFICE

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## DISCHARGE TUBE

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## 1 Claim. (Cl. 250—27.5)

This invention has reference to an electric discharge device, more particularly of the incandescent cathode type. The term incandescent cathode will hereinafter be understood to mean not only a cathode heated by a galvanic current but also heated in some other manner, for example by the discharge, if the temperature to which the cathode is heated is so high that the discharge has the character of an arc discharge.

Such arc discharge can only occur in discharge tubes of the type containing a gasfilling.

Thus our invention is distinguished from improvements in the use of high vacuum tubes adapted for the reception of wireless signals. In such devices conducting envelopes sometimes are employed to avoid external influences which would otherwise result in extreme noises in the loud speaker or telephone.

In devices containing electric discharge tubes of the kind described, for instance in tubes for rectifying alternating currents there is no necessity of avoiding such noises.

The shielding in a radio tube is to prevent electrostatic influences, which may cause noises and therefore mar the reception. On the other hand, as stated, in gasfilled rectifying tubes the extraneous electric fields or other extraneous not understood phenomena may altogether interrupt operation of the tube. The two phenomena are quite distinctly different, i. e., in case of radio tubes such outside electric influences do not cause interruption in the operation of the device, whereas in the case of rectifiers used, for instance, for power rectification, there is no sound reproduction and noises cannot be caused and observed.

However, during the operation of such a device the phenomenon may occur that the discharge between the incandescent cathode and an anode of the discharge tube is interrupted under certain conditions, for example, on the device being approached.

Probably this phenomenon is due to electrostatic influences, e. g. to atmospheric electric fields or earth fields.

An object of our invention is to improve the reliability of such devices.

Another object is to apply conducting envelopes to gasfilled discharge tubes.

A further object is to improve the ignition of incandescent cathode tubes having a gasfilling, when such tubes are employed in rectifying alternating current.

According to the invention in an electric device comprising an incandescent cathode, gasfilled discharge tube, a conducting envelope is arranged in the vicinity of said discharge tube and a connection is made between said conducting member and a direct current circuit for said tube.

In an embodiment of the invention a point of the direct current circuit is connected by a resistance or capacity to a metal housing, that constitutes the wall of the electric device.

According to another embodiment a point of the direct current circuit may be connected to a conducting coating of the wall of a discharge tube.

In the latter two embodiments the connection may be satisfactorily formed by a stroke of lead pencil.

The invention will be more clearly understood by reference to the accompanying drawing. In this drawing is shown, in section, a construction in which the wall of the tube is coated with a conducting layer.

In order to prevent electrostatic or electromagnetic disturbances in the operation of a high vacuum discharge tube it has been proposed to surround such a tube by a metallic casing connected to the cathode of the tube.

The wall of the discharge tube shown in the drawing is designated by 16, the incandescent cathode by 17 and the anodes by 18 and 19. The poles of the electrodes are taken out of the tube through the press 20 and connected to the lead wires 21, 22, 23 and 24.

The wall of the tube is coated with a conducting layer 25, for example of tin-foil, which is connected to the lead wire 22 of the cathode by a resistance 26 that may consist of a stroke of lead pencil.

What we claim is:

An electric discharge tube comprising a vitreous envelope, an anode and a cathode, leads for the anode and cathode, a conductive coating intimately adhering to the outer surface of the envelope and having a portion extending substantially to the bottom thereof, and a lead pencil line at the bottom of said envelope, said line conductively interconnecting one of the cathode leads and the extending portion of said coating.

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