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ELECTRIC DISCHARGE DEVICE

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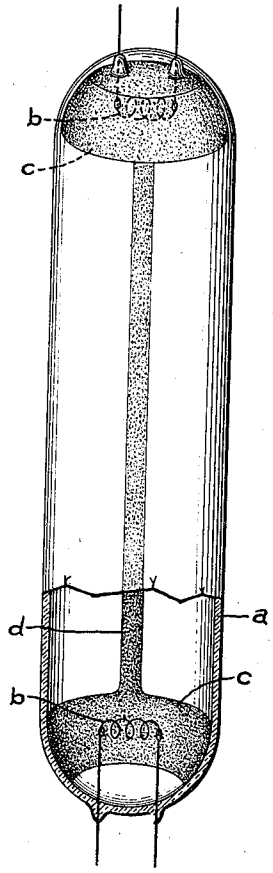

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ELECTRIC DISCHARGE DEVICE

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2 Claims. (Cl. 176—122)

This invention relates to electric discharge devices and more particularly to high pressure gas discharge lamps of the type in which luminous output is obtained by passing a discharge between anode and cathode or between two electrodes each acting alternately as anode or cathode, when the lamp is run from an alternating current supply.

In order that a discharge may take place between the electrodes, the lamp is provided with a filling of such metals as mercury, cadmium, zinc, sodium and others, or a mixture of such metals.

It is well known that the voltage necessary to start the discharge is greater than the voltage drop between the electrodes when the discharge is established.

The object of this invention is to reduce the starting voltage of the lamp and to that end it consists in introducing two extra electrodes inside the lamp, one surrounding each of the main electrodes and both being electrically connected to one another inside the lamp by a conductor.

This invention may be carried into effect in a number of ways, but we prefer to form the two electrodes and the connection between them by depositing a metallic film on the inside wall of the lamp. The metal film is preferably introduced prior to the exhausting of the lamp and may be formed by painting on the glass with a liquid metallic paint. Such paints are well known and we prefer to use a paint containing platinum or palladium. Whatever metal is chosen, it must be one which does not alloy or amalgamate with the metal forming the filling of the lamp. The electrodes painted on glass, which may be substantially hemispherical and surround the main electrodes, are joined together by one or more strips of paint extending along the walls between the two electrodes.

The accompanying drawing illustrates this method of carrying this invention into effect. In the drawing *a* represents the inner envelope of a lamp having a filling of a vaporizable metal or mixture of metals. At each end of the envelope main electrodes *b* are mounted and on the inner wall of the envelope extra electrodes *c* are painted or sprayed with a metal which will not alloy with the metal used as a filling. The two electrodes *c* are substantially hemispherical in shape and surround the main electrodes *b*. A narrow strip *d* of the same metallic paint joins the two electrodes *c*.

Although we have described one method of carrying this invention into effect by painting the electrodes on the glass, it will be understood that we do not limit ourselves to this method of forming the electrodes, as they may be made of thin metal or foil and mounted in the lamp during manufacture.

I claim:

1. A gaseous electric discharge device comprising an elongated, tubular container having substantially hemispherical ends, a gaseous atmosphere therein and a vaporizable material therein, thermionic electrodes sealed therein adjacent the ends thereof, the inner surface of each of said hemispherical ends having a thin film of metal on the inner surface thereof, the metal films at the ends of said container being electrically connected by a narrow strip of metal film extending along the discharge path between said thermionic electrodes to facilitate the starting of the electric discharge between said thermionic electrodes and to maintain said hemispherical ends at an elevated temperature during the operation of the device.

2. A gaseous electric discharge device comprising an elongated, tubular container having substantially hemispherical ends, a gaseous atmosphere therein and a vaporizable material therein, thermionic electrodes sealed therein adjacent the ends thereof, the inner surface of each of said hemispherical ends having a thin film of platinum on the inner surface thereof, the platinum films at the ends of said container being electrically connected by a narrow strip of platinum film extending along the discharge path between said thermionic electrodes to facilitate the starting of the electric discharge between said thermionic electrodes and to maintain said hemispherical ends at an elevated temperature during the operation of the device.

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