

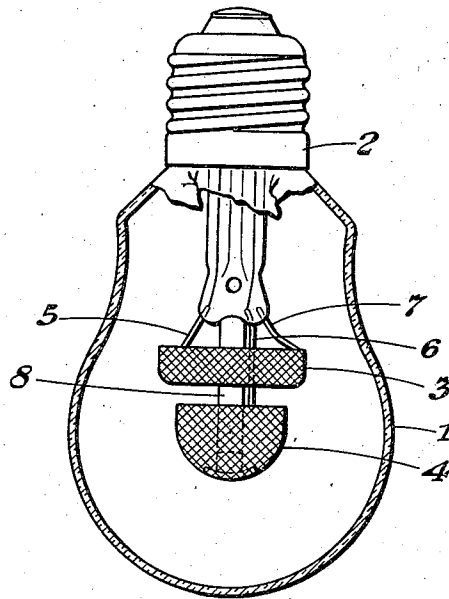
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GASEOUS ELECTRIC DISCHARGE DEVICE

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GASEOUS ELECTRIC DISCHARGE DEVICE

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3 Claims. (Cl. 176-122)

The present invention relates to gaseous electric discharge devices generally and more particularly the invention relates to such devices of the cathode glow type.

Fluorescent materials applied to the inner wall of the lamp container or on other surfaces in the lamp container are useful in complementing and supplementing the visible light emitted by the cathode glow discharge and, when desired, the only visible light emitted by the lamp is that from the fluorescent material. The manufacture of such lamps is greatly simplified by applying the fluorescent material to the cathode but I have observed that the light emitted by the fluorescent material on the cathode rapidly diminishes during the operation of the lamp.

The object of the present invention is to provide a cathode glow lamp having fluorescent material on the cathode thereof, which material retains its light emitting power during a long operating life of the device. Still further objects and advantages attaching to the device and to its use and operation will be apparent to those skilled in the art from the following particular description.

I have discovered that the fluorescent material on the cathode retains its light emitting power substantially undiminished when a material having high electron emissivity, such as barium oxide, is applied to the surface of the cathode. Such material reduces the voltage drop at the cathode and, of course, the ionic bombardment of the cathode. The fluorescent material applied to the cathode is thus not subjected to an intense ionic bombardment and retains its fluorescent quality for a long useful operating life of the lamp.

In the drawing accompanying and forming part of this specification an embodiment of the invention is shown in a front elevational, partly sectional view.

Referring to the drawing the cathode glow lamp comprises a container 1 having mesh electrodes 3 and 4 sealed therein and a base 2 attached thereto. Said container 1 has a gaseous atmosphere therein, such as a mixture of argon and mercury vapor, which emits ultra-violet light during the operation of the lamp. Current leads 5 and 6 are connected to said electrodes 3 and 4 respectively. Said electrodes 3 and 4 are supported by said leads 5 and 6 and by the supports 7 and 8, respectively.

Said electrodes 3 and 4 consist of wire net which is coated with a material having high electron emissivity, such as barium oxide, and a fluorescent material, such as zinc silicate. While

I prefer to mix these materials together and apply the mixture to the surface of the electrodes 3 and 4, good results can be obtained by first applying a coating of the fluorescent material to the surface of the electrodes 3 and 4 and then applying a thin, light transmitting coating of the electron emitting material to the fluorescent coating. During the operation of the lamp the fluorescent material transforms the ultra-violet light emitted by the cathode glow discharge into visible light.

When the above described lamp is operated on alternating current the electrodes 3 and 4 act alternately as anode and as cathode, when the lamp is operated on direct current one of the electrodes 3 or 4 acts as the cathode and the other as anode.

While I have shown and described and have pointed out in the annexed claims certain novel features of the invention, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its use and operation may be made by those skilled in the art without departing from the broad spirit and scope of the invention, for example, other types of electrodes, such as electrodes having plane surfaces are used, when desired.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. A gaseous electric discharge lamp comprising a container, electrodes sealed therein, a gaseous atmosphere capable of emitting ultra-violet light when excited by an electric discharge between said electrodes, and a coating on one of said electrodes, said coating comprising a material having high electron emissivity characteristics and another material having fluorescent properties.

2. A cathode glow lamp comprising a container, electrodes sealed therein, a gaseous atmosphere capable of emitting ultra-violet light when excited by an electric discharge between said electrodes, and a coating of high electron emissive material and fluorescent material on one of said electrodes, said materials being intimately mixed in said coating.

3. A cathode glow lamp comprising a container, electrodes sealed therein, a gaseous atmosphere capable of emitting ultra-violet light when excited by an electric discharge between said electrodes, and a coating of high electron emissive material and a coating of fluorescent material on one of said electrodes, said fluorescent coating being interposed between said emissive coating and said electrode.

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