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G. GAIDIES

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GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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Fig. 1

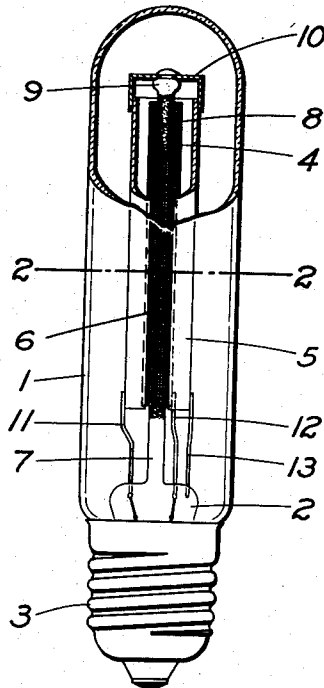
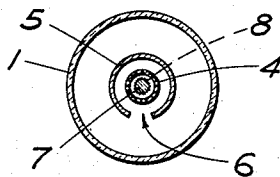


Fig. 2



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# UNITED STATES PATENT OFFICE

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## GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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Application June 18, 1937, Serial No. 149,004  
In Germany, June 24, 1936

1 Claim. (Cl. 176—122)

The present invention relates to gaseous electric discharge lamp devices generally and more particularly the invention relates to such devices of the cathode glow discharge type useful in television apparatus, or the like.

The object of the present invention is to provide a cathode glow discharge lamp which is a bright, sharply defined, efficient, linear light source. 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.

In accordance with this object the cathode glow lamp comprises a tubular container having mounted therein a cathode consisting of a mesh or net of cylindrical shape which surrounds a rod axially mounted with respect to said cathode which rod has a luminescent material associated therewith. A cylindrical sheet metal anode surrounds the cathode and is likewise axially mounted therewith. Said anode has a slit therein along its length through which the light from the cathode glow discharge and the luminescent material passes. The radiation from the cathode glow discharge impinges on the luminescent material which is strongly excited thereby. The luminescent material being applied to a body smaller in diameter than the cathode emits a brighter light than when this material is applied to a body larger in diameter than the cathode, such as the inner surface of the container surrounding the cathode, since the radiant energy per unit area impinging on the luminescent material is greater. The high brightness of the luminescent material is advantageous for many purposes and particularly for use in television apparatus.

In the drawing accompanying and forming part of this specification an embodiment of the invention is shown, in which,

Fig. 1 is a front elevational, partly sectional view of the cathode glow and

Fig. 2 is a top view along the line 2—2 of Fig. 1.

Like numbers denote like parts in both the figures.

Referring to the drawing the cathode glow lamp comprises a tubular container 1 having a stem 2 fused thereto at one end thereof. Two current leads 11 and 12 and a support wire 13 are hermetically sealed into the press part of said stem 2. Said container 1 is provided with a conventional screw base 3. A cylindrical mesh cathode 4 is axially mounted in said container 1

and is supported by said current lead 12. A cylindrical sheet metal anode 5 of larger diameter than said cathode 4 is mounted on said current lead 11 and said support wire 13. Said anode 5 has a slit 6 along its length. A glass rod 7 of smaller diameter than said cathode 4 is fused to the press of said stem 2 and is mounted axially with respect to said cathode 4, said anode 5 and said container 1. Said rod 7 extends beyond said cathode 4 in both directions and the free end of said rod 7 is thickened at 9 and a metal cap 10, which supports the free end of the anode 5, is mounted on said thickened part 9 of said rod 7. The container 1 has a gaseous atmosphere therein, such as a mixture of about 15% nitrogen and about 85% argon, which emits visible and ultra violet light when excited by a cathode glow discharge between said electrodes 4 and 5 and the surface of the rod 7 is coated with a luminescent material, such as calcium sulphide, which emits visible light under excitation by radiation from said discharge.

The radiation from the cathode glow discharge in the lamp impinges on the entire surface of the coated rod 7 so that the luminescent material 8 on said rod 7 is strongly excited and emits a bright light which passes through the mesh cathode 4 and the slit 6 in the anode 5 and which is useful in conjunction with many devices, particularly television apparatus.

While I have shown and described and have pointed out in the annexed claim 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.

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

A cathode glow lamp comprising a tubular container, a gaseous atmosphere therein, electrodes sealed therein, one of said electrodes being a cylindrical mesh cathode, a cylindrical, slitted, sheet metal anode surrounding said cathode and being axially mounted with respect thereto, a rod extending along the axis of said cathode and being surrounded by said cathode and a luminescent material on said rod which material emits visible light under excitation by radiation from the cathode glow discharge between said electrodes.

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