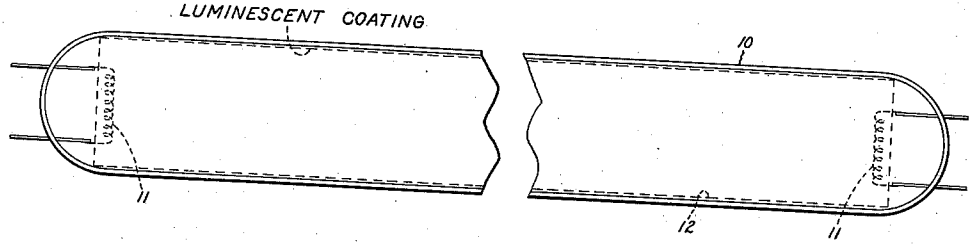
Oct. 7, 1941. A. RUTTENAUER ET AL 2,258,472

GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

Filed Feb. 20, 1939



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Patented Oct. 7, 1941 2,258,472

UNITED STATES PATENT OFFICE

2,258,472

GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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Application February 20, 1939, Serial No. 257,490
In Germany February 25, 1938

4 Claims. (Cl. 250—81)

Our invention relates to gaseous electric discharge lamp devices generally, and more particularly to improvements in lamps of the type comprising an electric mercury vapor tube or lamp containing a rare gas and having either incandescent electrodes or cold sheet metal electrodes, and in which a luminophor or luminescent layer is located in or adjacent to the path of the discharge column.

This luminophor layer referred to above consists of an isomorphic mixture of a zinc-beryllium silicate activated with manganese. This layer is applied within the tube, on the wall, on a surrounding vessel, or on a screen. When such luminophor layers are applied, one obtains by mixing the luminescent light with the light from the mercury vapor, a whitish light with a reddish hue, provided there is admixed to the zinc-beryllium silicate a certain percentage of a cadmium-silicate luminophor which is activated with manganese. A disadvantage of this arrangement is that the color tone of blue objects or of blue surfaces is not reproduced sufficiently well. In order to overcome this condition, it has been already proposed to add to the zinc-beryllium silicate, or to a mixture of zinc-beryllium silicate with cadmium silicate, 5 to 20 per cent of a tungstate luminophor which emits a blue light. However, the admixture of the tungstate luminophor with its emission of blue light weakens the red content of the total or resultant radiation in an undesirable manner, and so it is not advisable to add more than 20 per cent of the blue-light emitting tungstate luminophor.

We have discovered that a sufficient blue radiation can be attained without noticeable weakening of the red radiation when 20 to 40 per cent of a tungstate or molybdate luminophor is added to the zinc-beryllium silicate luminophor which, because of its manganeses content of 1.5 to 3 per cent, is already emitting a yellowish-red light. This tungstate or molybdate luminophor should contain 0.3 to 2 per cent samarium and 0.1 to 1 per cent bismuth, lead, silver, or copper. Such an additional luminophor has a violet to red-violet radiation, and as a result, the yellowish-red rays which issue from the zinc-beryllium silicate luminophor are supplied with not only the missing blue radiation but also with a certain quantity of red radiation. In this manner, the red radiation of the zinc-beryllium silicate luminophor is not unduly prevented at the expense of the added blue radiation.

An addition of 30 per cent of a calcium-tungstate luminophor, to which 0.7 per cent samarium and 0.5 per cent lead are added, are proved to be advantageous.

For a further understanding of the invention, reference may be had to the drawing which is an elevation of a type of lamp comprising our invention.

The lamp illustrated in the drawing comprises a glass container 10 having sealed into the ends thereof electrodes 11—11 which are shown as incandescent filamentary electrodes but which may be of any desired type, such as cold sheet metal electrodes, as is well known in the art. The container 10 has a filling of rare gas and mercury vapor and is provided on its inner surface, by methods now well known, with a layer 12 of luminescent material of the type described above which is excited to luminescence by the discharge between electrodes 11—11 through the mercury vapor.

A mercury-vapor tube or lamp which is provided with a luminophor layer according to the invention produces a large amount of a warm reddish-white light which permits blue objects or surfaces to appear in their true color.

What we claim as new and desire to secure by Letters Patents of the United States is:

1. A luminescent mixture capable of emitting a large amount of warm reddish-white light under excitation by an electric discharge through mercury vapor, said mixture comprising a yellowish-red luminescent zinc-beryllium silicate having mixed therewith about 20 to 30 per cent of a luminescent material of the group consisting of violet to red-violet fluorescing tungstates and molybdates containing about 0.3 to 2 per cent samarium and 0.1 to 1.0 per cent of a metal of the group consisting of bismuth, lead, silver and copper.

2. A luminescent mixture capable of emitting a large amount of warm reddish-white light under excitation by an electric discharge through mercury vapor, said mixture comprising a yellowish-red luminescent zinc-beryllium silicate having mixed therewith about 20 to 30 per cent of a luminescent calcium tungstate containing about 0.3 to 2 per cent samarium and 0.1 to 1 per cent of a metal of the group consisting of bismuth, lead, silver and copper.

3. A luminescent mixture capable of emitting a large amount of warm reddish-white light under excitation by an electric discharge through mercury vapor, said mixture comprising a yellowish-red luminescent, isomorphous mixture of zinc-beryllium silicate activated with about 1.5

to 3 per cent manganese having mixed therewith about 20 to 30 per cent of a luminescent material of the group consisting of violet to red-violet fluorescing molybdates and tungstates containing about 0.3 to 2 per cent samarium and about 0.1 to 1.0 per cent of a metal of the group consisting of bismuth, lead, silver and copper.

4. A luminescent mixture capable of emitting a large amount of warm reddish-white light under excitation by an electric discharge through mercury vapor, said mixture comprising a yellowish-red luminescent, isomorphous mixture of a zinc-beryllium silicate activated with about 1.5 to 3 per cent manganese having mixed therewith about 20 to 30 per cent of luminescent calcium tungstate containing about 0.7 per cent samarium and about 0.5 per cent lead.

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