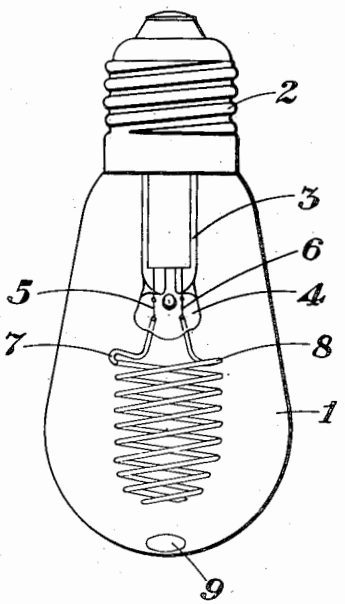
March 13, 1934. F. ABSHAGEN 1,951,117

GASEOUS ELECTRIC DISCHARGE DEVICE

Filed Nov. 24, 1931



INVENTOR
Franz Abshagen
BY Charles V. Ulla
ATTORNEY

Patented Mar. 13, 1934 1,951,117

UNITED STATES PATENT OFFICE

1,951,117

GASEOUS ELECTRIC DISCHARGE DEVICE

Franz Abshagen, Berlin, Germany, assignor to General Electric Company, a corporation of New York

Application November 24, 1931, Serial No. 577,105
In Germany December 30, 1930

3 Claims. (Cl. 176—122)

The present invention relates to gaseous electric discharge devices generally and more particularly the invention relates to such devices useful as a dark room lamp in the developing processes of the photographic art.

It is well known in the art that photographic films and plates are least sensitive to green light and that light of this wave length may be used at a sufficient intensity to render visibility to the developing process without harm to the films and plates being developed, this being true even in the case of panchromatic films and plates. It has hitherto been the practice in the art to use incandescent lamps equipped with a green filter for this purpose. Such devices have been difficult to manufacture and to use in photographic developing processes as the spectrum of the light emitted by the incandescent metal wire or carbon filament present in such devices is continuous in its nature and covers the entire range of the spectrum and the green colored light emitted is proportionately weak in intensity. Expensive, scientifically perfect filters were necessary to screen out the light other than the green light emitted by the incandescent filament and the manufacture of the container comprising such a filter presented many difficulties involving expensive operations.

The object of the present invention is to provide an inexpensive light source for use in the developing processes of the photographic art said light source providing a light harmless to photographic developing emulsions. Another object of the invention is to provide such a light source in which the spectrum of the emitted light is proportionately rich in green. 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 detailed description and from the appended claims.

In accordance with these objects the invention comprises a negative glow lamp having a gaseous atmosphere consisting of mercury vapor, or a mixture of mercury vapor and a rare gas such as, for example, argon, helium, krypton, xenon or neon. Such a lamp has a discontinuous spectrum, as is well known in the art, and the light emitted thereby is proportionately weak in light rays harmful in the developing processes of photographic films and plates and may be screened out with greater facility than the light, other than green light, emitted by an incandescent filament, and commercial green filters may be used for this purpose rather than the scientifically perfect filters necessary for screening out the light, other than green light, emitted by an incandescent filament and the glass container of the device may be such a filter if desired. Where a mixture of rare gas, such as argon, helium, krypton, xenon or neon, and mercury is used as the gaseous filling the mercury spectrum drowns out the rare gas spectrum during the operation of the device so that only the mercury spectrum, which is rich in green light, is emitted by the device. The other light rays, other than the green rays, of the mercury spectrum may be screened out by a common commercial filter.

In the drawing accompanying and forming part of this specification an embodiment of the invention is shown in front elevation but as such illustration is primarily for purposes of disclosure it will be understood of course that numerous substitutions, modifications and changes in the form and details of the device and in its use and operation will be apparent to those skilled in the art from the following detailed description and from the appended claims.

Referring to the drawing the new and novel dark room lamp, being a gaseous electric discharge device of the negative glow type, comprises a container 1 having a screw base 2. The leads 5 and 6 of the electrodes 7 and 8, respectively, are sealed into pinch part 4 of the stem 3 of said container 1. Electrodes 7 and 8 consist of metal wires shaped in the form of a screw and are arranged in the container 1 in such manner that they are equi-distant from each other at all points thereof. Said glass container 1 is filled with an easily ionizable rare gas, such as argon, at a low pressure. A drop of mercury 9 is in said container 1, said body of mercury 9 is vaporized during the operation of the device and the light emitted by the mercury vapor drowns out or suppresses the light emitted by the rare gas present in such device. The rare gas, such as argon, for example, has a low "break-down" potential and is therefore used for starting purposes. The light emitted by the mercury vapor is rich in green radiations and the other light emitted thereby may be screened out by common commercial filters. The glass container 1 may be made of a glass being a suitable filter or such said container 1 may be of clear glass and coated with a green lacquer or enamel or any other green filter well known in the arts may be used.

The shape of the electrodes and the container may be varied if desired.

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

1. A photographic dark room electric lamp

comprising a container, negative glow discharge electrodes sealed therein, a gaseous atmosphere therein, the negative glow light emitted by said gaseous atmosphere being rich in green radiations, a filter in operative relation to said device adapted to screen out the light, other than the green light, emitted by said device.

2. A photographic dark room electric lamp comprising a container, negative glow discharge electrodes sealed therein, a gaseous atmosphere therein comprising mercury vapor, the negative glow light emitted by said gaseous atmosphere being rich in green radiations, a filter in operative relation to said device adapted to screen out the light, other than the green light, emitted by said device.

3. A photographic dark room electric lamp comprising a container, negative glow discharge electrodes sealed therein, a gaseous atmosphere therein comprising a rare gas and mercury vapor, the negative glow light emitted by said mercury vapor drowning out the light emitted by said gas during the operation of the device, the light emitted by said mercury vapor being rich in green radiations, a filter in operative relation to said device adapted to screen out the light, other than the green light, emitted by said device.

FRANZ ABSHAGEN.