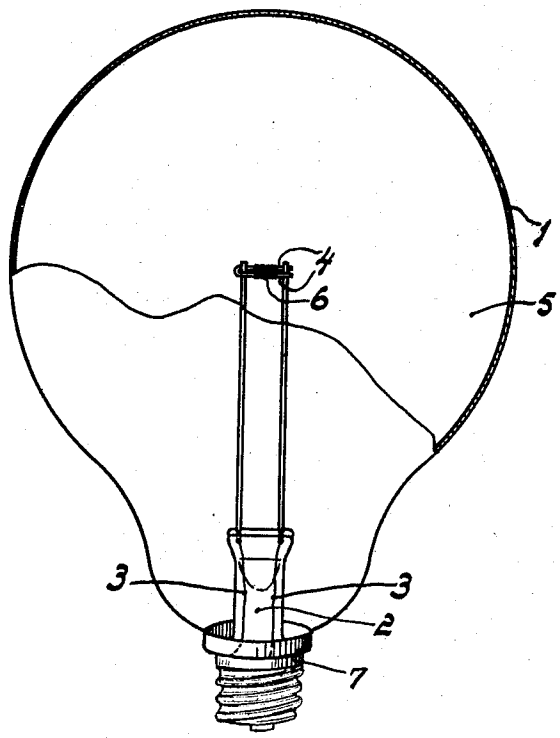
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FLASH LIGHT LAMP

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FLASH LIGHT LAMP

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7 Claims. (Cl. 67—87)

The present invention relates to flashlight lamps for photographic purposes, and more particularly to means to increase and improve the actinic effect of such flashlight lamps.

My invention may be applied to various types of flashlight lamps, for instance, to those in which the actinic effect is obtained by the rapid combustion of a metal, for instance of aluminium foil provided in an oxygen-containing sealed bulb, or to flashlight lamps in which a flashlight powder is provided in a sealed container and ignited by electric means.

Preferably my invention is applied to flashlight lamps of the type described in the copending application of van Liempt & Leydens, Ser. No. 594,910, filed February 24, 1932, in which the actinic effect is obtained primarily through a "gas reaction" which takes place between the gases of a mixture, or through the decompcsition of a single gas, enclosed in a sealed container, and which reaction is preferably initiated by electrical ignition means and more particularly to a gas reaction flashlight lamp of the type described in the copending application of Van Liempt and Leydens, Ser. No. 606,444 filed April 20, 1932.

Flashlight lamps of previous manufacture had the drawback that due to the character of the light obtained the inherent color sensitiveness of orthochromatic and panchromatic photographic material could not be always fully utilized.

In the above referred to two applications it has been suggested to provide in the lamps certain substances, for instance, the salts of certain metals, to enhance the actinic effect, and to modify the color spectrum of the light obtained by the reaction.

While it has been found that various salts and especially sodium salts, enhance to some extent the actinic effect of the light and improve its spectrum, the results were not fully satisfactory, even on panchromatic and orthochromatic plates or films.

I have found that by providing sodium azide (NaN_3) in the flashlight lamp, which decomposes easily and develops atomic sodium vapor, the actinic effect of the lamp is greatly improved, in correspondence with the colour sensitiveness of the plate and the flashlight lamp obtains a much higher intensity over a wide band around the well-known yellow sodium line. The fact that NaN_3 gives far better results than any other sodium compound is due to the fact that it easily produces a large amount of Na vapour in atomic state. Moreover in the case of the lamp described in the application Serial No. 606,444 not only the intensity in the yellow range is increased but also in the red range, whereas the too high intensity of the blue is diminished. NaN_3 is already decomposed by a temperature of 350–400° C.

While sodium azide generally improves the character of light and the actinic effect of flashlight lamps of various types, the best results are obtained when used in connection with flashlight lamps of the type described in said application Ser. No. 606,444, in which the actinic effect is due to a reaction taking place in a gas mixture consisting of carbon disulphide and nitric oxide.

When sodium azide is added to such gas filling the atomic sodium vapor developed during the gas reaction, combined with the gas reaction, produces a light of exceedingly favorable properties, in which high actinic effect, favorable spectrum distribution and quick reaction, are combined and which permits the full utilization of the inherent color-sensitiveness of orthochromatic and panchromatic photographic material, and also the taking of high quality instantaneous photographs.

In the drawing accompanying this specification:

The figure is a schematic side view, partly in section, of a lamp embodying my invention.

The bulb 1, which may be a standard incandescent lamp bulb, is provided with a stem 2 and lead-in wires 3—3, which carry the glower, which for example, comprises two closely-spaced parallel wires 4—4 connected to the ends of the lead-in wires 3—3. Between the wires 4—4 is provided a film 6 of sodium azide, which is deposited in a manner later to be explained. The lamp after being evacuated is filled with a gas mixture 5 of carbon disulphide and nitric oxide, for instance, one volume carbon dioxide to 1.5 to 3.5 volumes of nitric oxide, or preferably 2.25 to 2.75 volumes of nitric oxide, such lamps and their manufacture being more fully described in said applications.

The sodium azide is introduced in the lamp by providing on the wires 4—4, preferably before the stem is sealed in the lamp, a preferably boiling aqueous solution of sodium azide. The water is then evaporated which leaves the film 6 of sodium azide adhering between the two parallel wires.

The lamp is preferably provided with a base 7 of the usual type to which the lead-in wires are connected, and upon application of a suitable voltage the gas mixture is ignited and simultaneously the sodium azide is decomposed to liberate

atomic sodium vapor. The combined spectrum obtained by the reaction of the gas mixture and the spectrum of the sodium is such that a light having a photographic effect quite similar to daylight or even better is obtained, and thus the color sensitiveness of special photographic material fully utilized.

While such lamps are usually provided with electric ignition means, ignition mixtures may also be used, but neither the electric ignition means nor the ignition mixtures greatly contribute to the actinic effect of the lamp, which is solely or primarily obtained by the actinic effect of the gas reaction and the spectrum of the sodium vapor obtained through the decomposition of the sodium azide.

While I have described my invention with reference to a specific type of flashlight lamp, as stated it can be applied to various types of flashlight lamps. Therefore I do not wish to be limited to the example shown, but desire the appended claims to be construed as broadly as permissible in view of the prior art.

What I claim is:

1. A flashlight lamp comprising a container, electrical ignition means, and material which upon initiation by said ignition means enters into a reaction giving high actinic effect, and sodium azide on said ignition means to modify the actinic effect of said reaction.

2. A flashlight lamp comprising a sealed container, electrical ignition means, and a gas filling in which a gas reaction may be brought about by said electrical ignition means, said gas reaction giving a light of a high actinic effect, and sodium azide on said ignition means to modify the actinic effect of said gas reaction.

3. A flashlight lamp for photographic purposes comprising a container, electrical ignition means, and material in which a gas reaction may be brought about by said electrical ignition means, and sodium azide on said ignition means, which is decomposed and develops atomic sodium vapor when said reaction takes place, said sodium vapor modifying the actinic effect of the lamp being essentially due to the gas reaction and to the sodium vapor.

4. A flashlight lamp for photographic purposes comprising a sealed container, electrical ignition means, and a gas filling in which a gas reaction may be brought about by said electrical ignition means, and sodium azide on said ignition means to modify the actinic effect of the lamp, said electrical ignition not substantially contributing to the actinic effect of the lamp.

5. A flashlight lamp for photographic purposes comprising a container, electrical ignition means, and material which enters into a reaction giving high actinic effect and adapted to being directly ignited by said ignition means, and sodium azide on said ignition means to modify the actinic effect of said reaction.

6. A flashlight lamp comprising a sealed container, electrical ignition means, and a gas filling, said gas filling consisting of a mixture of carbon disulphide and nitric oxide, sodium azide provided on said ignition means, said lamp giving a high actinic effect upon ignition of said gas filling, said actinic effect being modified by the light emitted by atomic sodium obtained through the decomposition of said sodium azide which takes place when the gas filling is ignited.

7. A flashlight lamp for photographic purposes comprising a transparent sealed container which is deprived of air and which contains a gas filling, electrical ignition means in said lamp comprising an electric glower, said glower being provided with sodium azide, said gas filling adapted to be ignited by said electric ignition means to cause a gas reaction having high actinic effect, said sodium azide adapted to decompose upon said ignition to liberate atomic sodium vapor which modifies the actinic effect of the lamp.

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