Oct. 31, 1939. E. LEMMERS 2,178,428

FLASH LAMP

Filed March 13, 1937

Fig. 1.

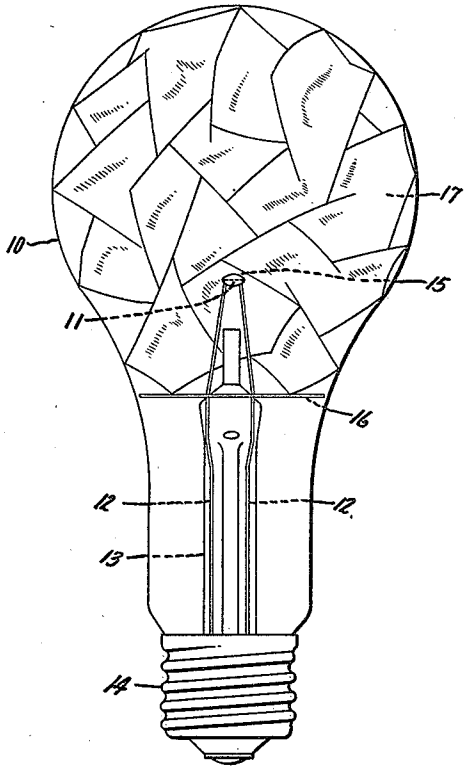
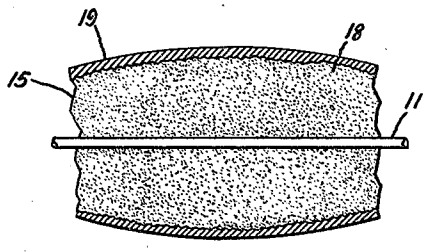


Fig. 2.



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FLASH LAMP

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6 Claims. (Cl. 67—31)

My invention relates to flash lamps and more particularly to that type of flash lamp used for photographic purposes which usually comprises a sealed transparent bulb in which is enclosed a readily combustible material, such as metal foil or wire, together with a substance, usually a gas filling, which upon ignition enters into a reaction with the combustible material with the resulting emission of actinic light.

To initiate the actinic reaction it is necessary to provide some form of ignition means therefor. The type of ignition means customarily employed for such purpose comprises a resistance element or filament embedded in a bead of ignition paste and supported within the bulb in close proximity to the combustible material by a conventional mount structure. The ignition paste generally used is extremely sensitive, and when the electrical circuit through the filament is energized, the heated filament promptly ignites the bead of ignition paste which in turn ignites the combustible material, thus initiating the actinic reaction.

As a safeguard against explosion of the glass bulb when a lamp of this type is flashed, it is customary to test the same for the presence of air. One desirable method of conducting such a test, known as a coil test, consists in the use of high frequency equipment employing glow tubes. It has been found, however, that such a method of testing results in the loss of a great number of flash lamps through the premature flashing of the same, termed flashouts, which premature flashing is caused by the ignition of the extremely sensitive bead of ignition paste by the high frequency of the test equipment. Furthermore, the bead of ignition paste is very fragile and frequently cracks or breaks off during shipment of the lamp. I have accordingly devised a novel form of ignition means or primer bead for flash lamps which will prevent the premature flashing of the same, and which possesses increased mechanical strength and resistance to cracking and breaking off.

One object of my invention is to provide an improved flash lamp which will not flash prematurely when subjected to various external phenomena, such as high frequency, corona, or the like.

Another object of my invention is the provision of a novel form of ignition means for flash lamps which will not ignite when subjected to various external phenomena, such as sparks induced by high frequency corona, and the like.

A further object of my invention is the provision of a coating of lacquer or other similar non-conducting material on the primer bead of a flash lamp, which coating excludes such paste from various external phenomena normally tending to ignite the same.

A still further object of my invention is the provision of a coating of non-conducting material on the primer bead of a flash lamp, which coating may consist of nitrocellulose, cellulose acetate or other lacquer, or a varnish, paint, glue or similar compound.

Another object of my invention is the provision of a coating on the primer bead of a flash lamp which coating adds mechanical strength to such bead and prevents the same from cracking and breaking off.

Other objects and advantages of my invention will be apparent from the following description of an embodiment thereof, taken in conjunction with the accompanying drawing, in which:

Fig. 1 is an elevation of a flash lamp comprising my invention in which the ignition means comprises a bead of ignition paste enclosing the filament and coated with a layer of non-conductive material, and

Fig. 2 is an enlarged fragmentary sectional view of a portion of a bead of ignition paste coated in accordance with my invention.

Referring to Fig. 1, the lamp comprises a vitreous transparent bulb 10 containing a small filament 11, the ends of which are connected to lead-in wires 12, 12 which extend through a stem 13 to the base 14. The filament 11 is embedded in a fulminating substance 15 to thereby form the ignition means for the lamp. A disc 16, preferably of asbestos, is mounted on the stem 13 to shield the base end of the lamp from the heat of combustion. The bulb 10 is loosely filled with combustible material 17, consisting of metal foil or wire, usually of aluminum.

The fulminating substance or primer bead 15 customarily employed in flash lamps of the type described above is composed of an extremely sensitive metal powder 18, such as zirconium metal, mixed with a suitable binding material, such as lacquer. When a bead of this paste dries, the metal powder particles at the surface protrude therefrom, and under the microscope have the appearance of fuzz. It is this fuzz that causes the bead of metal powder to flash when a slight spark or even corona strikes the same. By covering this fuzz or roughened surface with a coating of a suitable non-conductive substance 19, as shown in Fig. 2, the metal powder 18 is thereby excluded from the action of all external phe-

nomena thereon tending to ignite the same, such as sparks induced by high frequency, corona, and the like. In this manner, the premature flashing of the metal powder 18, and of the flash lamp itself, during test and other operations, is prevented. In addition, the coating 19 definitely adds a considerable amount of mechanical strength to the fragile bead of metal powder, thereby reducing the danger of such bead cracking and breaking off during shipment and other handling of the lamp.

The coating material 19 may consist of any suitable non-conductive substance, such as nitrocellulose, cellulose acetate, or other lacquer, or may even consist of a varnish, paint, glue or similar compound. This coating may be applied to the bead or fulminating substance or metal powder 18 by simply dipping such bead in the coating material and allowing the latter to dry thereon.

Although the above described method of preventing premature flashing of the fulminating substance 18 and adding mechanical strength thereto is the preferred method, the same effect may be obtained to a certain degree by mixing the metal powder with a great excess of binder, the latter thus tending to produce a bead having a smooth outer surface instead of the customary roughened surface.

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

1. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means including a body of highly sensitive fulminating substance comprising a readily ignitable metallic powder and coated with a layer of non-conductive material capable of preventing premature ignition of the fulminating substance during a high frequency test for the presence of air in said container.

2. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means including a body of highly sensitive fulminating substance comprising a readily ignitable metallic powder and coated with a layer of lacquer.

3. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means including a body of highly sensitive fulminating substance comprising a readily ignitable metallic powder and coated with a layer of nitrocellulose.

4. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means including a body of highly sensitive fulminating substance comprising a readily ignitable metallic powder and coated with a layer of cellulose acetate.

5. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means including a body of highly sensitive fulminating substance comprising a readily ignitable metallic powder and coated with a layer of varnish.

6. A flash lamp comprising a sealed container, a quantity of combustible material within said container, and means for igniting said combustible material, said means comprising an electrical translation element embedded in a bead of highly sensitive fulminating substance comprising a readily ignitable metallic powder, said bead being coated with a layer of non-conductive material which strengthens said bead against breakage and is capable of preventing premature ignition of the fulminating substance during a high frequency test for the presence of air in said container.

EUGENE LEMMERS.