Nov. 25, 1941. W. LEDIG ET AL 2,264,043

ELECTRIC PHOTOFLASH LAMP

Filed May 19, 1938

Fig. 2.

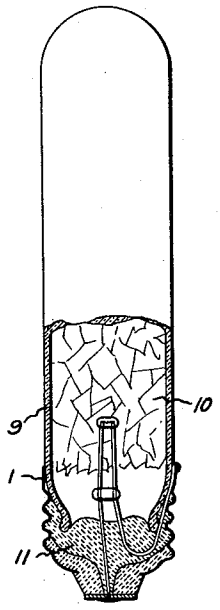


Fig. 1.

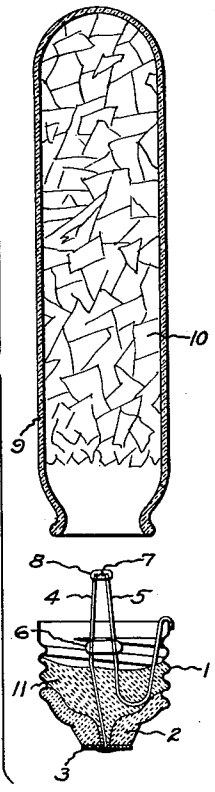
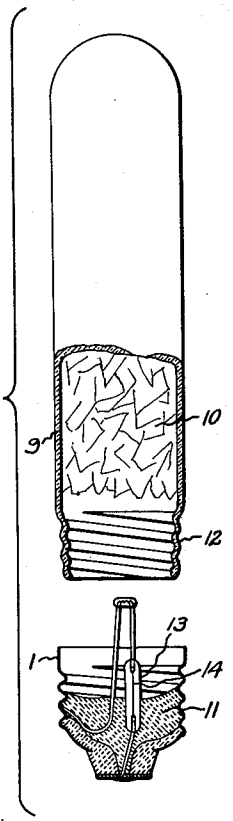


Fig. 3.



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ELECTRIC PHOTOFLASH LAMP

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4 Claims. (Cl. 67—31)

Our invention relates to electric photoflash lamps, particularly for photographic purposes, in which a flash-light material, which serves as the light agent, such as a loose filling or wad of foil or wire consisting of aluminum or magnesium, is arranged in a glass bulb resembling an incandescent lamp and containing oxygen or an oxidizing gas or gas mixture. In addition, the bulb contains a filament and ignition pellet which serves for igniting the flash-light material. The current supply wires, which carry the filament and ignition pellet, are in this case generally sealed in a glass stem which is to be sealed to the lamp bulb, or they are sealed directly in the glass bulb, whereupon the latter is evacuated, filled with oxygen, an oxygen mixture, or another oxidizing gas, and is sealed.

One of the objects of our invention is to simplify the manufacture of such electric photoflash lamps to a considerable extent and to make them less expensive. To this end the current supply wires which carry the filament together with the ignition pellet are, according to the invention, sealed neither in a stem tube, which is to be sealed to the lamp bulb, nor in the lamp bulb itself, but are merely secured to the base of the lamp bulb so that the base, the current supply wires, the filament and the ignition pellet constitute one unit. The unsealed lamp bulb which contains the gas filling and the flash-light material is placed over the filament and is closed off by a cementing compound which partly fills the base and which simultaneously connects the base to the lamp bulb in a rigid manner. In the manufacture of the lamp, the sealing of the current supply wires in a special glass stem or in the lamp bulb itself, is consequently eliminated, as is the evacuation of the bulb. It is necessary only to blow oxygen, an oxygen mixture or any other oxidizing gas or gas mixture into the lamp bulb after the flash-light material has been supplied, and then to hermetically close the bulb by means of the cement located in the base. A certain mixing of the gas filling of the bulb with atmospheric air, caused by mutual diffusion may occur before the lamp is placed in the base, but this is unimportant as the atmospheric air is also an oxygen mixture. For the connection of the base to the bulb and the sealing of the latter, it is advantageous to use a cement which readily solidifies in a vacuum-tight manner and which forms a vacuum-tight connection with the glass, possibly a pitch-like asphalt cement.

Further features and advantages will appear from the following detailed description and from the drawing of electric flash-light lamps designed according to the invention in which:

Fig. 1 is a vertical section prior to the cementing of the lamp bulb in the base; Fig. 2 is a vertical section after the cementing of the lamp bulb in the base is completed; and Fig. 3 is a vertical section through a modification of the lamp, also prior to the cementing of the lamp bulb in the base.

Referring to the drawing, the lamp is equipped with the well-known screw base which consists of a metallic threaded shell or sleeve 1, an insulating body 2, which may be glass, and a metallic bottom or end contact plate or eyelet 3. The one current supply wire 4 is connected to the latter and the other current supply wire 5 is soldered to the threaded sleeve. Portions of the two current supply wires 4 and 5 are sealed in a glass bead 6 which serves to space and stiffen them and which in certain cases can also be omitted. The ends of the two current supply wires 4 and 5 which protrude from the base are bridged by a filament 7 to which an ignition pellet 8 is fastened. The filament 7, the ignition pellet 8, the current supply wires 4, 5 and the base 1, 2, 3 therefore constitute one unit. The lamp comprises in addition, a cylindrical glass bulb 9 which is open at the bottom or neck portion thereof and which is filled with a suitable flash-light material, possibly—as shown—with a loose filling or wad of foil 10 of aluminum or magnesium. Before the glass bulb and the base are combined, oxygen, an oxygen mixture or any other oxidizing gas or gas mixture is blown into the glass bulb in order to drive out the air contained therein. In addition, the base is partly filled with a cement 11 which readily solidifies in a vacuum-tight manner. As long as the latter is still soft or after it has been brought into a plastic state by heating the base, the bulb which contains the flash-light material and the gas filling is pressed with its open end into the base, as shown in Fig. 2. Upon solidification of the cement 11, this will cause both a vacuum-tight seal of the lamp bulb 10 and also a solid connection of the lamp bulb with the base sleeve 1.

In the modification shown in Fig. 3, the lower end or neck of the lamp bulb 9 is provided with a screw thread 12 which is screwed into the threaded sleeve 1 of the base when the lamp bulb and the base are combined, to such an extent that the lower edge of the bulb, as shown in Fig. 2 of the first embodiment, penetrates into the cementing compound 11 while it is still soft. Consequently a vacuum-tight bulb seal is again

obtained in this case after the solidification of the cementing compound. The connection of the base with the lamp bulb, however, is a particularly good one since it is created not only by the solidified cement but simultaneously by the engagement of the screw threads.

Instead of the screw base shown, it is also possible to use a base of any other design, for instance a bayonet base. The lamp bulb can be of any desired size and may have any other desired shape. The lamp bulb can further, as known in itself, be provided with an internal or external coating which reduces the danger of bursting and may in certain cases consist of a colored glass or of a glass transparent to ultra-violet rays.

In the base of the lamp it is further possible to provide a fuse which, as shown by way of example in Fig. 3, can consist of a thin fuse wire 14 enclosed in a small glass tube 13.

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

1. An electric flash lamp comprising a bulb containing a loose filling of combustible material and an oxygenous atmosphere, a base comprising a metal shell having one end closed by a body of vitreous insulating material carrying an end contact, electric ignition means mounted on said base and forming an integral and solidly interconnected unitary structure therewith, said ignition means comprising a pair of current supply conductors connected permanently one to said shell and one to said end contact and carrying a filament having an ignition pellet associated therewith, said bulb having an open neck portion extending into the open end of said base and enclosing said ignition pellet, and a quantity of cement in said base which sets without heating to a temperature high enough to soften the said vitreous insulating material, said cement closing off and hermetically sealing said bulb neck and uniting it firmly to said base.

2. An electric flash lamp comprising a bulb containing a loose filling of combustible material and an oxygenous atmosphere, a base comprising a screw threaded shell having one end closed by a body of vitreous insulating material carrying an end contact, electric ignition means mounted on said base and forming an integral and solidly interconnected unitary structure therewith, said ignition means comprising a pair of current supply conductors connected permanently one to said shell and one to said end contact and carrying a filament having an ignition pellet associated therewith, said bulb having an open neck portion provided with threads screwed into the open end of said base and enclosing said ignition pellet, and a quantity of cement in said base which sets without heating to a temperature high enough to soften the said vitreous insulating material, said cement closing off and hermetically sealing said bulb neck and uniting it firmly to said base.

3. The method of manufacturing an electric flash lamp which comprises securing ignition means comprising a pair of current supply conductors, a filament and an ignition pellet to a base closed at one end by a body of insulating material to form a solidly interconnected unitary structure, introducing into said base a quantity of cement which sets without heating to a temperature high enough to soften the said insulating material, introducing a quantity of combustible material into an open-neck bulb, introducing a quantity of oxygen into said bulb to displace at least a portion of the air therein, and inserting the neck of said bulb into the open end of said base and into the cement therein to hermetically close off said bulb neck and secure it firmly to said base.

4. An electric flash lamp comprising a bulb containing a loose filling of combustible material and an oxygenous atmosphere, a base comprising a metal shell having one end closed by a body of insulating material carrying an end contact, electric ignition means mounted on said base and forming an integral and solidly interconnected unitary structure therewith, said ignition means comprising a pair of current supply conductors connected permanently one to said shell and one to said end contact and carrying a filament having an ignition pellet associated therewith, said bulb having an open neck portion extending into the open end of said base and enclosing said ignition pellet, and a quantity of cementitious material in said base which sets without heating to a temperature high enough to soften the said insulating material, said cementitious material closing off and hermetically sealing said bulb neck and uniting it firmly to said base.

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