Nov. 9, 1937. F. R. MEGINNISS 2,098,507

FLASH LAMP

Filed Aug. 14, 1935

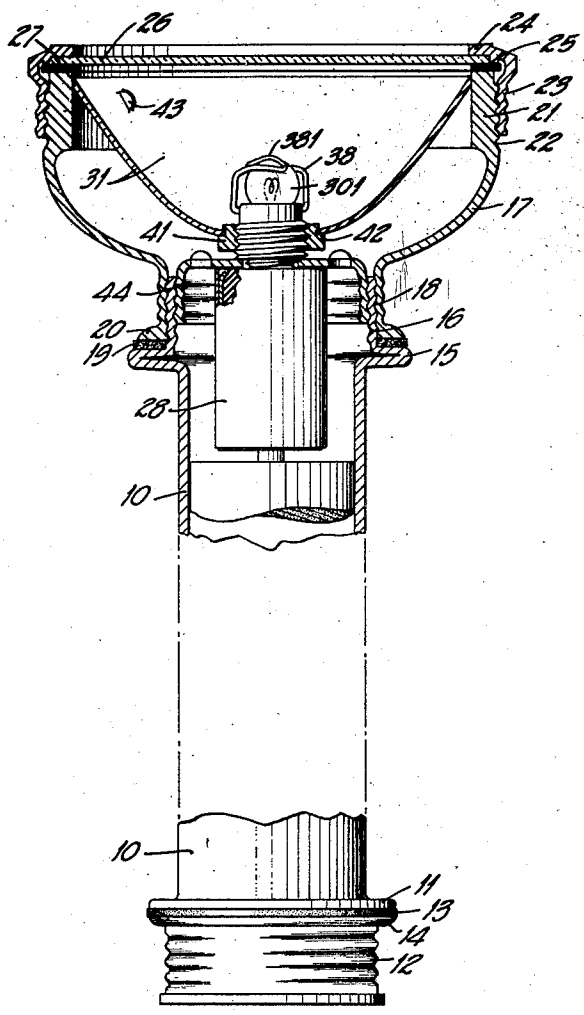


FIG. 1

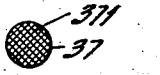


FIG. 4

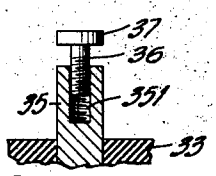


FIG. 3

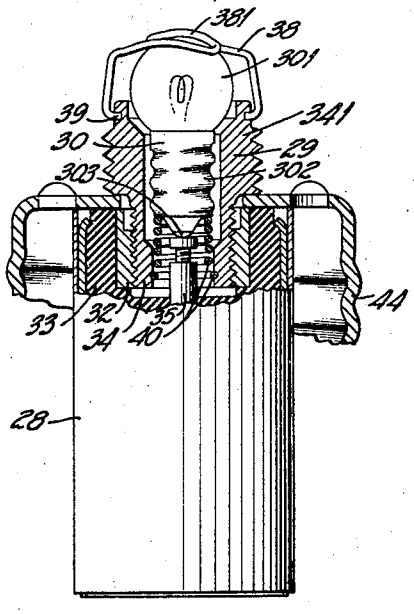


FIG. 2

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FLASH LAMP

Francis R. Meginniss, Albany, N. Y.

Application August 14, 1935, Serial No. 36,097

4 Claims. (Cl. 240—11.3)

My invention more particularly relates to that type of flash lamp which is applicable for use in gases of an explosive character such as mine gas and gasoline and other hydrocarbon vapors. In order to minimize the danger of an explosion when used in explosive gases of this character it has hitherto been proposed to eject the base of an incandescent lamp from its socket in case the bulb of the lamp is fractured. In such devices as have been proposed and with which I am familiar, however, for accomplishing this result, at least one of the contacts has been yielding and movable. I find that the circuit of the incandescent lamp is more quickly broken in case the contact co-operating with the lamp contact is normally stationary, as compared with contacts at least one of which is yielding as has hitherto been proposed, for the reason that the circuit of the lamp filament is broken the instant that the lamp contact leaves the normally stationary contact, whereas, in the case of a yielding contact, the circuit of the filament is prolonged during the travel of the yielding movable contact and after the lamp has been fractured.

A further specific object of my invention is the provision of means for adjusting the positions of the lamp contact and the normally stationary contact relatively to each other. In practice, the over-all length of the small incandescent lamps which are employed in flash lamps vary. When the contact which co-operates with the lamp contact is normally stationary, then in case of an oversized lamp, the clamping device which holds the lamp in position creates a stress in the bulb of the lamp which is likely to cause its rupture. On the other hand in case the lamp is undersized, it is loosely held in position in the flash lamp, which is likely to bring it out of focus with respect to the reflector, and it is otherwise objectionable for the lamp to be loosely held in the socket. In accordance with my invention, means are provided for adjusting the relative positions between the lamp contact and the normally stationary contact, and specifically for adjusting the position of the normally stationary contact to compensate for variations in the overall dimensions of the incandescent lamp which may be used.

A further object of my invention is the provision in combination with means for preventing the ignition of the gas in which the lamp may be located, of means for varying the focal distance between the lamp and the associated reflector, thereby enabling the user to vary the spread of the beam of light in any desired manner.

Other objects of my invention will appear in the specification and the novel features thereof will be fully pointed out in the claims.

My invention will best be understood by reference to the accompanying drawing in which I have illustrated a preferred embodiment thereof and in which

Fig. 1 is a longitudinal sectional view through a flash lamp embodying my invention and showing the lower portion in side elevation;

Fig. 2 is a side elevation of the switch element to which the socket for the incandescent lamp and the associated parts are connected, and showing the latter parts in section and on a larger scale than the corresponding parts in Fig. 1;

Fig. 3 is a sectional view through the normally stationary contact member, and

Fig. 4 is a plan view of the contact head.

Like reference characters indicate like parts throughout the drawing.

Referring to the drawing, 10 is a casing generally cylindrical in form, threaded at its lower end and preferably provided with an outwardly extending flange 11 located just above the said threaded portion. The lower end of the casing is closed by a threaded cap 12, a suitable gasket 13 being interposed between the flange 11 and a co-operating flange 14 formed on the cap 12, thereby hermetically sealing the lower end of the casing.

The upper end of the casing is preferably formed with an outwardly extending flange or bead 15 above which is a threaded portion 16 on which is received an enlarged casing head 17 formed with threads 18 engaging the threaded portion 16 of the casing, a suitable gasket 19 being interposed between said flange 15 and a flange 20 formed on the lower end of the casing head 17. The upper end of the casing head 17 is preferably provided with a thickened portion 21 and is threaded as at 22 for the reception of threads formed on a retaining rim 23 the upper portion of which is provided with an inwardly extending annular flange 24 and preferably formed with a shoulder 25 against which the lens 26 of the flash lamp is positioned. A suitable gasket 27 is interposed between the upper edge of the casing head 17 and the shoulder 25 and lens 26.

The switch and lamp assembly comprises a switch element indicated generally at 28, a socket 29 for the reception of an incandescent lamp 30 and a reflector 31, the assembly forming a unitary structure. The switch operating mechanism of the switch element may be the same as or similar to that shown and described in my co-pending application Ser. No. 655,586 which

was filed in the Patent Office February 7th, 1933, and the details thereof, therefore, have not been illustrated in my present application. The switch preferably is of the type in which the switch actuating means comprises an inertia operated element which may be operated either through centrifugal action by imparting to the same a rapid swinging movement or by abruptly stopping or starting the movement thereof. A switch of this character lends itself to a flash lamp which is hermetically sealed.

The upper end of the casing of the switch element is preferably provided with an interiorly threaded metallic sleeve 32 molded or otherwise set in insulating material 33 and forming a recess. A socket member 29 is provided with a contracted threaded portion 34 which is received in the threaded sleeve 32, and with a threaded portion 341 of greater diameter. The switch element is provided with a normally stationary contact member 35 the upper end of which is provided with a tapped opening 351 in which is received a threaded member 36 the contact head 37 of which is preferably milled at 371 as indicated in Fig. 4 to enable the user readily to rotate the same notwithstanding the fact that its surface is below the mouth of the sleeve 32 and thereby move the contact longitudinally of the member 35 and thus adjust its position relatively to the contact on the incandescent lamp.

The incandescent lamp 30 comprising a bulb 301 and a base 302 is received in the socket member 34, the contact 303 of the lamp engaging the adjustable contact head 37. The lamp is normally retained in position within the socket by a bail 38 which is hinged as at 39 to the upper end of the socket member, and which is preferably provided with a looped or reversely bent intermediate portion 381 that forms a concave seat engaging the upper end of the bulb 301 of the lamp thereby normally retaining the same in the position illustrated. A yielding means, preferably in the form of a spring 40 is secured within the socket member 34 and engages the lower portion of the base of the lamp when the latter is in position in the socket member, and is so biased that it is under compression when the lamp is retained in position in the socket member by the bail 38.

A reflector 31 is secured to an interiorly threaded ring 41 which engages the enlarged threaded portion 341 of the socket member. The lower edge of the reflector may conveniently be secured to the ring 41 by providing the latter with a shoulder 42 against which the lower edge of the reflector is seated, and peening over against the reflector the comparatively thin upper edge of the ring. The reflector is preferably provided with two outwardly extending struck up lugs 43 (only one of which is illustrated), which may be engaged by the fingers of the operator to rotate the reflector and thus adjust the focal distance of the reflector from the lamp and thereby vary the spread of the beam as desired. The internal diameter of the ring 41 is sufficient to permit it to pass over the bail 38 as well as the lamp, so that the reflector may be freely rotated without interference with the bail or other parts of the flash lamp. At the same time, the casing head 17 together with the reflector may readily be withdrawn forwardly of the flash lamp, the ring 41 passing over the lamp and the bail which retains the same in position.

The switch and lamp assembly constitute a unitary structure which may conveniently be secured to the casing by a threaded skirt or sleeve 44 the threads of which engage the interior threads formed on the threaded portion 18 of the casing.

It will be apparent that the casing of the lamp is sealed at every joint and it is impossible for either gases or liquids to seep into the casing. It is particularly desirable to exclude the former from the casing when the flash lamp is used in the presence of explosive gases, and it is especially desirable to exclude the latter where the lamp is used by fishermen or others where there is the possibility of the lamp being submerged in liquid.

By providing a spring between the socket and the base of the lamp which is positioned therein, and which is normally kept under compression by the bail, the lamp is ejected from the socket in case the bulb of the lamp is fractured. By making the contact which is engaged by the lamp contact normally stationary, the circuit for the filament of the lamp is broken the instant that the lamp moves in response to the fracture of the lamp bulb, thereby instantly causing the filament to be cooled to a temperature below the ignition temperature of explosive gases in which it may happen to be located and before the temperature of the gases immediately surrounding the filament has reached the ignition temperature.

By adjusting the position of the normally stationary contact, its position may be varied to compensate for variations in the over-all length of the lamp and thereby avoid undue stresses in the bulb of the lamp which might result in the fracture thereof in case of an oversized lamp, and even though the lamp is under-sized it is held firmly in position in the socket.

While I have illustrated my invention in a flash lamp having a generally cylindrical casing, it will be understood that certain features of my invention may be used to advantage in other types of flash lamps and in other lighting devices.

While I have described my invention in its preferred embodiment, it is to be understood that the words which I have used are words of description and not of limitation. Hence, changes within the purview of the appended claims may be made without departing from the true scope and spirit of my invention in its broader aspects.

What I claim is:

1. In a portable electric light, a socket, an electric lamp provided with a base receivable in said socket, yielding means located in said socket and engageable with said base for ejecting said lamp from said socket, means engageable with the bulb of said lamp for normally retaining the same in operative position in said socket, the base of said lamp being provided with a fixed contact thereon, a second contact fixed relatively to said lamp and engageable with said contact on said base, and means whereby said normally fixed contact may be adjustably positioned along said socket to fixed positions whereby lamps of variable over-all lengths may be used without substantially varying the pressure exerted by the lamp engaging means on said bulb.

2. In a portable electric light, a socket, an electric lamp provided with a base receivable in said socket, yelding means located in said socket and engageable with said base for ejecting said lamp from said socket, a bail mounted on said socket and normally engageable with the bulb of said lamp for normally retaining said lamp in

operative position in said socket, the base of said lamp being provided with a contact fixed thereon, a second contact normally fixed relatively to said lamp, and means whereby the position of said normally fixed contact may be adjustably positioned relatively to said lamp socket.

3. In a portable electric light, a switch element, a lamp socket mounted thereon, an electric lamp provided with a base receivable in said socket, yielding means located in said socket and engageable with said base for ejecting said lamp from said socket, means engageable with the bulb of said lamp for normally retaining the same in operative position in said socket, the base of said lamp being provided with a fixed contact thereon, a second contact fixed relatively to said lamp and engageable with said contact on said base, and means whereby said normally fixed contact may be adjustably positioned along said socket to fixed positions whereby lamps of variable over-all lengths may be used without substantially varying the pressure exerted by the lamp engaging means on said bulb.

4. In a portable electric light, a socket, an electric lamp provided with a base receivable in said socket, yielding means located in said socket and engageable with said base for ejecting said lamp from said socket, means engageable with the bulb of said lamp for normally retaining the same in operative position in said socket, the base of said lamp being provided with a fixed contact thereon, a second contact fixed relatively to said lamp and engageable with said contact on said base, said second contact comprising a contact member provided at its forward end with a tapped opening, and a threaded member received in said tapped opening and engageable with the lamp contact, whereby lamps of variable over-all dimensions may be used without substantially varying the pressure exerted by the lamp engaging means on said bulb.

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