June 18, 1940. A. J. DESIMONE 2,204,752

FLASHLIGHT

Filed April 30, 1938

Fig. 1.

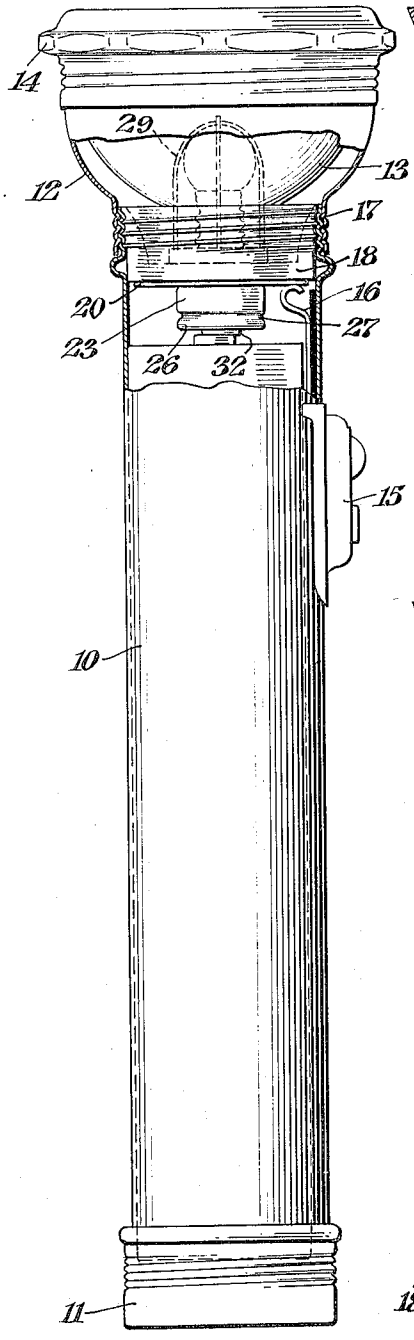



Fig. 2.

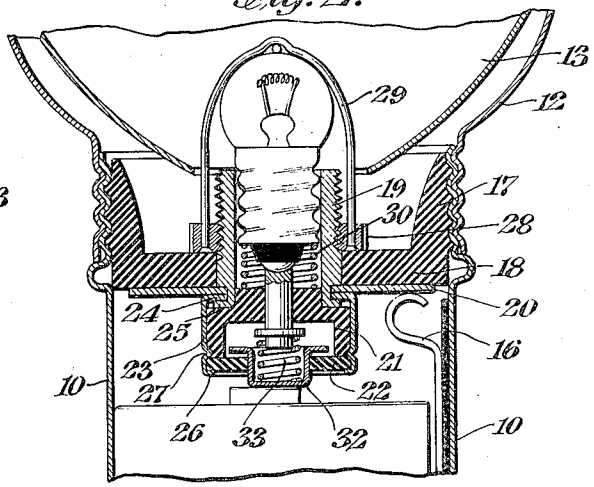
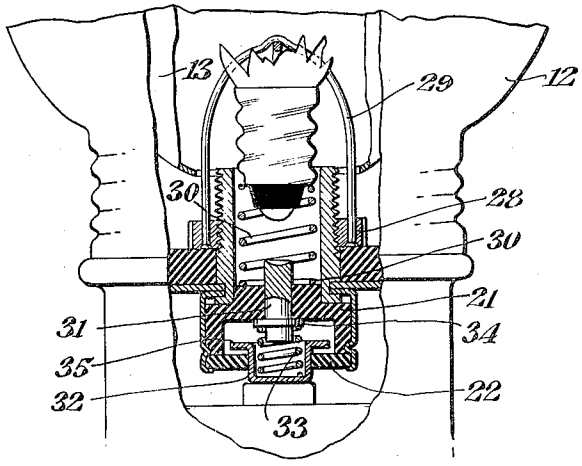



Fig. 3.



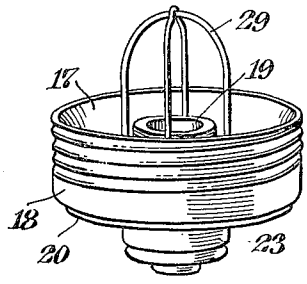




Fig. 4.

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# UNITED STATES PATENT OFFICE

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## FLASHLIGHT

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Application April 30, 1938, Serial No. 205,146

4 Claims. (Cl. 240—11.3)

This invention relates to flashlights.

An object of the invention is the provision in a flashlight of simple and effective means for interrupting current flow through the bulb filament in the event of breakage of the bulb.

Such an arrangement is desirable for flashlights used in locations where there is a possibility of the atmosphere containing explosive fumes which might become ignited should they be exposed to a hot filament. With the arrangement of the present invention, the breakage of the bulb results in interruption of current flow and so precludes the possibility of the ignition of explosive charges should any be in the immediate vicinity of the bulb. Furthermore, the arrangement is such that not only is the current flow interrupted but also the filament is severed, thus providing an additional measure of protection.

A further object of the invention is the provision in a flashlight of shock absorbing contact means for establishing electrical connection between the battery and the bulb.

With such an arrangement, injury to the bulb upon dropping the flashlight or upon its being subjected to a severe blow is minimized. Preferably, the current interrupting means and the shock absorbing contact means are embodied in a removable unit so as to facilitate replacement in the event of damage to either.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawing, wherein:

Fig. 1 is a side elevation partially broken away of a flashlight embodying the invention;

Fig. 2 is an enlarged fragmentary longitudinal section;

Fig. 3 is an enlarged fragmentary elevation partially broken away, and

Fig. 4 is a perspective view of the replaceable unit.

The flashlight consists of the usual casing 10, base cap 11 and head 12 in the latter of which is arranged a reflector 13 held in place by the usual lens ring 14. A switch housing 15 is provided on the outer surface of the casing 10 and a contact member 16 is associated therewith in the usual manner.

The bulb end of the casing 10 is interiorly threaded to receive the threaded flange 17 of a disk 18 of some suitable insulating material. A metal socket 19 set into the disk 18 has a smooth inner surface and a screw-threaded outer surface. The lower end of the socket 19 extends through the aperture of a metal annular disk 20 which engages the bottom face of the disk 18. A plug 21 of insulating material has a portion of reduced diameter extending into the socket 19, and also has a recess closed by an annular cap 22 of similar material. The cap 22, the plug 21 and the socket 19 are held in assembled relation by a cylindrical shell 23, the upper end of which is flanged inwardly at 24 to co-operate with an outwardly extending flange 25 on the socket 19 and the lower end of which is inwardly flanged at 26 and inwardly rolled at 27 for clamping purposes. The flange 24 also serves to hold the member 20 against the bottom of the disk 18, the member 20 being engaged by the contact 16.

An interiorly threaded ring 28 engages the exteriorly threaded surface of the socket 19 and is provided with a pair of wire loops 29, which are adapted to engage the bulb and hold the same in the socket 19. A helical spring 30 arranged in the socket 19 has one end bearing against the plug 21 and the other end engaging the base of the bulb adjacent the outer edge thereof. This spring presses the bulb against the loops 29 and in the event of breakage of the bulb, projects the base from the position shown in Fig. 2 to the position shown in Fig. 3, thereby interrupting current flow.

A contact 31 is slidably mounted in the plug 21 for engagement by the central contact of the bulb. A second contact 32 for engagement by the terminal of the battery is slidably mounted in the cover 22. A helical spring 33 is interposed between said two contacts and tends to move them apart. The contact 31 consists of a rod having a collar 34 which limits upward movement of the contact and the contact 32 is of cup shape with a flange 35 limiting downward movement of the contact.

The normal arrangement of the various elements is shown in Fig. 2. By screwing the collar 28 into engagement with the top surface of the disk 18, the bulb is drawn into the socket 19 against the action of the spring 30 so as to bring its center contact into engagement with the contact 31 and slightly depress the latter. The battery is in such relation to the disk 18 that the contact 32 is pushed in slightly against the action of the spring 33. If the flashlight should be subjected to any severe shock, the thrust of the battery toward the bulb is absorbed by the spring 33 and the possibility of injury to the bulb is minimized. Should the bulb for some reason be broken, the spring 30 acts to move the bulb so as to disengage the bulb contact from the con-

tact 31 and thus interrupt current flow through the bulb filament. Also, the spring projects the bulb far enough so that its filament engages the loops 29 which will sever the same, thus making absolutely certain of current interruption. In the event of damage either to the shock absorbing contact means or the current interrupting means, the unit comprising these means may be easily removed and a new unit replaced simply by unscrewing the disk 18 from the end of the casing 10.

The bulb may be adjusted longitudinally while in engagement with the contact 31 to effect focusing, such movement of the bulb being controlled by rotation of the collar 28 to adjust the longitudinal position of the loop 29.

I claim:

1. In a flashlight, a tubular casing, an annulus of insulating material at one end of said casing, a socket having a smooth inner surface and a screw-threaded outer surface fixedly supported by said annulus in its opening, a center contact within said socket and insulated therefrom, a spring in said socket for engagement by a bulb base, a screw-threaded collar on said socket, and a loop carried by said collar for holding a bulb in said socket with its center contact in engagement with said socket center contact.

2. A unit comprising an insulating disk, a socket carried by said disk and having a smooth inner surface and a screw-threaded outer surface, an insulating plug closing one end of said socket, a first contact slidably mounted in said plug for engagement by the center contact of the base of a bulb in said socket, a spring in said socket having one end engaging said plug and the other end engageable by the base of said bulb, a screw-threaded collar on said socket, a loop carried by said collar for holding the bulb in said socket with its center contact in engagement with said first contact, a second contact slidably supported by said plug in alinement with said first contact, and resilient means tending to urge said two contacts away from each other.

3. In a flashlight, a casing screw-threaded at one end, an insulating disk having a threaded flange engaging the casing threads, a socket carried by said disk and having a smooth inner surface and a screw-threaded outer surface, an insulating plug closing one end of said socket, a spring in said socket having one end engaging said plug and the other end adapted for engagement by the base of a bulb in said socket, a first slidable contact mounted in said plug centrally of said socket, a collar threaded on said socket, a loop carried by said collar and extending across the open end of said socket, a second contact slidably supported by said plug in alinement with said first contact, and resilient means tending to urge said two contacts away from each other.

4. In a flashlight, a socket having a smooth inner surface and a screw-threaded outer surface, an annulus of insulating material supporting said socket, an insulating plug closing one end of said socket, a first contact slidably mounted in said plug for engagement by the center contact of the base of a bulb in said socket, a spring in said socket having one end engaging said plug and the other end engageable by the base of said bulb, a screw-threaded collar on said socket, a loop carried by said collar for holding the bulb in said socket with its center contact engaging said first contact, a second contact slidably supported by said plug in alinement with said first contact, and resilient means tending to urge said two contacts away from each other.

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