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L. ABBOTTS

1,919,024

POCKET FLASH LIGHT

Filed Aug. 6, 1931

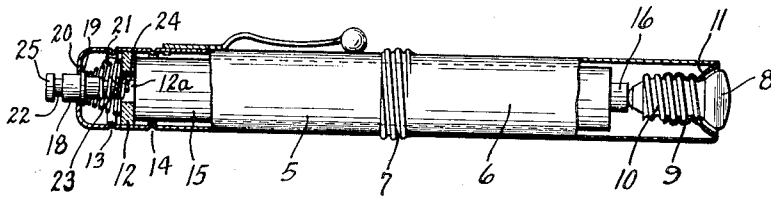


Fig. 1.

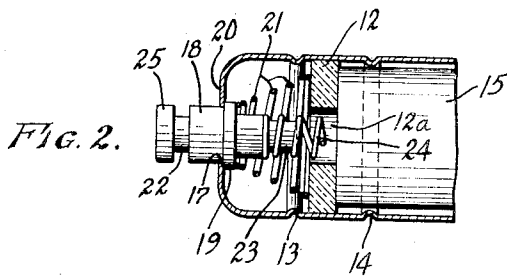


Fig. 2.

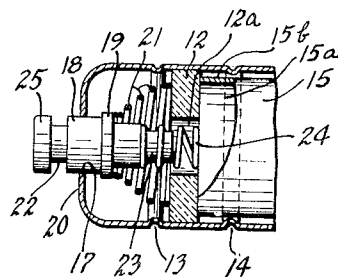


Fig. 3.

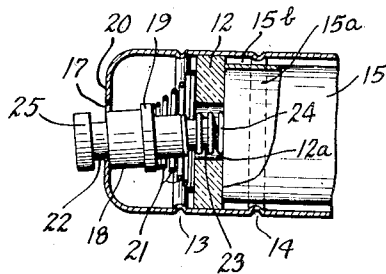


Fig. 4.

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# UNITED STATES PATENT OFFICE

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## POCKET FLASH LIGHT

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This invention relates to new and useful improvements in pocket flash lights.

An object of the invention is to provide a pocket flash light of the type shown in United States Patent No. 1,408,526 of March 7, 1922 and including improved circuit closing means whereby the light may be flashed on and off or may be maintained on as desired.

Another object is to provide a flash light including a circuit closing arrangement of economical construction and which is efficient and reliable in operation and which adapts the flash light for use with batteries of somewhat different lengths such as the variations incident to manufacture.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the precise details shown but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims to which claims reference is to be had for a definition of the invention.

In the drawing:

Fig. 1 is a view partly in side elevation and partly in section and showing the completely assembled flash light;

Fig. 2 is a sectional view on an enlarged scale showing the switch or circuit closing end of the flash light, the switch being in normal or off position;

Fig. 3 is a view somewhat similar to Fig. 2 but showing the switch in circuit closing position for flash effect; and

Fig. 4 is a view similar to Fig. 3 but showing the switch locked in circuit closing position.

Referring in detail to the drawing, the improved flash light is shown as including a metal casing comprising separable end sections 5 and 6 connected by screw threads as indicated at 7. Section 6 of the casing is adapted to carry a bulb 8 and to accommodate the bulb is turned backwardly upon itself to provide a screw threaded neck 9 to

receive the screw shell 10 of the bulb and is also shaped as at 11 to provide a reflector for the bulb.

Adjacent its outer end the section 5 of the casing carries an apertured ring-shaped insulator 12 adapted to move or float between two internal beads 13 and 14 rolled in the casing. The sections 5 and 6 of the casing are adapted to be uncoupled at 7 and a battery 15 may then be inserted into one section of the casing and the other section of the casing may then be disposed over an end of the battery and the casing sections screwed together. At one end the battery will have its central contact 16 engaging with the central contact of the bulb 8 and at its other end the exposed end of the metal shell 15a of the battery will seat on the insulator 12. This metal shell is enclosed in the usual heavy paper or fiber insulating tube or cover 15b.

Since the insulator 12 is movable or adapted to float between the beads 13 and 14 batteries of varying lengths may be used, the insulator moving toward the bead 14 under action of coiled spring 21 when a relatively short battery is used and being moved in the direction of the bead 13 when a relatively long battery is used. It will be understood that the shell 10 of the bulb is grounded on the casing and that the central contact of the bulb is engaged by the central contact of the battery, and that to complete the circuit between the battery and bulb it is but necessary to form a connection between the other pole of the battery and the casing.

The end of the section 5 of the casing beyond the insulator 12 is apertured as at 17, and said aperture preferably being in alignment with the aperture 12a in the insulator. Extending through the aperture 17 is a push button 18 including a shoulder 19 disposed at the inner side of the end 20 of the section 5 of the casing. This shoulder 19 is of such diameter as not to pass through the aperture 17 and within the casing and bearing at one end against the insulator 12 and at its other end against the shoulder 19 of the push button is a coil spring 21.

Coil spring 21 serves to maintain the push button or switching means in its normal or

off position as shown in Figs. 1 and 2 and this spring also serves to maintain the insulator 12 against one end of the battery so as to maintain the other end of the battery in engagement with the central contact of the bulb. The diameter of the push button 18 immediately above the shoulder 19 is such that the push button has a relatively snug but easily slidable fit in the aperture 17 and toward its outer end the button has a portion of reduced diameter providing a groove 22 the purpose of which will later appear.

At its inner end the push button is reduced somewhat and includes a shank 23 to which is secured and from which projects into the aperture 12a of the insulator 12 a compressible or yieldable contact member here disclosed as a relatively light coil spring 24. The aperture 17 being in alignment with the aperture in the insulator 12 the push button 18 with its contact member 24 is also in alignment with the opening in the insulator and therefore when the push button is pressed the contact member 24 passes downwardly or inwardly through the aperture in the insulator and contacts with the battery. A circuit is thus closed from the battery through the member 24 and push button 18 to the casing resulting in the bulb being energized. The extension 24 is not of sufficient length to engage the end of the battery in its normal or off position as shown in Fig. 2 so that when it is in this position the circuit is open.

It will be noted in Fig. 3 that the push button has been moved but a short distance to bring the contact member 24 into engagement with the end of battery 15. Of course, on the push button being released spring 21 will react to return the push button to its normal or off position as shown in Figs. 1 and 2. As has been suggested the push button may be locked in circuit closing position and to accomplish this it is but necessary to press the button inwardly until its grooved portion 22 is received in the aperture 17 and to then tilt the button slightly to one side for example as shown in Fig. 4.

An inspection of Fig. 4 will show that the spring 21 tending to return the push button to normal position forces a portion of the shoulder 25 defining one end of the groove 22 against the end 20 of the section 5 of the casing whereby the push button is held in circuit closing position. To release the button it is but necessary to move it into alignment with the aperture 17 when the spring 21 will act to move the button to inoperative position with its shoulder 19 disposed against the end wall 20.

Owing to the fact that batteries vary in length the push button or plunger must have sufficient movement in order that it may close the circuit and after reaching circuit closing position be capable of additional movement whereby it may be moved into its locked cir-

cuit closing position. This is taken care of by the yieldable extension 24 of the push button. This yieldable extension also permits the use of the light either as a flash light or as a permanent light. Thus it will be seen that this yieldable extension is of sufficient length to engage the end of the battery and thus close the circuit through the light before the shoulder 25 passes into the opening 17 in the end of the casing. Thus if the push button is now released without pushing it in further the push button will be shifted back by spring 21 to open the circuit and the light can be used as a flash light. However, if it is desired to use it as a steady light all that is necessary is to press in the push button further after the circuit is closed to the position of Fig. 4 so that it will be held closed by the shoulder 25 engaging the inner wall of the end of the casing. It will be clear this further movement of the push button after the circuit is closed is permitted by yielding of the extension 24. It will of course be understood other constructions of yieldable extensions can be used.

Having thus set forth the nature of my invention, what I claim is:

1. A flash light comprising a casing, a bulb at one end of the casing and grounded thereon, an apertured insulator in the other end of the casing, a battery within the casing and at one end contacting with the bulb and at its other end seating against the insulator, spaced stop means within the casing and between which the insulator is movable longitudinally of the casing to accommodate batteries of different lengths, a push button extending through an extremity of the casing, spring means engaging the push button and the insulator and normally maintaining the push button in inoperative position, and a yielding contact means carried by the push button and adapted on the push button being pressed to pass through the aperture in the insulator and engage the battery to close a circuit to the bulb.

2. A flash light comprising a casing, a bulb at one end of the casing and grounded thereon, an apertured insulator in the other end of the casing and movable longitudinally thereof, stops on opposite sides of the insulator to limit its movement, a battery within the casing and at one end contacting with the bulb and at its other end seating against the insulator, a push button means extending through an extremity of the casing having a shoulder, a spring pressing at its opposite ends against the shoulder and the insulator, and a yielding contact means comprising a relatively small coil spring carried by the push button and adapted to engage the battery through the aperture in the insulator to close a circuit to the bulb on the push button being pressed in the direction of the casing.

3. A flash light comprising a casing, a

bulb at one end of the casing and grounded thereon, an apertured insulator in the other end of the casing and movable longitudinally of the casing, stops on opposite sides of the insulator to limit its movement, a battery within the casing and at one end contacting with the bulb and at its other end seating against the insulator, a push button means extending through an extremity of the casing, a spring tending to shift the push button and insulator in opposite directions, a yielding contact means carried by the push button and adapted to engage the battery through the aperture in the insulator to close a circuit to the bulb on the push button being pressed in the direction of the casing, and means to lock the push button in depressed circuit closing position.

4. A flash light comprising a casing, a bulb at one end of the casing, an apertured insulator in the other end of the casing movable longitudinally of the casing, means to limit movement of the insulator, a battery within the casing and at one end seating against the insulator, a push button means extending through an opening in an extremity of the casing, a spring operating at its opposite ends against the insulator and the push button, a yielding contact means carried by the push button and adapted to engage the battery through the aperture in the insulator to close a circuit to the bulb on

the push button being pressed in the direction of the casing, and said push button having a reduced portion whereby the button may be tilted on the button being pressed to bring its reduced portion into the opening in the casing to thereby lock the button in circuit closing position.

5. A flash light comprising a casing, a bulb at one end of the casing, an apertured insulator in the other end of the casing mounted for limited movement longitudinally of the casing, a battery within the casing and at one end seating against the insulator, a push button means extending through an extremity of the casing, spring means normally maintaining said push button means in inoperative position and tending to force the insulator toward the battery, a yielding contact means, comprising a relatively small coil spring carried by the push button and adapted to engage the battery through the aperture in the insulator to close a circuit to the bulb on the push button being pressed in the direction of the casing, said push button operating through an opening in the extremity of the casing, and said push button having a reduced portion whereby the button may be tilted on being pressed to bring its reduced portion into the opening in the casing to thereby lock the button in depressed circuit closing position.

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