May 30, 1939. G. C. FULLMER 2,160,496

FLASHLIGHT SWITCH

Filed April 17, 1936

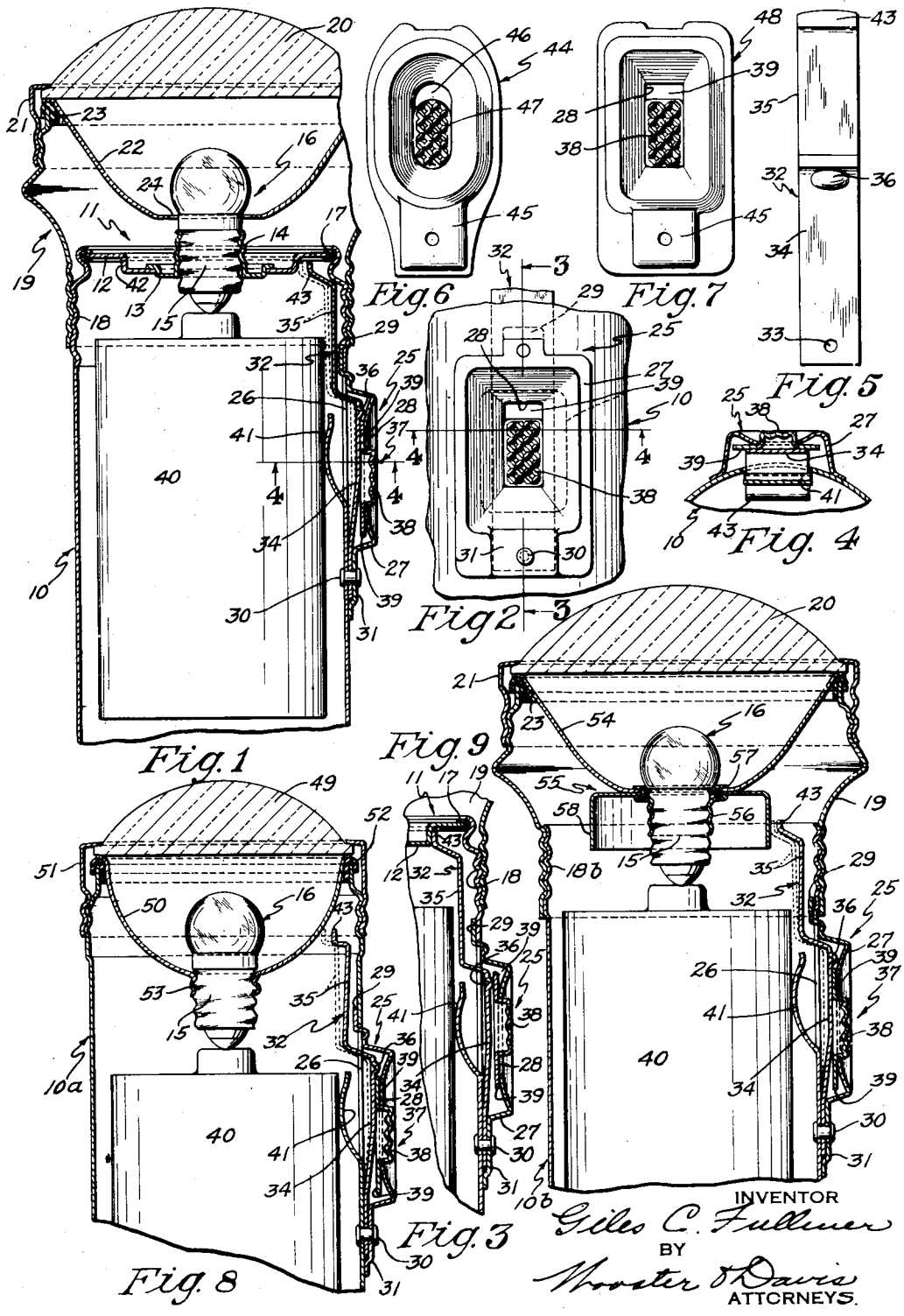


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

INVENTOR
Giles C. Fullmer
BY
Wooster & Davis
ATTORNEYS.

Patented May 30, 1939

2,160,496

UNITED STATES PATENT OFFICE

2,160,496

FLASHLIGHT SWITCH

Giles C. Fullmer, Bridgeport, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn., a corporation of Connecticut

Application April 17, 1936, Serial No. 74,935

1 Claim. (Cl. 240—10.66)

This invention relates to new and useful improvements in flashlights and has particular relation to switches for flashlights.

An object of the invention is to provide a flashlight switch which is reliable in operation and of simple construction, comprising but a minimum number of parts whereby it may be produced at low cost and is not likely to be easily gotten out of order in use.

Other objects and advantages will become apparent from a consideration of the following detained description taken in connection with the accompanying drawing wherein satisfactory embodiments of the invention are shown. However it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claim.

In the drawing:

Fig. 1 is a longitudinal sectional view through the upper portion of the focusing or spotlight embodying the invention;

Fig. 2 is a plan view of the switch of the light of Fig. 1;

Fig. 3 is a sectional view taken substantially along the plane of the line 3—3 of Fig. 2 and showing the right hand portion of Fig. 1 with the parts in position to close the lamp circuit;

Fig. 4 is a cross sectional view substantially on line 4—4 of Figs. 1 and 2;

Fig. 5 is an elevational view showing a spring contact employed in the switch;

Fig. 6 is a view somewhat similar to Fig. 2 but showing another form of switch housing;

Fig. 7 is a view similar to Fig. 6 but showing another switch housing;

Fig. 8 is a view similar to Fig. 1 but showing the invention as incorporated in a flashlight; and

Fig. 9 is a view similar to Fig. 8 but showing another modification.

Referring in detail to the drawing and at first more particularly to Figs. 1 through 4, at 10 is shown a metal flashlight casing at its upper end supporting a means generally designated 11 including an annulus or plate 12 and an inner member 13 carried by the plate and including a socket 14 into which the stem 15 of a bulb 16 is threaded. The end portion of the casing is turned about the outer edge of the plate so as to mount the same, and the plate and casing are separated by insulation 17.

Inwardly of its end the casing is provided with threads or with a threaded portion 18, and a hood 19 is threaded onto this portion of the casing and extends beyond the end thereof. At its outer end the hood carries a lens 20 secured to it by a threaded ring 21, and the ring 21 also serves to clamp the outer edge portion of a reflector 22 against the outer end of the hood. Preferably insulation 23 is arranged between the reflector and the hood. About the bulb 16 the reflector has a relatively large opening or hole 24 so that the reflector is spaced from the bulb whereby the hood may be threaded in or out with respect to the bulb and the reflector will be moved or adjusted with the hood so as to change or adjust the focus of the light.

A switch 25 is mounted on a side wall of the casing over an opening 26 therein. Said switch includes a housing 27 having an opening 28 therein. The housing is secured to the casing by passing an extension 29 of the housing through the opening 28 and disposing said extension against the inner surface of a wall of the casing and then riveting the other end portion of the housing to the casing as at 30. The housing portion 31 through which the rivet 30 passes is slightly raised or hollow and receives one end portion of a contact 32, which end portion of the contact has an opening 33 for the passage of the rivet 30 whereby in addition to securing the housing the rivet also secures the contact in place.

The contact 32 comprises a spring finger and includes a portion 34 in the switch housing 27 and a portion 35 within the casing 10, the intermediate portion passing through the opening 28. Toward one end of portion 34 there is provided a protuberance or bump 36 struck up from the plate, the function of which will presently appear. A switch button 37 is associated with the switch housing and comprises a finger engaging part 38 extending through the opening 28 in the housing and a plate-like part 39 within the housing and extending beyond the edges of the opening 28. The portion 34 of the contact 32 bears against the plate-like part of the button 37 and so maintains the plate-like part of the button against the inner side of the housing with the part 38 of the button projecting through the opening 28 in the housing.

Casing 10 may contain one or more batteries 40, and the batteries are grounded on the casing by the usual spring contact (not shown) engaging the other end of the battery, and this contact also holds the center contact of the innermost battery in engagement with the center contact of the bulb 16 as shown in Fig. 1 in the usual manner. In forming the opening 26 in the casing a part is lanced and then pressed inwardly pro-

viding a spring-like part 41 acting as a guard to keep the battery spaced from the switch contact 32 so that the battery cannot interfere with the functioning of said contact. The annulus or plate 12 of the means 11 is provided with an annular shoulder 42, and it is noted that in Fig. 1 the inner end portion 43 of the contact 32 is shown opposite but spaced from such shoulder. In said figure the full lines show the parts in their normal positions with contact 32 having its portion 43 spaced from the shoulder 42 so there is no circuit to the bulb 16.

To energize the bulb the button 37 may be pressed inwardly whereby to press the contact 32 inwardly causing it to flex and bring its portion 43 into engagement with the shoulder 42 to close the circuit through the bulb. Owing to the fact that contact 32 is of spring metal it immediately returns to normal position opening the circuit to the bulb on the button 37 being released. This permits flash operation of the light. However the opening 28 through which the finger engaging portion 38 of the button extends is elongated, and if it is desired to keep the bulb energized and yet remove the hand from the button the operator simply pushes or slides the button from the position of Fig. 1 to that of Fig. 3.

This results in the plate-like part 39 of the button riding up onto the protuberance or bump 36 on the portion 34 of the contact and forcing the contact to flex inwardly to bring its portion 43 into engagement with the shoulder 42. This positions the parts as shown in Fig. 3, and the tendency of the contact to return to its normal position causes it to press the button against the housing and frictionally holds the button in the position of Fig. 3 until manually released therefrom by being shifted back to normal position at the other end of the opening 28.

Attention is directed to the fact that since the contact 32 is moved to engage the shoulder 42 and the latter is annular it is not necessary that the means 11 be positioned to have any particular part disposed toward the contact. There is no necessity to turn the means forward or backward to make any nice adjustments when assembling it and the casing, since if the means is rotated in one direction or the other there will yet be the same relation between the shoulder and the contact in so far as the closing of the circuit is concerned.

The switch comprises but a minimum of parts as in addition to the part to be engaged by the spring contact 32 the switch includes only the housing 27, the button 37 and the spring contact 32. It is also noted that the portions of housing 27 about the finger engaging part 38 of the button are extended so as to be flush with or beyond the outer surface thereof whereby when the flashlight is in a tool box or the like a part will not engage and push the button inwardly to close the circuit or forwardly to cause it to ride up onto the protuberance or bump 36 and accidentally close the circuit through the bulb and burn out the battery.

Fig. 6 shows a slightly different shape of switch housing which may be used. In this figure the switch housing is designated 44 and is somewhat rounded but includes an extension 45 corresponding with the extension 31 of the housing 27. The opening 46 in the housing 44 is also rounded at its ends as is the finger engaging portion 47 of a switch button. Fig. 7 shows another design of switch housing generally designated 48, which may be used and the same is somewhat longer with respect to its width than is the housing 27 of Fig. 1. Either of the switch housings 44 and 48 may be substituted for that of Fig. 1.

Referring now to Fig. 8 the casing 10a and the switch 25 are shown, but the outer end of the casing receives a lens 49 clamped against the end of a reflector 50 by means of a ring 51 threaded onto the outer end of the casing. Insulation 52 is disposed between the reflector and the end of the casing and the glass lens being between the ring 51 and the reflector it will be apparent that the reflector is fully insulated from the casing. Reflector 50 is formed with a downwardly extending socket 53 receiving the stem 15 of a bulb 16 from which it will be clear that the bulb is mounted by and electrically connected with the reflector. Therefore on the button of the switch 25 being operated as previously described the contact 32 will be flexed to have it engage the reflector as suggested by the dotted lines in Fig. 8 and a circuit closed through the bulb. Since the reflector is semi-spherical the contact will have the same relation to the reflector in all rotary positions of the latter.

Fig. 9 shows a further modification including a casing 10b mounting the switch 25, and in its upper end portion provided with threads 18b to which are threaded the hood 19 particularly described when considering Fig. 1. This hood mounts a reflector 54 clamped between the upper end of the hood and the lens 20 by the ring 21. Reflector 54 is insulated from the hood and thus from the casing by the lens and the insulation 23, and carries a member 55 of somewhat the shape of an inverted cup.

Member 55 is secured to the reflector by a socket piece 56 passing through the member and reflector and clamping them against one another at 57. This socket 56 is threaded to receive the stem 15 of the bulb 16. Member 55 includes a depending annular skirt portion 58 adapted to be engaged by the portion 43 of the spring contact 32 on flexing of the latter by proper manipulation of the button 37 as will be understood. The skirt portion 58 being annular it will be apparent that the contact 32 is adapted to make engagement therewith in any position of rotary adjustment of the reflector 54 and member 55. From this it will be apparent that in assembling the flashlight it is not necessary to make any rotary adjustments to bring any particular part of the member 55 opposite the free end portion of the contact 32.

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

In a flashlight, a casing, means insulated from the casing and electrically connected with a bulb, a switch on the casing and comprising a housing having an elongated opening therein, a button including a portion in said opening and a plate at the inner side of the housing and movable with the button, a spring contact having a portion in the housing and a portion extending into the casing, a protuberance on said contact within the housing, and said button being shiftable along the elongated opening in the housing to cause said plate to ride onto said protuberance and thereby flex said contact to have it engage said means and close a circuit through said bulb.

GILES C. FULLMER.