Nov. 29, 1949 G. F. N. OLIVER 2,489,806

HAND FLASHLIGHT

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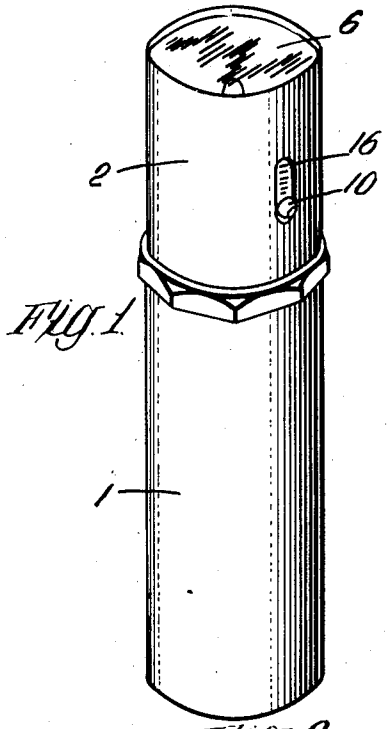


FIG. 1

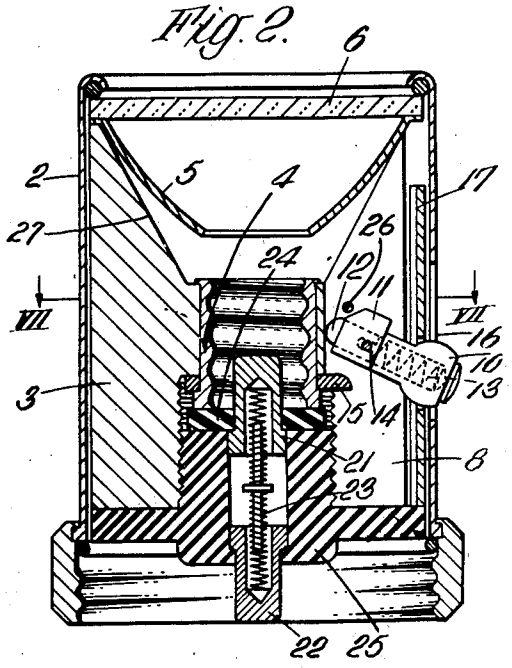


FIG. 2

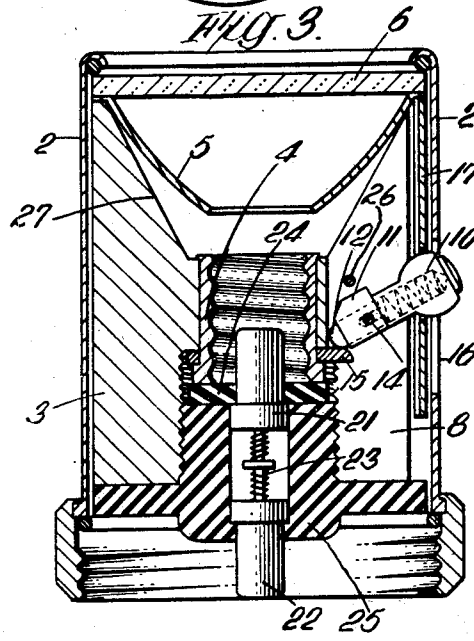


FIG. 3

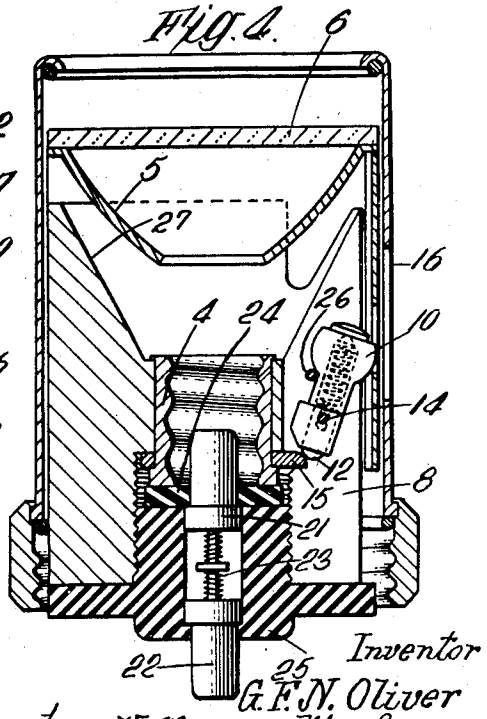


FIG. 4

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Fig. 5.

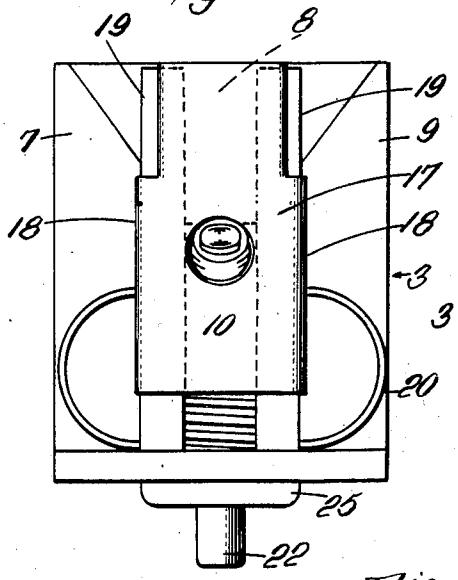


Fig. 6.

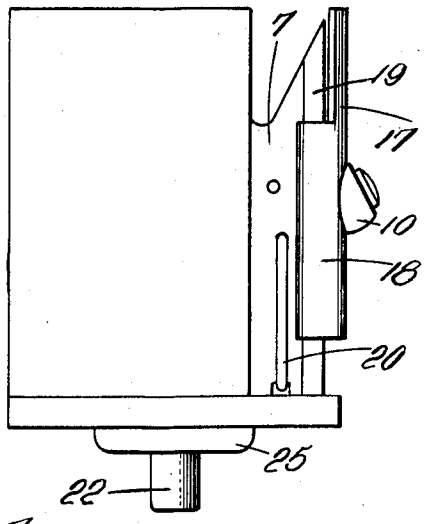
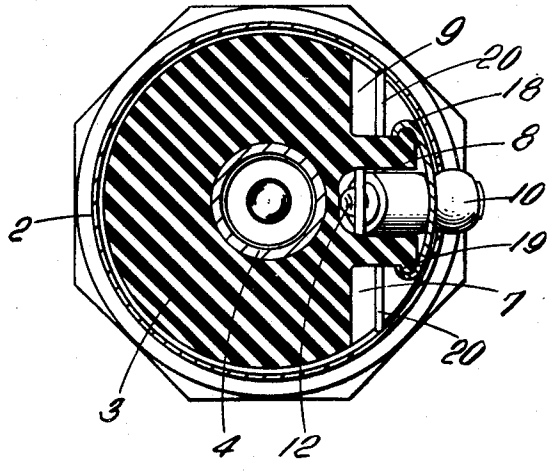


Fig. 7.



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HAND FLASHLIGHT

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3 Claims. (Cl. 240—10.66)

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This invention relates to electric hand flashlights.

In a flashlight comprising two tubular casing parts screwed together, one containing the bulb and reflector and the other the battery, the fact that the bulb and reflector must be extracted rearwardly from the casing part containing them when the bulb has to be changed makes it difficult to provide a satisfactory form of switch which can be operated by one hand. Accordingly, a method of switching on and off such a flashlight at present in use is to screw the one casing part relatively to the other. This necessitates the use of two hands. If a switch is provided to enable the flashlight to be operated by one hand it generally depends for its operation upon the resilience of a flat metal strip, which is not reliable.

The principal object of my invention is to provide a flashlight with a switch which can be operated by one hand but which will permit the bulb to be readily replaced.

A further object is to provide a one-piece tubular flashlight head made from sheet metal or tubular drawn metal and containing in addition to a glass, a reflector, and a bulb-holder, a switch which can be operated by one hand and is wholly positive in operation.

Yet another object is to provide an improved flashlight switch which will be held by spring action in all its positions so that there is no risk of the energy of the battery being wasted as a result of accidental movement of the switch.

In my invention I provide a novel switch construction in a flashlight head adapted to be secured to a casing containing a battery. This includes a pivoted switch member which projects through an opening in the casing of the head and can rock between two end positions in normal use but which, when the head is detached from the battery casing and the parts within the casing of the flashlight head are partly withdrawn, can rock further into a position in which it lies entirely within the casing of the head. All the parts within the head can then be withdrawn from the casing.

The preferred embodiment of my invention will now be described by way of example with reference to the annexed drawings, in which:

Figure 1 is a perspective view of the complete flashlight;

Figures 2, 3 and 4 are central axial sections through the head of the flashlight with the switch in three different positions;

Figure 5 and 6 are two side elevations at right angles to one another of an insulating body contained in the head of the flashlight; and

Figure 7 is a section on the line VII—VII in Figure 2.

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The flashlight shown includes two casing parts 1 and 2, the part 1 accommodating a dry battery in the usual way and screwing into the open end of the part 2, which with the elements within it constitutes the head of the flashlight. Both these casing parts are cylindrical and made from tubular drawn metal.

The casing 2 contains an assembly that includes an insulating body 3 and a holder 4 for a bulb stem. A reflector 5 and a glass 6 are also mounted inside the casing 2 and all these parts can be removed from the casing by sliding them rearwardly. The body 3 is provided with a conical seating 27 on which the reflector seats and is thereby automatically centred on assembly.

The body 3 is formed with three lateral recesses 7, 8 and 9 each extending over its whole length. At its forward end it is recessed to accommodate the reflector 5 and a bulb screwed into the bulb holder 4. A switch member is accommodated within the recess 8 and it comprises a dolly 10 with a cylindrical skirt 11 within which there is a contact member 12 urged outwardly by a spring 13. The whole switch member is mounted to rock about a pivot 14 which enters openings in the walls of the body 3 which bound the recess 8. Figure 2 shows the switch member in the "off" position with the contact member 12 bearing against an abutment surface which is parallel to the centre line of the flashlight head and is constituted by the base of the recess 8. In the "on" position shown in Figure 3 the plunger 12 makes contact with a contact plate 15 constituted by a flange on a washer-like member which surrounds the bulb holder 4 and lies at the base of an axial recess in the base of the body 3. It will be observed that in moving from the "on" position to the "off" position the switch member passes through a dead-centre position, the plunger 12 moving inwards against the action of the spring 13 during the first part of the movement and outwards again after the dead-centre has been passed. When the plunger is in the "on" position shown in Figure 3 the switch member cannot rock further so long as the complete assembly within the casing 2 is in the position shown. It will be observed that in both the "off" and "on" positions the dolly 10 of the switch member projects through a lateral opening 16 in the casing 2 so that it can be engaged by the finger of the operator. Thus it will be appreci-

ated that in normal use only one hand is needed to operate the flashlight and the switch is firmly held by the spring 13 in either the "on" or the "off" position.

If it is desired to change the bulb the complete assembly is first moved axially through a short distance relatively to the casing 2 by pressing on the glass 6 after detaching the head from the casing part 1. Then the switch member will be able to rock further, passing through another dead-centre position in which the plunger 12 is normal to the contact plate 15, until it is arrested by a stop 26 in the position shown in Figure 4. In the course of the movement from the position shown in Figure 3 to that shown in Figure 4, the dolly 10 of the switch member swings entirely within the casing 2 through the opening 16 and as soon as this has occurred all the parts (including the switch member) can be withdrawn axially.

As the opening 16 in the casing 2 through which the dolly 10 projects must be long enough to allow the switch member to rock, it is convenient to make a sliding shield 17 surround the dolly 10 immediately inside the casing 2. This shield is made of sheet metal and it is formed with an opening through which the neck of the dolly of the switch member passes and with two inturned side flanges 18 which engage flanges 19 forming the edges of the recesses 7 and 9. These flanges guide the shield during its sliding movement. The shield serves to keep out dust and is also used to determine the extent of the movement of the switch member after it has passed over dead-centre from the "off" position into the "on" position. For this purpose the shield is arranged to come into contact with the rear surface of the reflector 5. It is only when the parts inside the casing 2 are slightly withdrawn axially as shown in Figure 4 that the shield 17 can move further forwards relatively to the whole internal assembly and allow the switch member to rock further so that the dolly head lies entirely within the casing.

The pivot 14 for the switch member is constituted by part of a curved wire spring 20, the parts of which outside the switch member lie in the recesses 7 and 9 and bear against and make electrical contact with the inside of the casing 2.

In a further part of the axial cavity at the rear of the body 3 there are two cup-shaped plungers 21 and 22 with their open mouths facing one another and with a compression spring 23 arranged between them with one end in each plunger. These plungers are held in position by insulating members 24 and 25, the plunger 21 being urged by the spring into contact with the central contact of a bulb screwed into the holder 4 and the plunger 22 being urged rearwardly into contact with the contact of a battery contained in the casing part 1. Thus the electric circuit runs from one contact of the battery through the plunger 22, the spring 23 and the plunger 21 to the central contact of the bulb. The circuit continues through the bulb filament and bulb stem to the bulb holder 4 and thence through the contact plate 15, the plunger 12 of the switch member, the spring 13, the dolly 10, the wire spring 20, and the casing 2 to the casing 1 and the other contact of the battery.

The flashlight can be made from mass-produced parts and requires no adjustment during or after assembly, whereas in most existing flashlights adjustment is necessary after assembly.

What I claim is:

1. In a flashlight head, an outer casing having a slot formed therein, means on said casing for attaching and detaching same from a battery container, a unitary assembly withdrawably housed in said casing, a bulb holder carried by said unitary assembly, bulb-electrode-contacting means carried by said unitary assembly, a finger switch pivotally mounted on said unitary assembly and positioned to project through the slot of said casing when said unitary assembly is within said casing, shielding means for said slot movably carried by said unitary assembly and having an opening to receive said finger switch, said shielding means being of such dimension relative to said casing and said unitary assembly to cause limited pivotal movement of the finger switch and thus hold the same projected through the slot when said unitary assembly is fully housed within the casing, said shielding means being movable to a position beyond its normal limit upon partial withdrawal of said unitary assembly from said casing to position said opening relative to said slot so that said finger switch may have a more extended travel and thus be fully retracted within the casing and said unitary assembly further withdrawn from said casing.

2. In a flashlight head, an outer casing having a slot therein and adapted for attachment to a battery container, a unitary assembly withdrawably housed in said casing, a bulb holder within said assembly, bulb-electrode-contacting conductor means, a finger switch pivotally mounted on said unitary assembly and positioned to project through the slot in said casing when said unitary assembly is housed, spring means providing for positive "snap-over" action of said finger switch between "on" and "off" positions, shielding means for said slot movably carried by said unitary assembly and having an opening to receive said finger switch, said shielding means being of such dimension relative to said casing and said unitary assembly to cause limited pivotal movement of the finger switch and thus hold the same projected through the slot when said unitary assembly is fully housed within the casing, said shielding means being movable to a position beyond its normal limit upon partial withdrawal of said unitary assembly from said casing to position said opening relative to said slot so that said finger switch may have a more extended travel and thus be fully retracted within the casing and said unitary assembly further withdrawn from said casing.

3. A flashlight head as claimed in claim 2 including a fixed contact element engaged by the finger switch at one end of its pivotal travel, said engagement contactually completing the conductive circuit from the base of said unitary assembly to the bulb holder, said contact element so constructed and positioned to cooperate with said spring means to give a further "snap-over" action of said finger switch between one end of its pivotal movement and its fully retracted position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,398,799	Recker	Nov. 29, 1921
1,588,515	Barany	June 15, 1926
1,621,610	Sokolow	Mar. 22, 1927
1,674,650	Leser	June 26, 1928
1,676,849	Barany	July 10, 1928
1,849,506	Rathmann	Mar. 15, 1932
1,986,281	Nygard	Jan. 1, 1935