

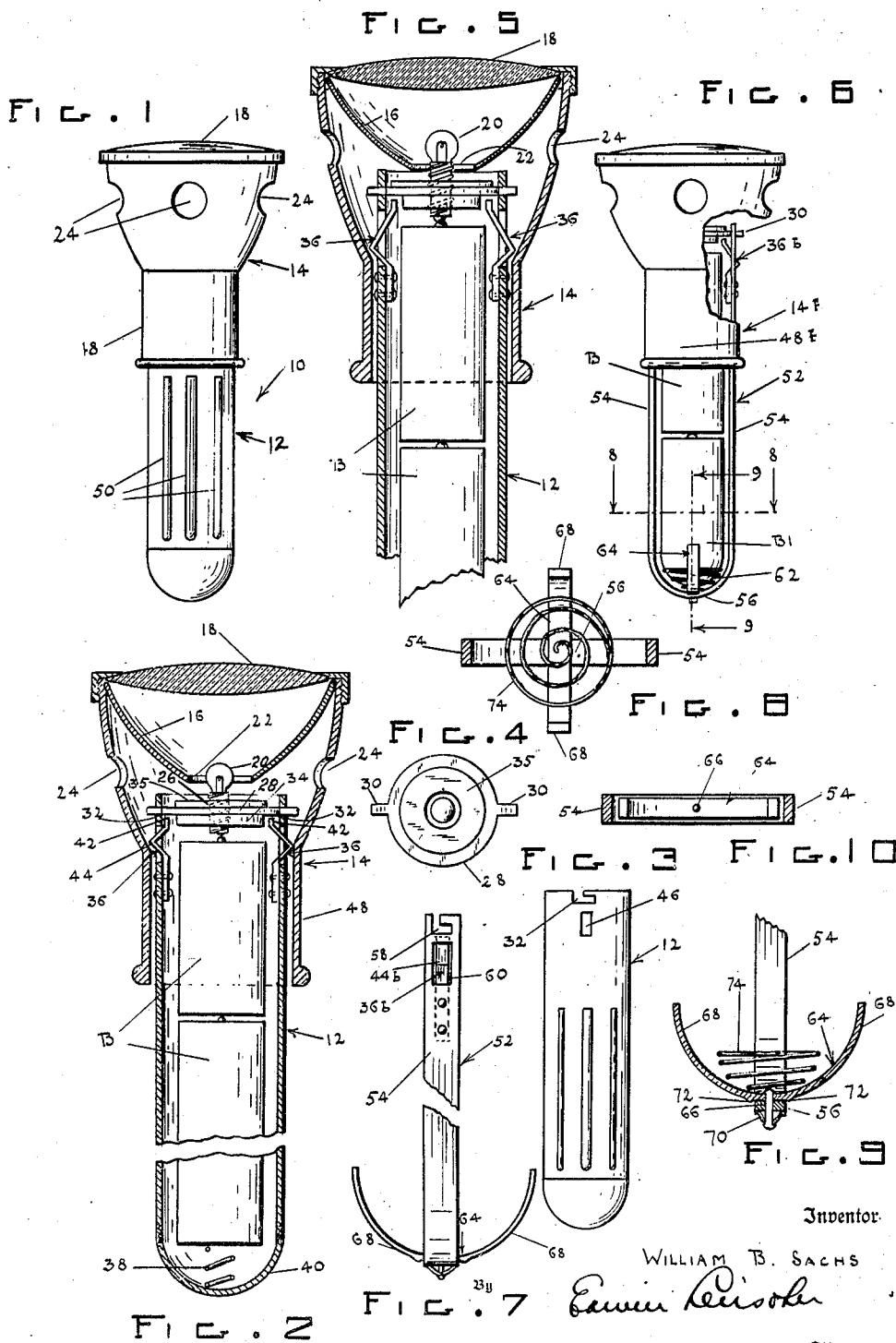
Jan. 18, 1944.

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2,339,356

FOCUSING FLASHLIGHT

Filed March 22, 1941



UNITED STATES PATENT OFFICE

2,339,356

FOCUSING FLASHLIGHT

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Application March 22, 1941, Serial No. 384,644

5 Claims. (Cl. 240—10.69)

This invention relates to flashlights and more particularly to focusing flashlights.

One object of the invention is to provide a flashlight, the focus of which can be readily adjusted by movement of a part of the flashlight by the thumb or finger of the user's hand in which the flashlight is carried, the movement of said part being also effective to turn the flashlight on and off. For this purpose the flashlight is provided with a head which is slidable on and longitudinally of the frame which carries the flashlight battery or batteries, said head having a reflector and lens mounted therein and movable therewith toward and away from the flashlight lamp, and one or more spring members are provided which constitute a switch for the lamp and which also preferably provide resilient means for resiliently engaging said head whereby to hold the latter releasably in adjusted position and to prevent a too free movement thereof.

Another object of the invention is the provision of a flashlight frame including means for mounting a lamp socket at one end thereof, said lamp socket mounting means being detachably connected to said frame, and provided with a contact member engageable by a switching contact member for connecting the lamp to and disconnecting the same from the battery.

A further object of the invention is to provide a flashlight frame constructed and arranged to permit one or more batteries to be inserted through the side of the frame without disconnecting any part thereof.

The above and other objects, features and advantages of the invention and the invention itself will best be understood from the following description, reference being had to the accompanying illustrative drawing.

In the drawing:

Fig. 1 is a side view of a flashlight embodying the present invention;

Fig. 2 is a longitudinal sectional view, on a larger scale, of the flashlight illustrated in Fig. 1;

Fig. 3 is a side view of the shell;

Fig. 4 is a top plan view of the lamp socket mounting means;

Fig. 5 is a fragmentary sectional view similar to Fig. 2;

Fig. 6 is a side view of a flashlight embodying another form of the present invention;

Fig. 7 is a side view of the frame of the flashlight construction shown in Fig. 6;

Fig. 8 is a sectional view of the frame on the line 8—8 of Fig. 6;

Fig. 9 is a sectional view of the frame on the line 9—9 of Fig. 6;

Fig. 10 is a view similar to Fig. 8 but showing the battery holding member in a different position, the spiral spring being omitted.

Referring now more particularly to the drawing, the flashlight 10 comprises a frame which, as here shown, is in the form of a metal shell 12 which is shown as cylindrical, but which can be of non-circular cross section. A head 14 is slidable on said shell longitudinally thereof. As illustrated in Fig. 2 and Fig. 5 a reflector 16 and a lens 18 are carried by head 14 and are movable therewith toward and away from the lamp 20, said reflector being provided with an opening 22 for the passage of light from lamp 20 through the transparent cover here constituted by said lens 18. It will be understood that the flashlight is focused by moving head 14 longitudinally of shell 12, the beam of light increasing in width as the reflector and lens carried by said head are moved toward said lamp and decreasing in width as said reflector and lens are moved away from said lamp. Said head 14 is also provided with a plurality of openings 24 for the passage of light for nearby illumination when the reflector and lens are moved to beam narrowing positions for more distant illumination.

Provision is made for detachably mounting the lamp socket 26 at one end of shell 12. Said socket mounting means comprises a plate 28 formed of insulation material and provided with lateral projections or ears 30 adapted to engage the bayonet slots 32 in the upper end of shell 12. A metal disk 34 is fixed to plate 28 and is in threaded engagement with the shell of lamp socket 26, the central terminal of socket 26 being positioned to engage the central terminal of the adjacent battery B. A reflector 35 is carried by plate 28.

One or more switch members 36 are riveted at their ends or otherwise fixed to shell 12 and are electrically connected thereto, said shell being electrically connected to the batteries by the spring 38 carried by the removable end cap 40 of the shell. Switch members 36 are constituted by flat strips of resilient metal and each has an end portion 42 adapted to be engaged with and disengaged from contact member 34 under the control of slidable head 14. For this purpose said switch contact members have outwardly bent portions 44 which project through openings 46 in shell 12 for engagement by the sleeve portion 48 of head 14. Switch contact members 36 are inherently biased, by their form and resiliency, to disengage contact member 34 and are

out of contact with said contact member when the head 14 is in the retracted position illustrated in Fig. 2. However, a slight movement of said head toward the projected position thereof is sufficient to cause switch contact members 36 to engage contact member 34 for closing the circuit through lamp 20 in socket 26, and further movements of said head to projected positions thereof are thereupon effective to vary the focus of the flashlight. Shell 12 is provided with projections 50 which limit the movement of head 14 in the retracted position thereof. It will be understood that resilient switch members 36 resiliently engage the inner surface of sleeve 48 of slidable head 14 and thus hold said head in adjusted position and also prevent a too free sliding movement thereof. It will be noted further that one switch member 36 would be sufficient for controlling the energization of lamp 20 but since said switch members are also utilized for releasably holding head 14 in adjusted position, the provision of two or more of the resilient members 36 is preferred. It will be observed that head 14 need move only longitudinally of the shell, rotary movement of said head being unnecessary, for focusing the light and for turning the lamp "on" and "off."

In the form of the invention illustrated in Figs. 6 to 10, the frame, instead of being in the form of a shell, comprises a U-shaped metal strap 52 having longitudinally extending legs 54 connected by a curved transverse part 56. The upper ends of legs 54 are provided with bayonet slots 58 for the detachable connection of the lamp socket mounting means. The latter is preferably of the same construction described above in reference to the flashlight illustrated in Figs. 1 and 2, the ears 30 of plate 28 of said lamp socket mounting means being received in the bayonet slots 58 of strap 52. Also, the slidable head 14B is of the same construction and operates in the same way as head 14 in said first described flashlight construction. The switch members 36b are the same as the switch members 36 described above and are fixed to legs 54 of strap 52, the latter having openings 60 through which the bent portions 44b of said switch members project for engagement by the sleeve part 48b of slidable head 14B. As here shown, the outer battery B1 has a curved end portion 62 which conforms to the curvature of strap portion 56, the other battery B being of conventional construction. It will be understood, however, that the flashlight may be designed for one battery in which event a dummy battery may be utilized in lieu of battery B or where the frame of the flashlight is relatively short said dummy battery is dispensed with and a single battery B1 provided with the curved end portion 62 is provided. Strap 52 is provided with a battery holding member 64 pivotally connected to cross part 56 of strap 52 by a pivot pin 66. Said holder 64 corresponds in shape to the curved end portion 62 of battery B1 and has opposite end portions 68 which engage the battery at opposite sides thereof. To permit the insertion and the removal of the batteries sidewise of the frame, that is, between the opposite legs 54 of strap 52, holder 64 is movable about pivot pin 66 from the position illustrated in Fig. 8 to the position illustrated in Fig. 10 and, of course, when the battery or batteries are inserted in the frame said holder member 64 is moved from the position illustrated in Fig. 10 to the position illustrated in Fig. 8. A spring 70 retains battery holding member 64 releasably in

the position illustrated in Figs. 8 and 9, said member 64 having projections 72 which engage part 56 of strap 52 for releasably preventing turning movement of member 64. A spring 74 is connected to member 64 in position to engage the curved end portion 62 of battery B1 for holding said battery or the set of batteries when more than one battery are provided in electrical engagement with the central terminal of the lamp socket, said spring 74 having the function of spring 38 of the flashlight illustrated in Fig. 2. Frame parts 56 and 64 can be straight instead of curved and with such construction a conventional battery can be used in lieu of the battery B1. Ears 30 limit movement of head 14 to projected position.

While I have shown and described the preferred embodiment of my invention, including several forms thereof, it will be understood that my invention may be embodied otherwise than as herein specifically shown or described, and it will be further understood in the forms of the invention herein shown certain changes in the details of construction and arrangement of parts may be made. Accordingly, I do not wish to be limited to the specific constructions herein shown or described except to the extent which may be required by the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A flashlight comprising a frame adapted to carry a battery and including a U-shaped metal strap having longitudinally extending legs connected at adjacent ends by a transverse part, a mounting member connected to said legs near the outer ends thereof, a lamp socket carried by said member and insulated from said frame, said socket having a terminal adapted to engage the central terminal of the battery, the other battery terminal being electrically connected to the frame, a contact member carried by said mounting member and electrically connected to the other terminal of said lamp socket, a switch carried by one of the legs of said strap and movable into and out of engagement with said contact member, and a battery holding member pivotally connected to said transverse part and provided with arms adapted to engage opposite sides of the battery, said holding member being movable to position said arms in registry with said legs of the strap whereby to permit the battery to be inserted and removed from the frame through the side thereof.

2. A flashlight comprising a frame adapted to carry a battery and including a U-shaped metal strap having longitudinally extending legs connected at adjacent ends by a transverse part, a mounting member connected to said legs near the outer ends thereof, a lamp socket carried by said member and insulated from said frame, said socket having a terminal adapted to engage the central terminal of the battery, the other battery terminal being electrically connected to the frame, a contact member carried by said mounting member and electrically connected to the other terminal of said lamp socket, a switch carried by one of the legs of said strap and movable into and out of engagement with said contact member, a battery holding member pivotally connected to said transverse part and provided with arms adapted to engage opposite sides of the battery, said holding member being movable to position said arms in registry with said legs of the strap whereby to permit the battery to be in-

serted and removed from the frame through the side thereof, and a head slidable on said legs of the strap and engageable with said switch for controlling the operation thereof.

3. A flashlight comprising a frame constructed and arranged to have a battery mounted therein and including a U-shaped metal strap having longitudinally extending legs connected at adjacent ends thereof by a transverse part, a lamp socket carried by the other ends of said legs in position to engage the central terminal of the battery, and a battery holding member pivotally connected to said transverse part and provided with arms adapted to engage opposite sides of the battery, said holding member being movable to position said arms in registry with said legs of the strap whereby to permit the battery to be inserted and removed from the frame through the side thereof.

4. A flashlight comprising a frame for carrying one or more batteries, a lamp socket carried by said frame, a head mounted on said frame and provided with a transparent cover for the passage of light from the lamp in said socket, said frame having laterally spaced longitudinally extending members in fixed relation, an opening in its side to permit the insertion and removal of the battery by movement thereof laterally of said frame, and a battery holding member pivotally secured to said frame and carried thereby for pivotal movement about an axis extending

longitudinally of said frame parallel to and between said laterally spaced members and having a part movable about said pivotal axis from one position in which said part prevents removal of the battery through said side opening to a retracted position whereby to permit such removal of the battery.

5. A flashlight comprising a frame for carrying one or more batteries, a lamp socket carried by said frame, a head mounted on said frame and provided with a transparent cover for the passage of light from the lamp in said socket, said frame having laterally spaced longitudinally extending members in fixed relation, an opening in its side to permit the insertion and removal of the battery by movement thereof laterally of said frame, and a battery holding member pivotally secured to said frame and carried thereby for pivotal movement about an axis extending longitudinally of said frame parallel to and between said laterally spaced members and having a part movable about said pivotal axis from one position in which said part prevents removal of the battery through said side opening to a retracted position whereby to permit such removal of the battery, and interengaging means on said frame and on said battery holding member for releasably securing said battery holding member in said first mentioned position thereof.

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