Jan. 26, 1943. H. KORNGOLD 2,309,402

FLASHLIGHT SWITCH

Filed Feb. 24, 1941

Fig. 1.

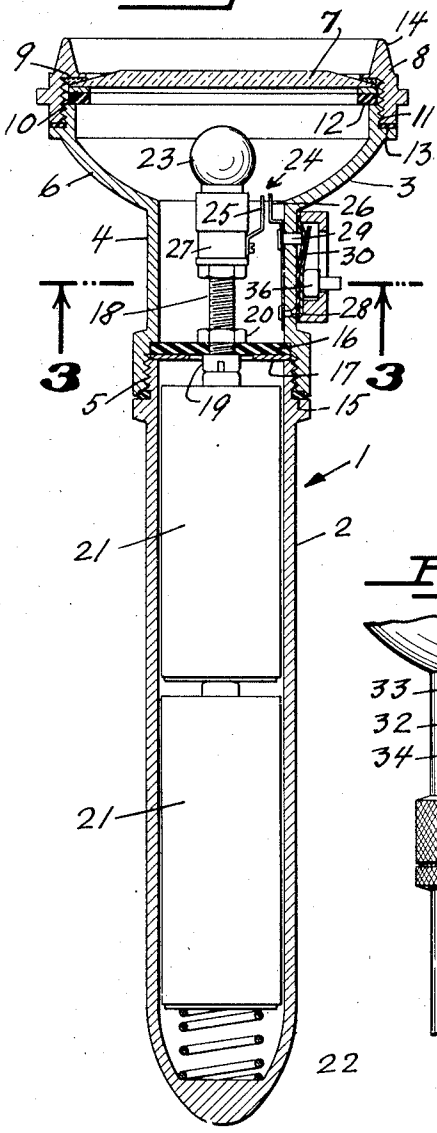


Fig. 2.

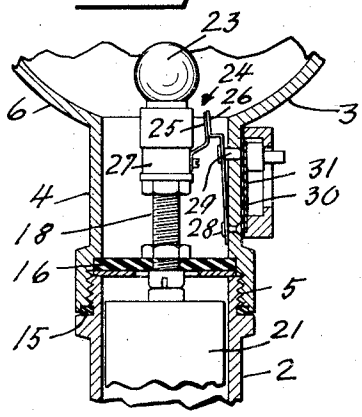


Fig. 4.

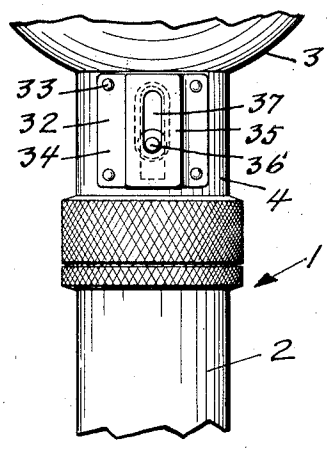
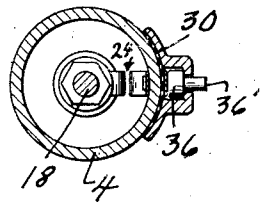


Fig. 3.



INVENTOR,
HERMANN KORNGOLD.
BY
A. Schapp.
ATTORNEY.

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FLASHLIGHT SWITCH

Hermann Korngold, San Francisco, Calif.

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3 Claims. (Cl. 200—60)

The present invention relates to improvements in a flashlight switch and more particularly to a switch mounting for the same.

The general object of the invention is to provide a flashlight that is water, air and gas tight and may be used under water and in atmosphere charged with explosive gases.

With this object in view, it is particularly proposed to provide a switch mounting which allows the switch, although operated from the outside of the flashlight housing, to open and close without any danger of igniting explosive gases in the surrounding atmosphere.

It is further proposed to provide a switch mounting in which an absolute seal is provided against the operating means mounted upon the outside of the housing so that no water may enter into the housing from the outside by leakage past the operating means.

Further objects and advantages of my invention will appear as the specification proceeds, and the novel features thereof will be fully set forth in the claims hereto appended.

The preferred form of my invention is illustrated in the accompanying drawing forming part of this application, in which:

Figure 1 shows a longitudinal axial section through my flashlight, with the switch in open position;

Figure 2, a similar fragmentary section showing the switch in closed position;

Figure 3, a transverse section taken along line 3—3 of Figure 1; and

Figure 4, an outside view of the fragment shown in Figure 2.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached, without departing from the spirit of the invention.

Referring to the drawing in detail, my flashlight 1, in its general features, may be of any suitable conventional type, provided that suitable water and gas tight sealing means be applied at the various joints.

In the drawing the flashlight is shown as comprising a cylindrical shank section 2 and a head section 3 comprising a cylindrical shank 4 threaded upon the shank section 2, as at 5, and a reflector 6 carrying a lens 7 secured to the reflector by means of a ring 8.

The lens is tightly secured in the ring 8 between a suitable flexible sealing medium 9 and a ring 10, which may be threaded into the ring 8. The latter then is threaded upon the end of the reflector, as at 11, and suitable gaskets 12 and 13 are used to render the connection water-tight as well as gas-tight.

The ring 8 is preferably formed with a projecting rib, as at 14, which surrounds the lens and gives the same a certain amount of protection against accidental damage.

At the joint 5, I also provide a suitable gasket 15, and I utilize this joint as a supporting means for a disc 16 of insulating material, which, together with a reinforcing ring 17, is clamped between the two shank sections.

The insulating disc 16 serves as a base for the lamp mounting, indicated at 18, which may be of any suitable type, and includes a threaded shank extending through the disc 16, and secured upon the latter between a head 19 and a nut 20.

The lower shank section of the flashlight serves as a housing for a plurality of batteries 21 arranged in series in the conventional form, one side of the batteries being grounded to the housing through a spring 22, which also serves to urge the batteries toward one another, and the uppermost battery toward the light mounting 18 to establish contact in the conventional manner with one of the filament terminals of the lamp 23.

The other contact is established through the switch 24 comprising two leaf contacts 25 and 26, the contact 25 being mounted upon a bushing 27 having electrical connection with the other terminal of the light filament, and the contact 26 being secured upon the inside of the housing, as at 28.

The latter contact is in the form of a leaf spring and the free end thereof tends to swing away from the contact 25 and toward the wall of the housing, but it may be actuated to move toward the contact 25 by means of a pin 29, one end of which is secured to an intermediate portion of the leaf spring, while the shank is slidable in a registering hole in the wall of the housing and normally projects slightly beyond the outside of the housing.

It is apparent that, when this pin 29 is pushed inwardly, it will urge the leaf spring contact 26 toward the contact 25, so as to establish electrical connection. It is further apparent that it is rather difficult to render the housing about the pin 29 water-tight and air-tight.

In order to solve this problem, I provide a sheet of rubber or similar flexible material, indicated at 30, the margin of which is securely fas-

tened upon the ouside of the housing, so as to surround the pin 29, whereas an intermediate section of the rubber overlying the pin 29, is capable of yielding movement to accommodate the projecting end of the pin 29.

For operating the pin 29, I use a leaf spring 31 anchored over the outside of the rubber sheet 30 and having a free end projecting over the pin. A casing 32 is secured upon the outside of the housing by means of rivets 33 passing through flanges 34 overlying the sheet of rubber and is formed with a raised central portion 35 adapted to accommodate a slide 36.

The latter rides on top of the spring leaf 31, and has a small manipulating stud 36' projecting through a slot 37, so that it may be readily manipulated from the outside of the casing.

Figure 1 shows the switch 24 in open position with the two contacts 25 and 26 separated, the slide 36 in its lowermost position in the casing 32 and the pin 29 projecting outwardly through the housing, but covered by the rubber sheet, while the end of the leaf spring 31 bears upon the pin 29 through the rubber sheet. To close the switch, the slide 36 is pushed upward into the position shown in Figure 2. This causes the free end of the leaf spring 31 to bear upon the pin 29 and to force the same inwardly, whereby the contact 26 is urged upon the contact 25 for closing the electrical circuit.

It will be noted that the hole around the pin 29 is always hermetically sealed against the outside, so that even if a spark should be created in the operation of the switch, it would be safely insulated from the outside, thereby eliminating all danger of igniting gases present in the surrounding atmosphere.

I claim:

1. A switch mounting for a flashlight comprising a housing for the flashlight having a hole in the wall thereof, a leaf spring having one end secured to the inside of the housing, a pin secured to a free portion of the leaf spring and extending slidably through the hole, a diaphragm secured upon the outside of the housing so as to seal the hole, the diaphragm having a section free to move in response to movements of the pin, and means mounted upon the outside of the housing for operating the pin through the diaphragm, the said means comprising a leaf spring having one end secured to the housing with a free end projecting over the diaphragm and the pin and a member slidable over the leaf spring for depressing the free end thereof to push the pin inwardly.

2. A switch mounting for a flashlight comprising a housing for the flashlight having a hole in the wall thereof, a movable contact mounted inside the housing and having a pin extending slidably through the hole, a diaphragm secured upon the outside of the housing so as to seal the hole, the diaphragm having a section free to move in response to movements of the pin, and means mounted upon the outside of the housing for operating the pin through the diaphragm, the said means comprising an elastic bridging member having a free portion projecting over the diaphragm and the pin and a member slidable over the bridging member for depressing the free section thereof to push the pin inwardly.

3. A switch mounting for a flashlight comprising a housing for the flashlight having a hole in the wall thereof, a leaf spring having one end secured to the inside of the housing, a pin secured to a free portion of the leaf spring and extending slidably through the hole, a diaphragm secured upon the outside of the housing so as to seal the hole, the diaphragm having a section free to move in response to movements of the pin, and means mounted upon the outside of the housing for operating the pin through the diaphragm, the said means comprising an elastic bridging member having a free portion projecting over the diaphragm and the pin, and a member slidable over the bridging member for depressing the free section thereof to push the pin inwardly.

HERMANN KORNGOLD.