Jan. 2, 1940. F. L. HUMESTON 2,185,849

SWITCH

Filed Feb. 28, 1936 2 Sheets-Sheet 1

Fig. 1.

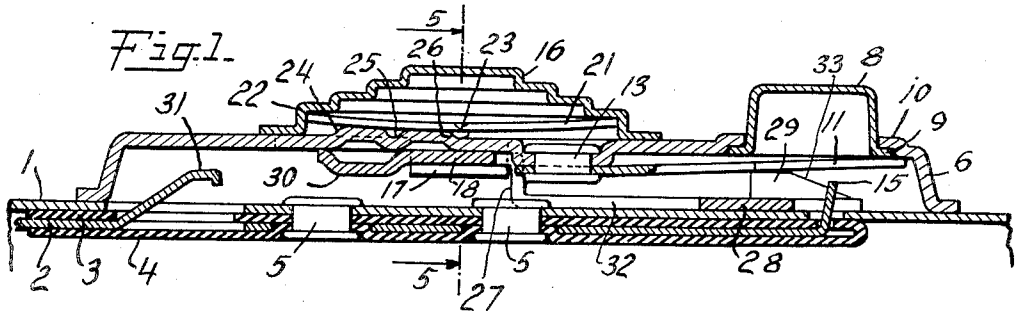



Fig. 2.

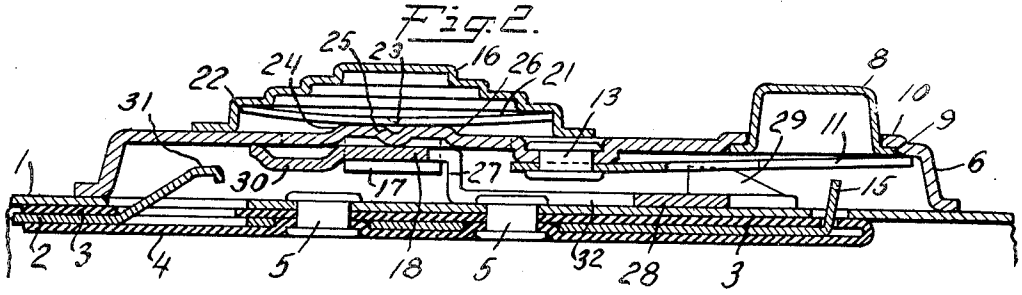



Fig. 3.

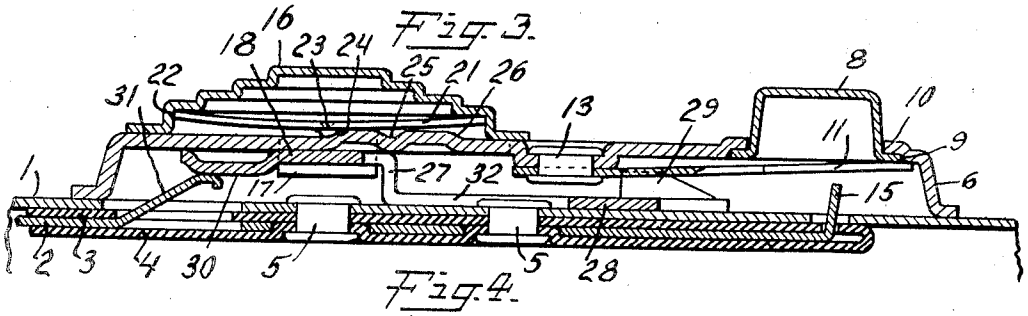
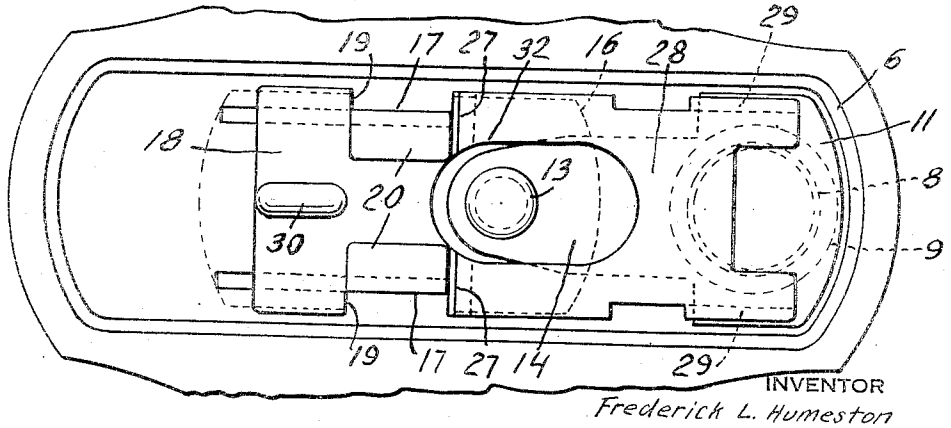



Fig. 4.




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Filed Feb. 28, 1936 2 Sheets-Sheet 2

Fig. 5.

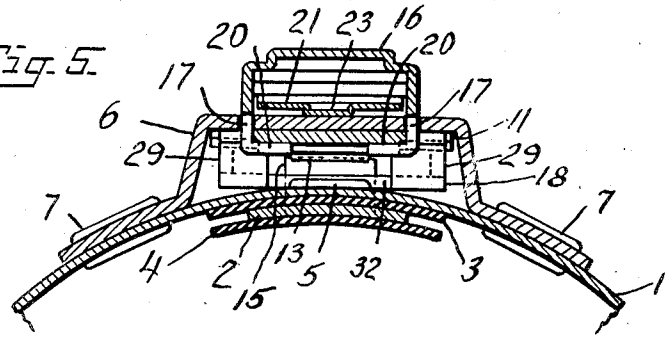



Fig. 6.

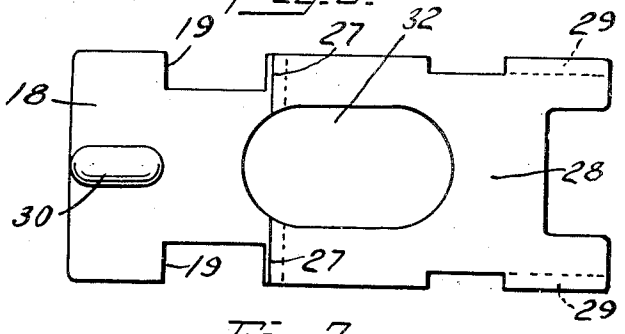



Fig. 7.

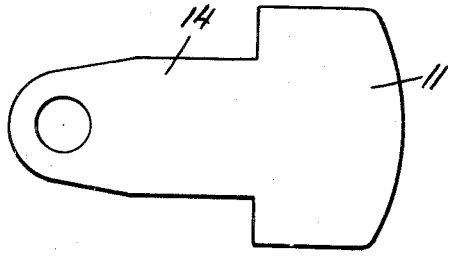
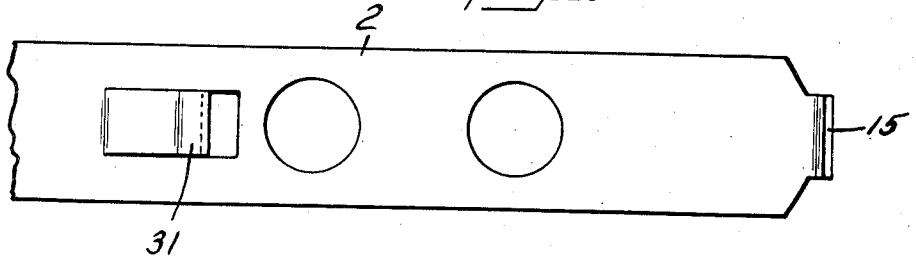



Fig. 8.




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# UNITED STATES PATENT OFFICE

2,185,849

## SWITCH

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Application February 28, 1936, Serial No. 66,153

6 Claims. (Cl. 200—60)

This invention relates to switches and more particularly to switches for hand lamps.

An object of the invention is to provide a hand lamp switch which may be locked in the "on" or "off" position and which may also be positioned to permit intermittent operation of the switch and flashing of the lamp.

A further object of the invention is to provide a simple type of construction for carrying out the above object consisting of relatively few parts which may be cheaply made and which is unlikely to get out of order. In the accompanying drawings I have shown one embodiment of the invention.

Fig. 1 is an enlarged, sectional view of a portion of a flashlight casing showing the switch of my invention with the slide in the locked position;

Fig. 2 is a similar view showing the slide in its intermediate position permitting flashing of the light;

Fig. 3 is a similar view showing the slide in its forward position which retains the switch closed;

Fig. 4 is a bottom plan view of the switch member removed from the casing;

Fig. 5 is a transverse, sectional view on line 5—5 of Fig. 1;

Fig. 6 is a detailed view of the member which forms the sliding switch lock;

Fig. 7 is a plan view of the switch spring; and

Fig. 8 is a plan view of a portion of the switch connection.

Referring to the drawings, the reference numeral 1 designates a portion of a flashlight case. A switch connecting strip 2 extends from the portion of the case on which the switch is mounted to the lamp socket (not shown) and is connected thereto in any suitable manner. Between the case and the switch connecting strip a layer of insulation 3 is arranged, and a similar layer 4 of insulation is arranged on the inside of the connecting strip to insulate it from the flashlight cells (not shown), which are normally arranged in the casing. As shown, the switch connecting strip is connected to the case at spaced intervals by rivets 5.

The switch comprises a switch box or housing 6 which is mounted on the case at a convenient point. It is provided with an ear on each side by means of which it may be secured to the case by rivets 7 or other suitable fastening means. The rear of the switch box is provided with an opening adapted to receive a button 8 which functions in flashing the light. As shown, the button is provided with a flange 9 which fits under a circular raised portion 10 of the switch box. A switch spring 11 is mounted on the inside of the switch box with its free end in engagement with the button as shown. The spring 11 normally retains the flange 9 against the raised portion 10. The opposite end of the switch spring is secured to the top of the switch box by a rivet 13. This end of the switch spring is reduced in width as shown at 14 in Fig. 7 of the drawings. Adjacent the button and the free end of the switch spring 11 the switch connecting strip 2 is provided with an upstanding portion 15 which passes through openings in the case and in the insulating strip 3.

A switch slide is arranged on top of the switch box forwardly of the button 8. It consists of a suitably shaped member 16 having a pair of lugs 17 extending from its sides which are adapted to pass through openings in the switch box. These lugs embrace a switch lock member 18 (see Fig 6). As shown, this member 18 is provided with a pair of cut-out portions 19 for the reception of the lugs. The lugs are then bent around the under surface of the switch lock member 18, as indicated at 20 in Fig. 5 of the drawings, to hold the switch lock member in position adjacent the inner surface of the switch box. A spring 21 is arranged within the slide 16 and is held therein by engagement of its ends with shoulders 22 formed on the inner surface of the switch slide and by contact with the top of the switch box. As shown, the spring 21 is flexed toward the top of the switch box and is provided with a detent 23 which is adapted to engage either of three stops 24, 25 and 26 formed on the top of the switch box to retain the switch slide in either of three positions.

The switch lock member 18 is formed from a blank of the shape shown in Fig. 6 of the drawings and before assembly this blank is offset as at 27 to dispose the rear portion of the member against the flashlight case as indicated at 28. Arms or extensions are then bent upwardly to form cams 29. The forward portion of the switch lock member which is arranged immediately below the inner surface of the switch box is provided with an offset or indent 30 which, when the member is in the forward position shown in Fig. 3 of the drawings, is adapted to contact with an upwardly extending portion 31 of the connecting strip 2. As shown this upwardly extending portion 31 passes through suitable openings in the flashlight case and in the insulating strip 3. A portion of the switch lock member adjacent the offset 27 is cut out as indicated at 32. The cams 29 are provided with sloping edges 33.

In operation the slide 16 is adapted to be arranged in either of three positions to permit locking the switch, flashing of the light, or to retain the switch in the "on" position. In Fig. 1 of the drawings the slide is shown at its rear position with the detent 23 engaging the rear stop 26 on the top of the switch box. In this

position the cams 29 are arranged under the wide portion of spring 11 beneath the button 8. Flexing of the spring to close the circuit between it and the contact 15 is prevented. Contact with the other contact 31 is also open so that the switch is locked in the "off" position. With the parts in this position the reduced portion 14 of the spring 11 is arranged adjacent the cut-out portion 32 of the switch lock member and these parts are spaced from each other as shown in Fig. 1 of the drawings so that the only contact between the spring 11 and the slide is between the wide portion of the spring and the cams 29.

When the slide is moved forwardly to the intermediate position so that the detent 23 engages the stop 25, contact between the switch slide 18 and the front contact 31 is still open as shown in Fig. 2 of the drawings. The cams 29, however, have been moved out of alignment with the button 8, spring 11 and contact 15, and pressure on the button 8 flexes the spring into contact with the contact 15 to close the circuit. The circuit is maintained in closed position as long as pressure is applied to the button 8 and when the pressure is removed from the button 8 the resiliency of the spring 11 breaks the contact.

If the slide 16 is moved to its forward position with the detent 23 engaging the stop 24, the parts assume the position shown in Fig. 3 of the drawings and the depression 30 of the switch slide is brought into contact with the front contact 31 of the connecting strip 2 to close the circuit.

The spring 21 is of simple construction and is held in place between the shoulders 22 and the top of the switch box to exert sufficient pressure to maintain the detent 23 in a desired one of the stops 24, 25 or 26 against accidental displacement. The contact members are also of simple construction and the switch spring 11 functions entirely independently of the slide 18 except when the slide is in its rear position shown in Fig. 1 of the drawings with the cams 29 immediately below the adjacent portion of the spring and the button 8. When the slide is moved to its foremost position shown in Fig. 3 of the drawings, the steady "on" contact is completed by the depression 30 and the contact member 31 entirely independently of the elements which function in the making of an intermittent contact. The sloping edges 33 of cams 29 may be employed to raise the spring 11 from contact 15, should the spring become stuck, for any reason.

I claim:

1. A hand lamp switch comprising a conductor member mounted on the casing of a hand lamp, a switch box mounted on the casing, a pair of spaced contacts carried by said conducting member and projecting into said switch box, a depressible contact carried by said switch box and adapted to engage one of said spaced contacts, a sliding contact carried by said switch box and adapted to engage the second spaced contact, and means carried by said sliding contact and movable thereby to a position for obstructing movement of the depressible contact toward said fixed contact and thereby positively securing said depressible contact against operation.

2. A hand lamp switch comprising a conducting member mounted on the casing of a hand lamp, a switch box mounted on the casing, a pair of spaced contacts carried by said conducting member and projecting into said switch box, a spring mounted in said switch box having a free end adapted to be depressed to engage one of said spaced contacts, and a sliding contact in said switch box adapted to engage the other of said spaced contacts and having a sloping part engageable with the free end of the spring to secure the spring against movement toward said first contact.

3. A hand lamp switch comprising a conducting member mounted on the casing of a hand lamp, a switch box mounted on the casing, a pair of spaced contacts carried by said conducting member and projecting into said switch box, a spring mounted in said switch box having a free end adapted to be depressed to engage one of said spaced contacts, a sliding contact in said switch box adapted to engage the other of said spaced contacts and cams carried by said sliding contact and adapted to engage said spring to prevent depression of said spring.

4. A hand lamp switch comprising a conducting member mounted on the casing of a hand lamp, a switch box mounted on the casing, a pair of spaced contacts carried by said conducting member and projecting into the opposite ends of said switch box, a spring arranged adjacent one end of said switch box having a free end adapted to be depressed into engagement with one of said spaced contacts, a button on said switch box for depressing said spring, a slide arranged on the exterior of said switch box, a sliding contact arranged in said switch box and connected to said slide, and a cam mounted on the end of said sliding contact adjacent said button, said sliding contact when in one position being so arranged that said cam engages said spring to prevent depression of said spring, when in a second position being free to permit operation of said spring and when in a third position engaging the other of said spaced contacts.

5. A hand lamp switch comprising a conducting member mounted on the casing of a hand lamp, a switch box mounted on the casing, a pair of spaced contacts carried by said conducting member and projecting into said switch box, a spring mounted in said switch box having a free end adapted to be depressed to engage one of said spaced contacts, a sliding contact in said switch box adapted to engage the other of said spaced contacts and cams carried by said sliding contact and adapted to engage said spring to prevent depression of said spring, said cams being provided with sloping edges.

6. In a switch, the combination of a pair of fixed contacts disposed in spaced relation, a contact arm, means for operatively mounting one end of the arm and securing the arm against endwise movement, the other end of the arm being depressible into engagement with one of the fixed contacts, locking means movable relative to the contact arm to a position under the depressible end thereof to obstruct movement of the arm toward said first fixed contact, and a sliding contact operatively connected to said locking means and movable selectively into one position for engaging the other of said fixed contacts, into another position for moving the locking means under the depressible end of the contact arm, and into a third position in which it is out of engagement with the second fixed contact and manitains the locking means out of locking relation with the contact arm.

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