April 2, 1963 C. S. PACKER ET AL 3,084,248

PIVOTED REFLECTOR HOLDER FOR A HAND LANTERN

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Fig. 1

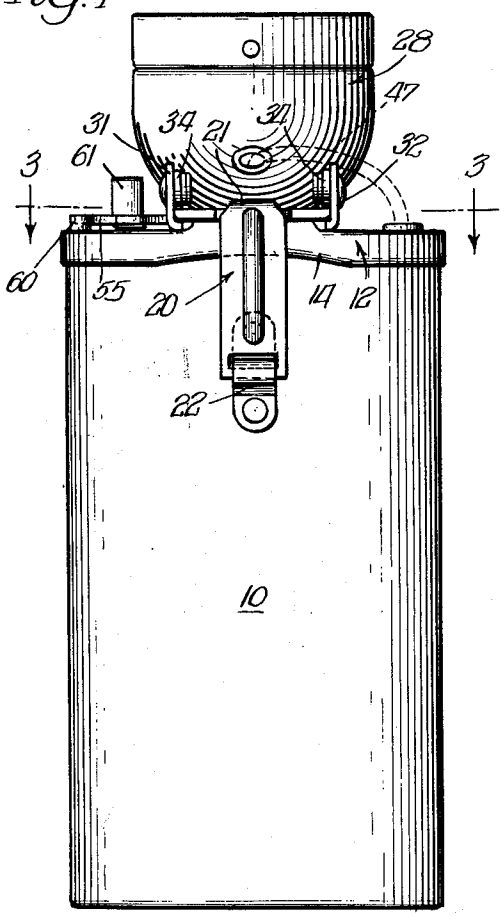


Fig. 2

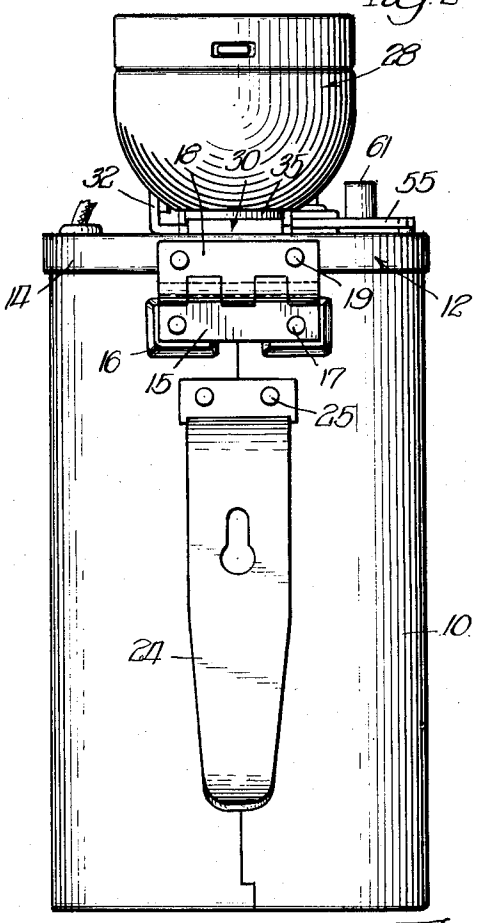


Fig. 3

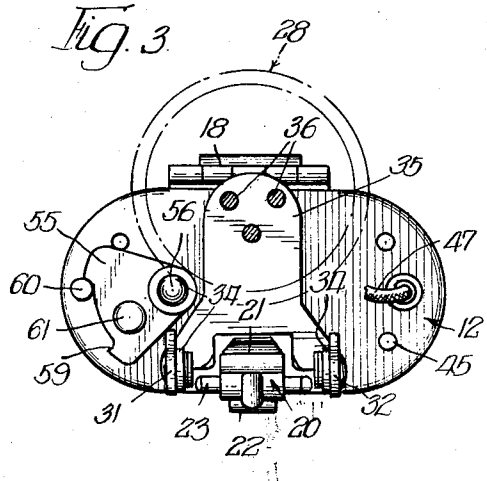
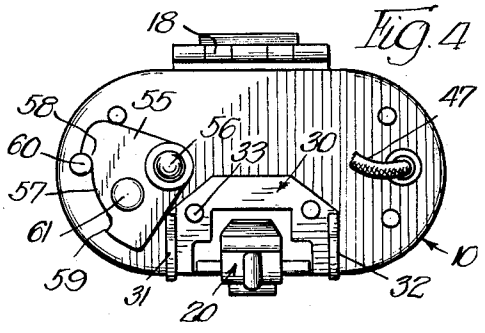


Fig. 4



INVENTORS.
BY Charles S Packer,
Nicholas W. Keller,
William B. Rosinski,
Byron Hume Groen & Clement
Attys.

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Fig. 5

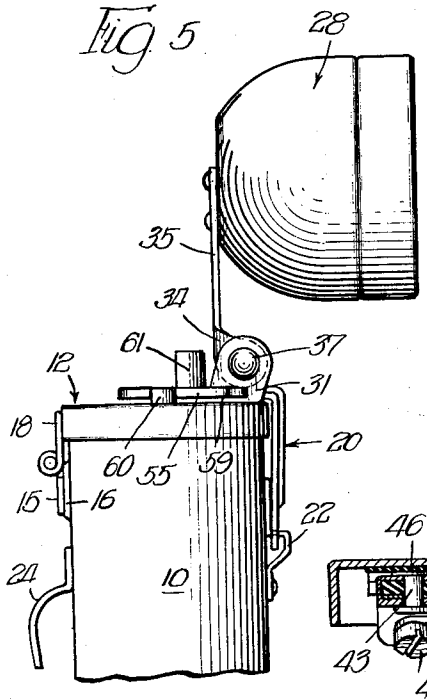


Fig. 6

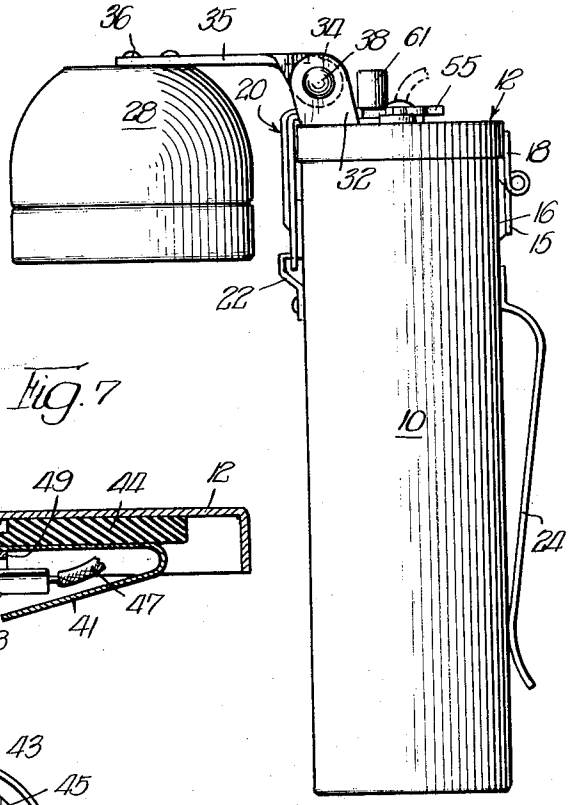


Fig. 7

Fig. 9

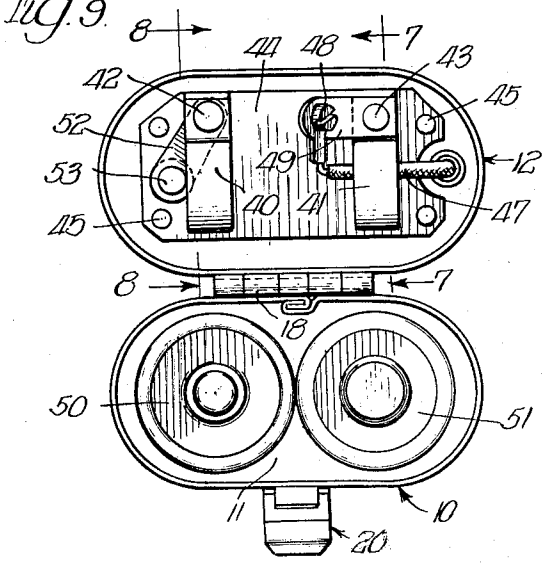
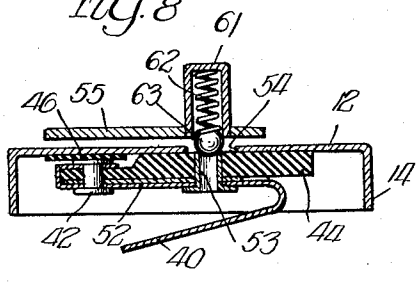


Fig. 8



INVENTORS.
Charles S. Packer,
Nicholas W. Keller,
William B. Rosinski,
BY Byron Hume Broen & Clement
attys.

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PIVOTED REFLECTOR HOLDER FOR A HAND LANTERN

Charles S. Packer, Nicholas W. Keller, and William B. Rosinski, Chicago, Ill., assignors to Justrite Manufacturing Company, Chicago, Ill., a corporation of Illinois

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2 Claims. (Cl. 240—10.65)

The invention relates to portable lanterns and has reference more particularly to a battery powered flashlight of the type having a casing or housing for containing the batteries and having a pivoted reflector holder for projecting the light beams in the directions desired by the operator.

An object of the invention is to provide a battery powered flash-light having a unique and novel pivoted top closure plate for the casing, the said closure plate carrying battery contacts on its under side, a switch device on its top exposed side, and said plate also carrying bracket structure for pivotally supporting the reflector holder.

Another object of the invention is to provide a flashlight type of hand lantern wherein the top closure plate for the casing is equipped with pivot lugs for pivotally mounting the reflector holder on the said top plate and wherein the top plate is itself pivoted to the casing.

Another object is to provide pivot structure for mounting the reflector holder of a flashlight on the top closure plate of the battery casing, the said pivot mounting being constructed and arranged to provide for pivotal movement of the reflector holder through an arc of approximately one hundred and eighty degrees.

Another object is to provide switch structure having novel and improved features and which is especially adapted for pivotal securement to the top closure plate of the battery casing.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended thereto.

In the drawings which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

FIGURE 1 is a front elevational view of a portable hand flashlight constructed in accordance with and embodying the improved features of the present invention;

FIGURE 2 is a rear elevational view of the flashlight of FIGURE 1;

FIGURE 3 is a horizontal sectional view taken substantially along line 3—3 of FIGURE 1;

FIGURE 4 is a top plan view of the top closure plate with the pivoted reflector holder being omitted;

FIGURE 5 is a fragmentary side elevational view showing the pivoted reflector holder in an upright position for projecting the light beams horizontally;

FIGURE 6 is a side elevational view showing the pivoted reflector holder in a forward down position for projecting the light beams vertically downward;

FIGURE 7 is a transverse sectional view taken substantially along line 7—7 of FIGURE 9;

FIGURE 8 is a transverse sectional view taken substantially along line 8—8 of FIGURE 9; and

FIGURE 9 is a top plan view of the battery casing, with the top closure plate in open position to show the battery contacts and other electrical connections.

Referring to the drawings and to FIGURES 1 and 2 in particular, the invention is disclosed as applied to a hand flashlight having a battery casing 10 approximately elliptical in transverse section and having a depth so as to contain four battery cells of conventional size, two of which are shown in FIGURE 9. The bottom wall 11 is provided with a bridging contact, not shown, for electrically connecting the positive and negative terminals of the respective battery cells at the base of casing and the top of the casing is conveniently closed by a closure plate 12. Said plate has a depending peripheral flange 14 which overlies the top edge of the casing and said plate is pivoted to the casing at the rear by the conventional hinge structure. The bottom part 15 of said hinge structure is secured to the rectangular embossed area 16 by the rivets 17. The top part 18 of the hinge is secured to the flange 14 by the rivets 19. The top closure plate 12 is held in closed position on the casing by a releasable clip 20 having a finger part 21 for manipulation, said clip being loosely secured to the casing by the clevis 22. The finger part 21 of the clip engages the embossed ridge 23 formed on the outside surface of the top plate and functions to yieldingly hold the plate in closed relation as regards the casing.

A carrying clip such as 24 may be secured by the rivets 25 to the casing at the rear. The clip 24 can be engaged with a belt or other wearing apparel of the operator for carrying the flashlight so as to leave the hands free.

The top closure plate 12 has the reflector holder 28 pivotally secured to the same. For such purposes the member 30, having the upstanding pivot lugs 31 and 32, is fixedly secured to the plate on the top forward surface thereof as best shown in FIGURE 4. Rivets such as 33 or other fastening means may be employed for securing the member to the plate. The upstanding lugs 31 and 32 form the base portion of hinge structure wherein the top portion is provided by the lugs 34, FIGURE 5, of the holder support plate 35. The said reflector holder 28 is fixedly secured to the support plate 35 by the rivets or screws 36. The lugs 34 coact respectively with the lugs 31 and 32 and the hinge structure for the reflector holder is completed by the pivot pins 37 and 38, the pin 37 joining the lugs 31 and 34 whereas the pin 38 joins the lugs 32 and 34.

The hinge structure for the reflector holder 28 makes possible pivotal movement of the holder through an arc of approximately one hundred and eighty degrees. This is clearly evident from the drawings wherein FIGURE 1 shows the holder located in a horizontal rear position, in which position the holder projects the light beams vertically upward. In FIGURE 6 the holder is located in a forward down position so that the light beams are projected vertically downward. FIGURE 5 illustrates an intermediate position wherein the holder support plate 35 has an upstanding position so that the reflector holder will project the light beams horizontally.

The top closure plate, in addition to carrying the reflector holder, also carries the contacts 40 and 41 (FIGURE 9), which engage with the terminals of the battery cells 50 and 51 to establish the electric circuit to the light bulb located within the reflector holder, all of which is conventional structure as regards flashlights and which is, therefore, not shown in detail. The said contacts 40 and 41 are located on the underside of the top closure plate, being secured in place on the insulating pad 44 by the rivets 42 and 43, respectively. The said contacts are thus insulated from the metal of the top closure plate by the pad 44 of insulating material such as hard rubber or a plastic. The insulating pad 44 covers most of the undersurface of the top closure plate and the same is conveniently secured to the said plate by the rivets or screws 45. The pad 44 covers an area of the plate sufficient to completely insulate the contacts 40 and 41 which have a shape such as shown in FIGURE 7, so that the free end of each contact is flexible for yielding contact with a terminal of

one of the battery cells retained by the casing. Snce the rivets 42 and 43 extend completely through the insulating pad 44, it is necessary to interpose a strip of insulating material such as 46 between the rivets and the metal of the top closure plate, all as clearly shown in FIGURE 7.

The conductor 47 is electrically connected at 48 to the metal strip 49, which is in turn electrically connected by the rivet 43 to the contact 41. The conductor 47, therefore, completes the electric circuit from the battery cell 51 to the lamp bulb within the reflector holder, it being understood that the conductor will have electrical contact with the center terminal of the light bulb and that the threaded base of the bulb will be grounded to the metal of the holder and thus to the metal of the top closure plate. Whereas contact 41 engages the negative terminal of cell 51, it will be understood that contact 40 has similar engagement with the positive terminal of cell 50. In accordance with the invention contact 40 is electrically connected and disconnected from the metal of the top closure plate by switch structure carried by said plate, and thus it is relatively convenient for the operator to make and break the electric circuit to the reflector holder.

The switch structure is best shown in FIGURE 8 and as previously described, the said structure is carried by the top closure plate on the top surface thereof so as to provide easy access to and convenient manipulation by the operator. The metal strip 52 is secured at one end to contact 40 by means of the rivet 42. The other end of strip 52 is electrically connected to the tubular metal sleeve 53 which is inserted in so as to extend completely through the insulating pad 44. In the place of the metal sleeve 53 a rivet or similar electrical conducting stud can be substituted therefor. The top plate 12 is provided with an enlarged opening 54 in direct alignment with the metal sleeve 53, and the said top plate, in the vicinity of the opening 54, has the actuating member 55 of the switch device pivotally mounted thereon by means of the pivot pin 56. FIGURE 4 shows the shape of the actuating member 55 which is formed with the curved surface 57 having a pocket 58 at one end and a similar pocket 59 at its other end. The pin 60 constitutes a stop and the same has coaction with either pocket 58 or 59 to posittion the actuating member 55 in a circuit closing position or in a circuit open position. The said member 55 is actuated or oscillated by the knob 61. The said knob is hollow and cylindrical as shown in FIGURE 8, and the same has a secured relation with the actuating member 55 in a manner which provides an open bottom for the knob and a closed top. Said knob carries the coil spring 62 which yieldingly engages the metal ball 63 forcing the same downwardly as evidenced from said FIGURE 8.

The mode of operation of the switch structure as herein described is relatively simple. When the actuating member 55 is inoperatively positioned, it will be understood that the spring pressed ball 63 will have contact with the top surface of the metal plate 12. In this inoperative position of the switch actuating member the circuit to the light bulb in the reflector holder is broken at contact 40. Accordingly, this constitutes the "off" position of the switch, and in said position the actuating member 55 is located as shown in FIGURES 3 and 4 with the pocket 58 in contact with stop 60. When the switch member 55 is oscillated so as to bring the pocket 59 in contact with stop 60, the knob 61, and thus the spring pressed ball 63, will be moved to locate the ball over the opening 54 and thus the spring pressed ball has electrical contact with the metal sleeve 53 to thereby complete the electric circuit through the contact 40. In this position of the spring pressed ball 63 the same acts as a detent holding the switch member in "on" position until the member is oscillated by the operator into a circuit "off" position.

What is claimed is:

1. In a portable lantern, the combination with a battery casing for containing a plurality of battery cells, of a top closure plate of metal for the battery casing having a pivoted connection thereto, a reflector holder electrically connected to the top closure plate, a pivot member fixed to the top exposed surface of the closure plate, means pivotally securing the reflector holder to the said pivot member to provide for movement of the reflector holder through an arc of approximately one hundred and eighty degrees, a pair of battery contacts secured to the closure plate on the underside of the same and which are adapted to respectively contact certain of the battery cells when the plate is closed, a pad of insulating material interposed between the battery contacts and the metal closure plate to insulate the contacts from the plate, a switch device located on the top surface of the closure plate and carried thereby, said switch device including an actuating member pivoted to the plate for movement in directions parallel to its top exposed surface, a metal sleeve electrically connected to one of the battery contacts and extending through the pad of insulating material in spaced relation and in alignment with an opening in the closure plate, and a metal detent resiliently carried by the actuating member and adapted to contact the sleeve through the opening when the actuating member is so positioned whereby to establish an electric circuit to the reflector holder.

2. In a portable lantern, the combination with a battery casing for containing a plurality of battery cells, of a top closure plate of metal for the battery casing, a reflector holder associated with said top closure plate and being electrically connected to the said plate, a pair of battery contacts secured to the closure plate on the underside of the same and which are adapted to respectively contact certain of the battery cells when the plate is closed, a pad of insulation material interposed between the battery contacts and the metal closure plate to insulate the contacts from the plate, a switch device located on the top surface of closure plate and carried thereby, said switch device including an actuating member pivoted to the plate for movement in directions parallel to its top exposed surface, a metal sleeve electrically connected to one of the battery contacts and extending through the pad of insulating material in spaced relation and in alignment with an opening in the closure plate, and a metal detent resiliently carried by the actuating member and adapted to contact the sleeve through the opening when the actuating member is so positioned whereby to establish an electric circuit to the reflector holder.

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