March 30, 1965 A. S. LUKASEK 3,176,092

FLASHLIGHT SWITCH CONSTRUCTION WITH ROTATABLE CONTACT STRUCTURE

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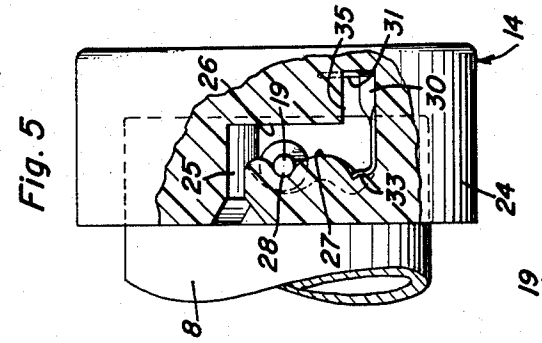
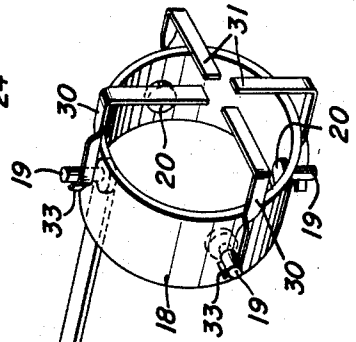


Fig. 5



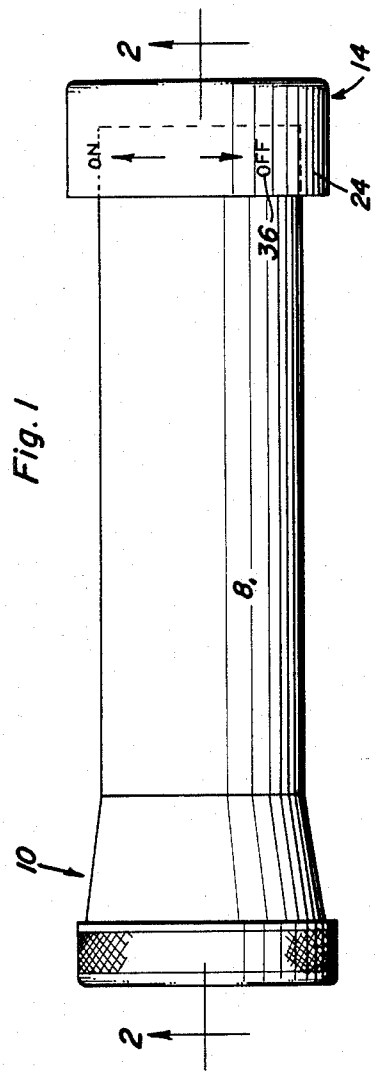


Fig. 1

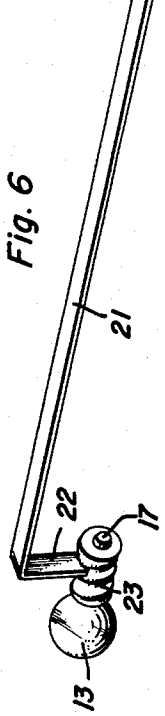


Fig. 6

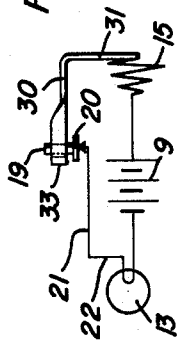


Fig. 7

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FLASHLIGHT SWITCH CONSTRUCTION WITH ROTATABLE CONTACT STRUCTURE

Filed April 2, 1962 2 Sheets-Sheet 2

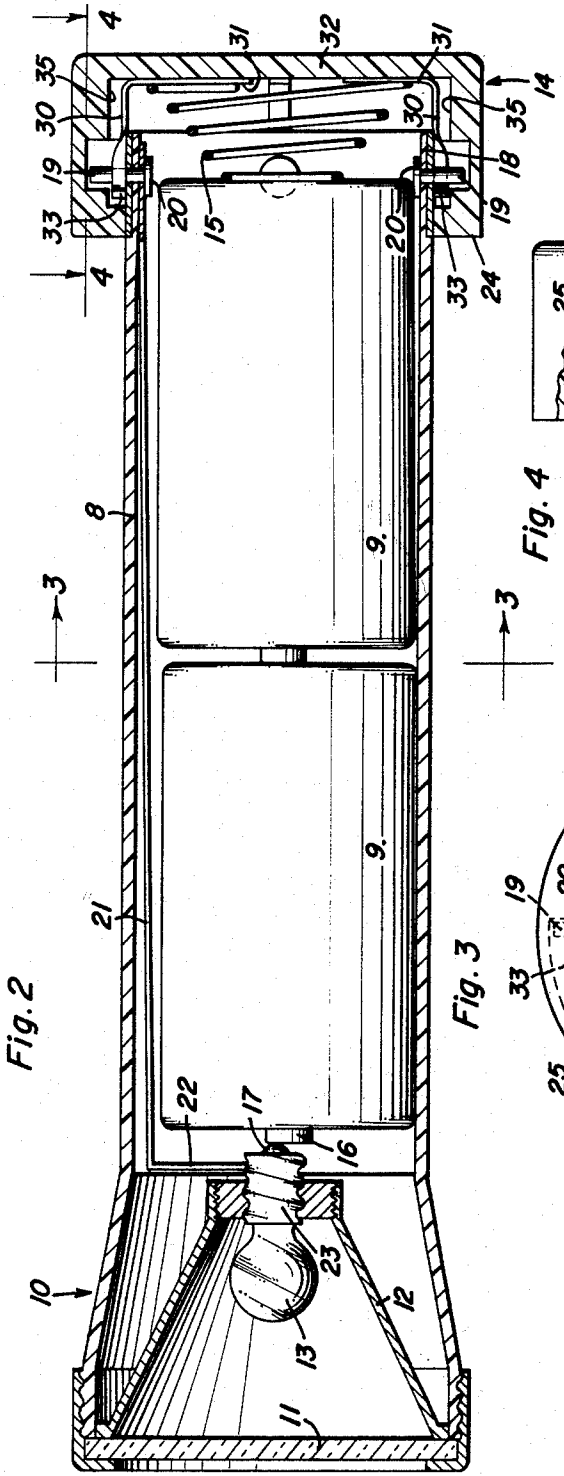


Fig. 2

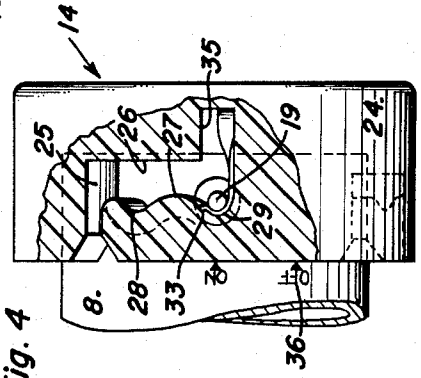


Fig. 4

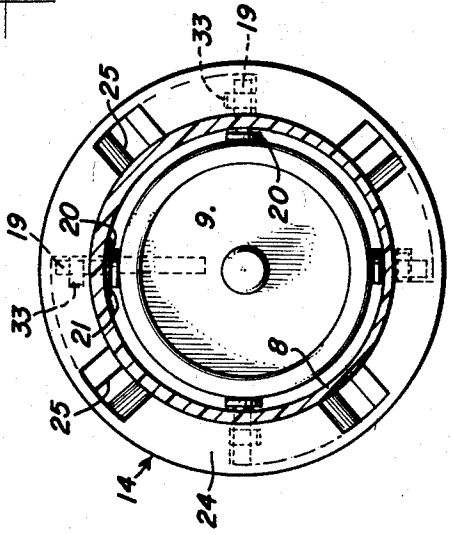


Fig. 3

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3,176,092

FLASHLIGHT SWITCH CONSTRUCTION WITH ROTATABLE CONTACT STRUCTURE

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6 Claims. (Cl. 200—60)

This invention relates to new and useful improvements in a flashlight cap and light switch construction and has for its primary object to provide, in a manner as hereinafter set forth, a device of this character comprising a combination cap and switch of novel construction for closing the cylindrical casing and for controlling the lamp.

Another important object of the present invention is to provide an improved flashlight of the aforementioned character wherein the switch may be quickly located under all conditions.

Still another important object of the invention is to provide a flashlight of the character described wherein the control switch includes a multiplicity of electrical contacts for ensuring the functioning of said switch at all times.

Another object of the present invention is to provide a flashlight comprising a control switch which will automatically latch and remain in closed position until manually opened.

Other objects of the invention are to provide a flashlight control switch which is comparatively simple in construction, strong, durable, compact, of light weight and which may be manufactured at low cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in side elevation of a flashlight constructed in accordance with the present invention;

FIGURE 2 is a view in longitudinal section on an enlarged scale through the flashlight, taken substantially on the line 2—2 of FIGURE 1;

FIGURE 3 is a cross-sectional view, taken substantially on the line 3—3 of FIGURE 2;

FIGURE 4 is a fragmentary view in top plan of the rear end portion of the device with a major portion being broken away in section substantially on the line 4—4 of FIGURE 2;

FIGURE 5 is a view substantially similar to FIGURE 4 but showing the switch in open position;

FIGURE 6 is a perspective view showing the main components of the switch and the means for connecting said switch to the lamp; and

FIGURE 7 is a diagrammatic view of the electrical circuit of the flashlight.

Referring now to the drawing in detail, it will be seen that the embodiment of the present invention which has been illustrated comprises a cylindrical casing 8 of suitable insulating material. The casing 8, which may be of any desired length and diameter, is for the reception of a plurality of batteries or dry cells 9. A head assembly 10 is provided on the forward end of the casing 8. The head assembly 10 includes a suitable lens 11 in front of a reflector 12 having mounted therein a lamp 13.

Rotatably and slidably mounted on the rear end portion of the casing 8 is a removable cap 14 which is also of suitable insulating material. Mounted under compression between the cap 14 and the rear battery cell 9 is a contact spring 15 which abuts the base contact of said rear cell. The spring 15 urges the cells 9 forwardly in the usual manner for electrical connection at 16 with the base or center contact 17 of the lamp 13.

The rear end portion of the casing 8 is externally reduced and mounted thereon is a metallic ring 18. Extending through the rear end portion of the casing 8 and the ring 18 is a plurality of radial, equidistantly spaced contact pins 19 having headed inner ends 20. A longitudinal conductor strip 21 of suitable metal electrically connects the ring 18 to the lamp 13. As shown to advantage in FIGURE 2 of the drawing, the rear end portion of the conductor strip 21 is apertured and one of the pins 19 passes therethrough. The conductor strip 21 includes an angularly bent forward end portion providing a contact finger 22 which is engageable with the usual shell 23 of the lamp 13.

The skirt 24 of the cap 14 has formed therein a plurality of bayonet slots or grooves 25 for the reception of the pins 19. The circumferential inner end portions 26 of the bayonet slots or grooves 25 include inner longitudinal walls 27 which are undulated in a manner to provide pockets or recesses 28 and 29 for the reception of the pins 19.

Mounted in the cap 14 for rotation therewith is a plurality of contact fingers 30 of suitable metal, one for each of the contact pins 19. The fingers 30 include right angularly bent base portions 31 which are affixed radially to the top or end wall 32 of the cap 14 and with which the spring 15 is engaged. The fingers 30 extend into the inner ends of the bayonet slots or grooves 25 in the manner shown to advantage in FIGURE 4 of the drawing and terminate in end hooks or the like 33 in the pockets or depressions 29 and which receive the contacts 19. The bayonet slots or grooves 25 include at their inner ends outward extensions 35 which accommodate the fingers 30.

It is thought that the operation of the switch will be readily apparent from a consideration of the foregoing. Of course, the spring 15 yieldingly urges the dry cells 9 forwardly in the casing 8 and said spring yieldingly urges the cap 14 rearwardly on said casing. Thus, the contacts 19 are caused to yieldingly engage in the pockets or depressions 28 and 29 in a manner to releasably retain the cap against rotation. With the contacts 19 engaged in the pockets 28 as shown in FIGURE 5 of the drawing the circuit to the lamp 13 is open. By turning the cap 14 clockwise to the position of FIGURE 4 of the drawing the contacts 19 are caused to engage the end portions 33 of the fingers 30 in the pocket 29 thus closing the electrical circuit and energizing the lamp 13 in an obvious manner. To facilitate operation of the switch the cap 14 is provided on its periphery with suitable indicia 36. The construction and arrangement of parts is such that the cap 14 functions with a snap action as the contacts 19 engage in the pockets or recesses 28 and 29. The multiple contacts 19, fingers 30, etc., ensures functioning of the switch mechanism at substantially all times and under various conditions. Of course, to remove the cap 14 said cap is simply turned counterclockwise for aligning the longitudinal or intake end portions of the bayonet slots or grooves 25 with the contacts 19. It will be noted that the elements 19 have the dual functions of switch contacts and retaining pins for the cap 14. The ring 18 electrically connects the contact pins 19 and said contact pins also serve to positively secure said ring on the casing 8. Still further, one of the contact pins 19 electrically connects the conductor strip 21 to the ring 18.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A flashlight construction including a tubular casing for mounting an electric lamp and dry cells therein, a combination multiple contact switch and closure cap removably mounted on one end of said casing for both axial and rotational movement, a unitary electrical conductor for connecting said switch to said lamp, said conductor consisting of a metallic strip disposed within and extending longitudinally of said casing, a laterally extending arm at one end of said strip for abutting electrical engagement with said lamp, the other end of said strip comprising a ring having radially projecting pins, said pins constituting both switch contact elements and retainers for said cap, said cap having an inwardly opening chamber consisting of a flat outer bottom wall and a cylindrical side wall and receiving the open outer end of said casing therein, the cylindrical side wall having a plurality of circumferentially spaced grooves recessed therein, each groove containing circumferentially spaced axially extending outer and inner portions connected by a circumferentially extending portion, said outer portions opening to the exterior of said cap and providing an inlet for the passage of said pins into said grooves, resilient contact fingers each seated in one of said inner portions and against said bottom wall for electrically connecting said dry cells and engaged by said pins when the latter are moved in said circumferentially extending portions from said outer portions to said inner portions.

2. The combination of claim 1 wherein said groove circumferentially extending portions each have a pair of seating recesses in a wall thereof for selectively receiving a pin therein, said resilient contact fingers each having a contact terminal received in one seating recess of the associated circumferentially extending portion establishing electrical contact between the associated pin and contact terminal with the other seating recess retaining the associated pin out of electrical contact with the associated contact terminal, said circumferentially extending portions being of sufficient width for travel of said pins therealong between said outer and inner portions and selectively into and past said seating recesses.

3. The combination of claim 2 including a spring in said chamber yieldingly urging said pins against said recessed wall of said circumferentially extending grooves and simultaneously electrically connecting all of said resilient fingers to said dry cells.

4. A flashlight construction comprising an elongated casing for mounting an electric lamp assembly, and for housing dry cells and a combination closure cap and multiple contact switch removably mounted upon the

casing rear end for both axial and rotating movement thereon, multiple circumferentially spaced stationary switch contacts extending through the casing wall at its rear end and having inner and outer terminals, means electrically connecting all of the stationary contacts to each other, means extending longitudinally within said casing for electrically connecting all of said inner terminals to said lamp, said cap having a forwardly opening switch chamber including a cylindrical side wall and a bottom wall with said chamber receiving said casing rear end, a plurality of circumferentially recessed grooves in said side wall, each groove comprising axially extending and circumferentially spaced forward and rearward portions connected by circumferential portions, said forward portions opening to the front end of said chamber and constituting inlets to said grooves, multiple movable switch contacts each comprising metallic fingers seated in one of said groove rearward portions, said outer terminals being movable each in a circumferential groove between said forward and rearward grooves and into and out of electrical contact with said metallic fingers.

5. The combination of claim 4 wherein said means electrically connecting all of said stationary contacts comprises a sleeve mounted upon and embracing a diametrically reduced exterior portion of said casing at its rear end, said stationary contacts extending through both said sleeve and casing rear end.

6. The combination of claim 4 wherein said groove circumferential portions each have a pair of circumferentially spaced seating recesses in the forward wall thereof, one of said fingers having an end portion disposed in one of said seating recesses, the walls of said circumferential portions being sufficiently spaced to enable passage of an associated stationary switch contact therealong between said seating recesses and between said forward and rearward portions, spring means yieldingly urging said stationary switch contacts against said circumferential groove front walls.

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