April 2, 1935. O. RHEIN ET AL 1,996,655

FLASH LIGHT

Filed Dec. 4, 1931 2 Sheets-Sheet 1

Fig. 1

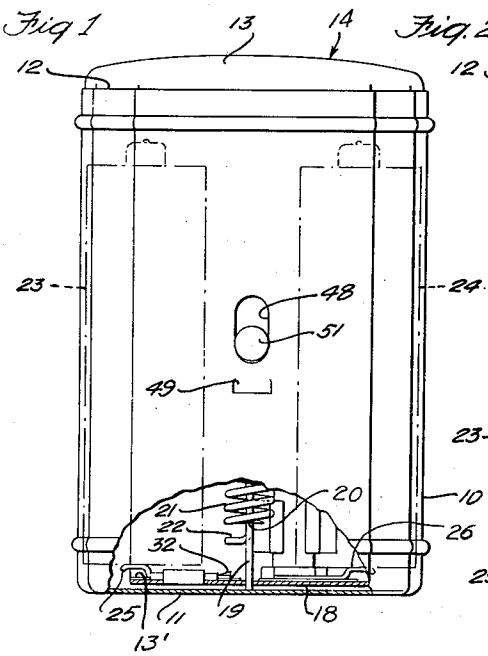


Fig. 2.

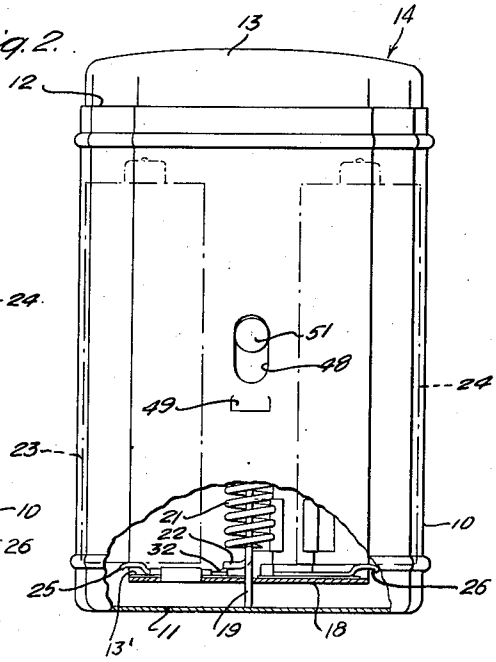


Fig. 3.

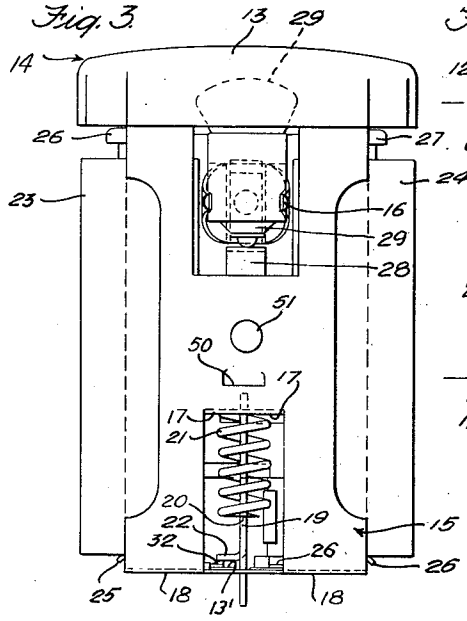
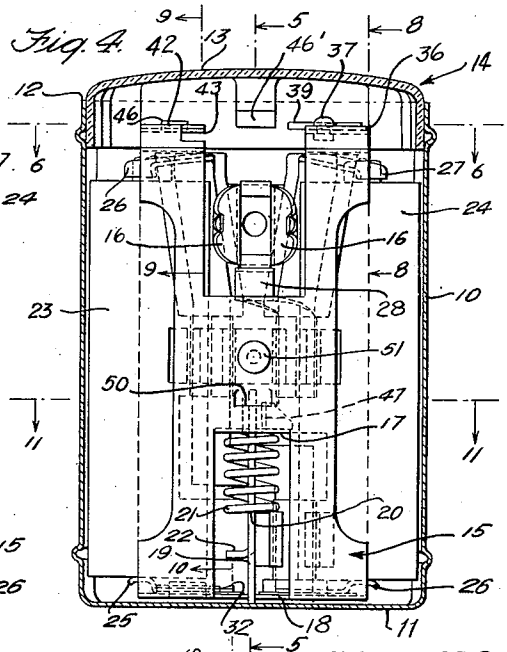


Fig. 4.



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Filed Dec. 4, 1931 2 Sheets-Sheet 2

Fig. 5.

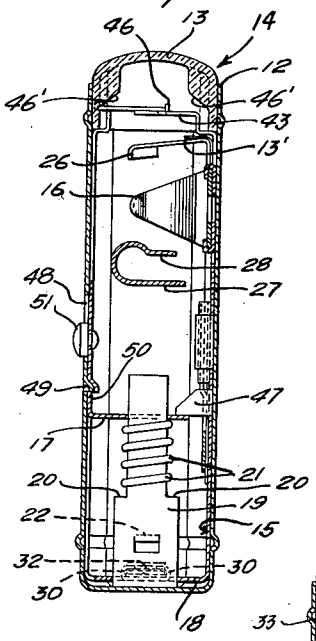


Fig. 6.

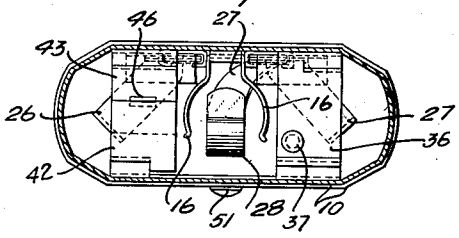


Fig. 7.

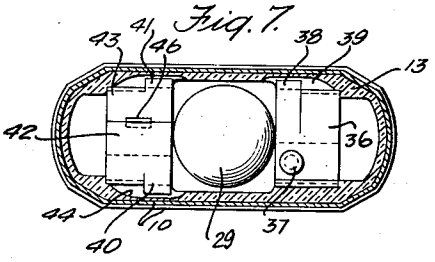


Fig. 8.

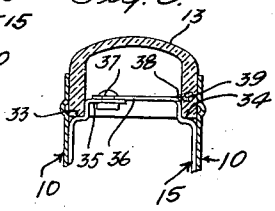


Fig. 9.

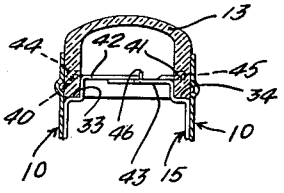


Fig. 11.

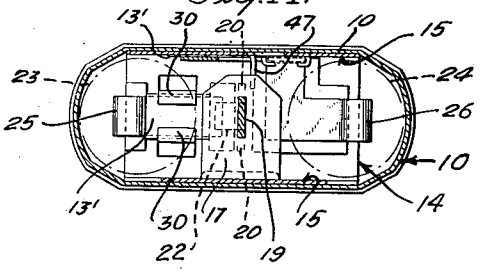
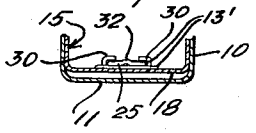


Fig. 10.



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UNITED STATES PATENT OFFICE

1,996,655

FLASH LIGHT

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Application December 4, 1931, Serial No. 579,072

16 Claims. (Cl. 240—10.65)

The invention is a flashlight especially adapted for being carried in a vest pocket, lady's handbag or purse, and the like.

One object is to provide such a flashlight with a comparatively large translucent dome over the bulb that is moved out of the casing to elevated position when the bulb is lighted and back into the casing to depressed position when the bulb is extinguished.

Another object is to provide such a flashlight with a unitary mobile body that slides in a container casing between elevated and depressed position.

Another object is to provide such a flashlight with a motive spring to move the body from depressed to elevated position.

Another object is to provide such a flashlight with a latch to hold the body in depressed position.

Another object is to provide such a flashlight with a push button that may be manually depressed from the outside of the casing to release the latch.

Another object is to provide such a flashlight with a push button that may be moved to a second position to release the body from the casing for the purpose of renewing the bulb or battery.

Another object is to provide such a flashlight with a push button that limits the movement of the body in the casing.

Another object is to provide such a flashlight with contacts adapted to hold a battery of individual or "unit" cells.

Another object is to provide such a flashlight with a bulb clip from which the bulb may be removed laterally.

Another object is to provide such a flashlight with a device for elevating the body and closing the electric circuit at the same time and, conversely, for opening the circuit when the body is depressed.

Another object is to provide such a flashlight with two component units having no loose parts that may be misplaced or lost when the light is taken apart for recharging.

Other objects are to provide such a flashlight that is ornamental in appearance, economical to manufacture, rugged in construction, easy to manipulate, convenient to recharge, effective in performance, and reliable in operation.

Other aims, objects, and novel features will be manifest by the following specification and the accompanying illustration, in which

Fig. 1 is a front elevation of the flashlight with the casing partially broken away to show the body in depressed position.

Fig. 2 is a similar view showing the body in elevated position.

Fig. 3 is a front elevation of the body with a bulb and battery therein.

Fig. 4 is an enlarged front elevation of the flashlight somewhat in detail with the front half of the casing removed.

Fig. 5 is a sectional view along the line 5—5 of Fig. 4.

Fig. 6 is a horizontal section along the line 6—6 of Fig. 4 with the dome removed.

Fig. 7 is a similar view with the dome in place.

Fig. 8 is a vertical section along the line 8—8 of Fig. 4.

Fig. 9 is a vertical section along the line 9—9 of Fig. 4.

Fig. 10 is a vertical section along the line 10—10 of Fig. 4.

Fig. 11 is a horizontal section along the line 11—11 of Fig. 4.

The flashlight is of a substantially rectangular or flattened type of a size adapted to fit in a vest pocket, handbag or purse and comprises a casing having an open end or top in which a translucent dome that covers the bulb may be moved upward some distance out of the casing to an elevated position and downward substantially flush with the casing to a depressed position.

The bulb and dome are carried by a frame that slides in the casing and is moved to elevated position by a motive spring, and is held in depressed position by a latch. The latch may be released from the outside of the casing by a button that limits the upward travel of the body, and the button may be depressed to a lower or second position to release the body so that it may be removed from the casing.

The body is provided with a bulb that is held in a bulb clip from which it may be removed laterally. A resilient conductor makes contact with the bottom of the bulb, and a bulb stop on the dome limits the upward movement of the bulb in the clip. The body is also provided with suitable resilient contacts or conductors for holding a battery of individual or "unit" cells, and for connecting the cells in series with the bulb and the switch.

The casing is provided with a keeper under which a latch carried by the body rests to hold it in depressed position, and the latch is released by a button attached to the body and extending outward through a slot in the casing that limits

the upward movement of the body. This button may be disengaged from the slot by an inward movement to release the body from the casing.

The body comprises a U-shaped metal frame having the upper ends turned inward and provided with catches for holding the dome, and a latch for holding the catches in place. The movable contact of the switch is carried by the body which is moved upward with respect to a stationary contact on a slide. When in its lower or depressed position the electric circuit is open and the slide is mostly within the body, from which it projects when the body is in elevated position.

One example of our invention is embodied in the flashlight shown in the accompanying drawings. This flashlight comprises a flat rectangular casing 10 having a closed bottom 11 and an open top 12 in which a loosely fitting dome 13 is adapted to move up and down.

The dome 13 is part of a body 14 comprising a U-shaped frame 15 provided with a bulb clip 16 and a spring abutment 17.

The spring abutment 17 and the bottom 18 of the frame 15 are provided with rectangular openings in which an elevating slide 19 is loosely held. The slide 19 is provided with spring shoulders 20, and a motive spring 21 is carried in partially compressed condition around the slide 19 between the spring shoulders 20 and spring abutment 17. The slide 19 is also provided with a switch contact 22 that closes the electric circuit and also limits the upward movement of the body with respect to the slide.

The body 14 is provided with two battery cells 23 and 24. Cell 23 is supported at the lower end by a cell-to-switch conductor 25, and at the top by an intercell conductor 26 that also supports the lower end of cell 24. The upper end of cell 24 is supported by a cell-to-bulb conductor 27 that has a resilient bulb contact 28 that makes electrical connection with the center terminal of a bulb 29 in clip 16. The conductor 25 is carried under overturned ears 30 that are sheared from the bottom 18 of the frame 15 and suitable insulation, such as paper or fiber 13', is interposed between conductor 25 and the ears 30 and frame 15 to electrically isolate the conductor. Conductors 26 and 27 are attached to frame 15 in a similar manner. The portions of conductors 25 and 26 supporting the lower ends of cells 23 and 24 are comparatively rigid but the portions of conductors 26 and 27 supporting the upper ends of cells 23 and 24 are sufficiently resilient to permit the cells to be inserted and withdrawn and to compensate for variations in length. Conductor 25 is provided with a movable switch contact 32 in the path of stationary switch contact 22.

The upper end of frame 15 is bifurcated and the forked ends are offset inward to provide shoulders 33 and 34 upon which dome 13 is supported. Ends 35 and 36 are also turned inward, overlapped, and secured together by rivet 37, and a dome catch 38 is sheared from end 36 above shoulder 34 and turned outward so that it extends into a recess 39 in dome 13 to hold it on shoulders 34. Similar dome catches 40 and 41 are sheared from the inturned ends 42 and 43 respectively and extend likewise into recesses 44 and 45 in dome 13. A dome latch keeper 46 is sheared from end 43 and turned upward and end 42 latches behind this keeper to hold dome catches 40 and 41 in dome recesses 44 and 45.

The translucent dome 13 is provided with a bulb stop 46' at each side thereof to hold bulb 29 in good electrical contact with bulb contact 28, and a spring abutment support 47 is sheared from frame 15 and turned inward above spring abutment 17 to prevent it from being bent upward by spring 21.

The front of casing 10 is provided with a slot 48 and a keeper 49 sheared therefrom and bent or pressed inward. The front of frame 15 also has a sheared portion pressed inward to provide a recess for keeper 49 and a latch 50 that cooperates therewith. The front of frame 15 is also provided with an opening in alinement with slot 48 in which a push button 51 is rigidly secured. When body 14 is in depressed position button 51 is in the lower end of slot 48. When body 14 is in elevated position button 51 is resting against or near the upper end of slot 48 and limits the upward movement of the body with respect to the casing.

When body 14 of the flashlight is in depressed position the electrical circuit is broken between switch contacts 22 and the end 32 of conductor 25. When body 14 is in elevated position the electrical circuit is complete and the path is from the upper end of cell 23 to conductor 26 which connects the upper end of this cell with the lower end of cell 24. From the upper end of this cell the path is to conductor 27 which connects this cell with the lower end of bulb 29. The path then leads through the filament of the bulb to bulb clip 16 which is electrically connected to frame 15 through which the path extends to slide 19, switch contact 22, and the end 32 of conductor 25 which is connected to the bottom of cell 23.

When the flashlight is in normal condition body 14 is held in depressed position by latch 50 which is under keeper 49, and stationary contact 22 is separated from movable contact 32. In order to operate the light button 51 is depressed. This presses the resilient front wall of frame 15 inward and releases latch 50 from keeper 49, thereby allowing spring 21 to force body 14 upward by the pressure of slide 19 against the bottom 11 of casing 10. When body 14 has reached substantially the upper limit of its range of movement, movable contact 32 engages stationary contact 22 and completes the electric circuit through the flashlight, and button 51 is substantially at the upper end of slot 48 and prevents a further upward movement of the body. In this position dome 13 projects some distance above the upper edge 12 of body 10 and the light from bulb 29 is thrown both upward and to the side. Due to the fact that the dome is translucent, the character of the light will be soft and mellow without objectionable shadows, streaks, or glare. To extinguish the light the body is moved downward by pressure on dome 13 until latch 50 snaps under keeper 49. This downward movement opens the electrical circuit by separating contacts 22 and 32.

The dome 13 is preferably formed of a material that is highly translucent but not entirely transparent, and it may be tinted with white or other suitable colors. Examples of such materials are thermoplastic resins, such as vinyl resins; thermoreactive resins, such as ureaformaldehyde plastics; and pyroxylin plastics, although other materials giving the desired effect may be used. Casing 10 may be formed of any suitable metal, embossed or engraved with any suitable design, and decorated with an electroplate of rare or lustrous metal, such as gold, silver or chromium, or a coating of enamel, lacquer, or other artistic finish. Frame 15, slide 19, spring 21, and conductors 25, 26, and 27 may be made of conven-

tional materials, such as brass, bronze, or iron, which are adapted for the purpose, and suitable insulation may be employed where it is required.

While the operating button of this flashlight is shown rigidly attached to the body and sliding in a slot in the upper casing, this particular structure is not imperative and the invention includes operating buttons of a different type, such as one carried in a closely fitting round opening in the body casing and sliding in a slot in the body or frame. Such a button would be desirable from the standpoint of appearance.

Although the flashlight as shown is provided with a bulb clip from which the lamp bulb may be removed laterally, it is understood that other types of bulb clips or sockets may be employed and that the bulb may be inserted longitudinally and be either of a sliding or threaded fit in a socket.

Although the novel features of this invention are shown applied to a flashlight of the vest pocket type it is understood that they may be applied to flashlights having different size, shape, appearance, and use. Where no material has been specified it is understood that a conventional material has been employed. While only one particular arrangement of the parts has been shown it is understood that they may have a different form and be assembled in a different manner without departing from the spirit of the invention or the scope of the claims.

We claim:—

1. A flashlight comprising a casing having an open end, an elongated slot in the side thereof, and a keeper on the inner surface thereof adjacent said slot; and a mobile body in said casing having a depressed position and an elevated position and comprising a frame; a translucent dome carried by said frame and substantially filling the open end of said casing; a bulb clip carried by said frame; a bulb in said clip under said dome; a spring abutment carried by said frame; an elevating slide carried by said frame and provided with a spring shoulder; a motive spring carried in partially compressed condition around said slide between said shoulder and said abutment, and adapted to move said body to elevated position; a switch contact carried by said slide; two battery cells carried by said body; a cell-to-switch conductor carried by said frame; an intercell conductor carried by said frame; a cell-to-bulb conductor carried by said frame; a latch carried by said frame and adapted to cooperate with said keeper to retain said body in depressed position; and a push button carried by said frame in said slot and adapted to disengage said latch thereby allowing said spring to move said cell-to-switch conductor into contact with said switch contact and said body to elevated position.

2. A flashlight comprising a casing; a mobile body in said casing; a bulb clip carried by said body; a bulb in said bulb clip; a dome carried by said body over said bulb; a resilient bulb contact below said bulb; a plurality of bulb stops on said dome for holding said bulb in engagement with said bulb contact; a battery carried by said frame; and means for completing the electrical circuit through said battery and bulb.

3. A flashlight comprising a casing; a mobile body within said casing; a slide carried by said body; a spring adapted to move said body upward with respect to said slide; a switch contact carried by said slide; a conductor carried by said body; means for latching said body in depressed position; and means for manually releasing said latch to allow said spring to move said body upward to elevated position and said conductor into contact with said contact to close the electric circuit.

4. In a flashlight; a casing having a slot therein; a mobile body carrying a bulb and a battery in said casing; a spring for moving said body upward with respect to said casing; means for latching said body in depressed position; and a button carried by said body in said slot for releasing said latch and limiting the upward movement of said body.

5. In a flashlight; a casing; a body in said casing having a shoulder thereon; a dome resting upon said shoulder and having a plurality of recesses therein; a plurality of dome catches carried by said body and extending into said recesses respectively; and a releasable latch for holding said catches in said recesses.

6. In a flashlight; a casing having a portion of the wall pressed inward to provide a keeper; a mobile body within said casing having a portion thereof pressed inward to provide a recess for said keeper and a latch; means for releasing said latch from said keeper; and means for moving said body upward with respect to said casing.

7. In a flashlight; a casing having a slot and a keeper; a mobile body carrying a bulb and a battery within said casing and having a resilient wall carrying a latch cooperating with said keeper; means for moving said body upward with respect to said casing; and a button carried by said wall in said slot and adapted for being depressed to one position to release said latch from said keeper to allow said means to move said body upward to operating position wherein said bulb is lighted, and to a second position to release said body from said casing for the renewal of said battery or bulb.

8. In a flashlight; a casing; a mobile body in said casing having a depressed position and an elevated position; a bulb carried by said body; a plurality of conductors carried by said body for holding unit cells; a plurality of unit cells in said conductors; resilient means for moving said body from depressed to elevated position; and means for closing the electric circuit through said battery and bulb when said body is in elevated position.

9. A flashlight comprising the combination of a casing; a mobile body in said casing having a depressed position and an elevated position; a bulb and a battery carried by said body; resilient means for moving said body to elevated position; and means for latching said body in depressed position against movement by said resilient means.

10. In a flashlight the combination of a casing having an open top; a mobile body in said casing having an elevated position and a depressed position; a lamp bulb carried by said body; a translucent dome carried by said body over said lamp bulb and projecting from said casing when said body is in elevated position; a spring for moving said body to elevated position and for lighting said bulb; and means for latching said body in depressed position.

11. A flashlight comprising a casing; a body movable in said casing between depressed position and elevated position; a bulb and a battery within said body; a spring for moving said body from depressed to elevated position; means for latching said body in depressed position; and means for completing the electrical circuit

through said battery and bulb when said body is in elevated position.

12. A flashlight comprising an outer casing; a body movable in said casing between depressed position and elevated position; two battery cells carried by said body in spaced relation; a lamp bulb carried by said body between said cells; and a switch carried by said body between said cells for closing the electric circuit through said cells and said bulb.

13. A flashlight comprising an outer casing; a body movable in said casing between depressed position and elevated position; two battery cells carried by said body in spaced relation; a lamp bulb carried by said body between said cells; and a switch carried by said body between said cells for closing the electric circuit through said lamp bulb when said body is in elevated position.

14. A flashlight comprising an outer casing; a body movable in said casing between depressed position and elevated position; two battery cells carried by said body in spaced relation; a lamp bulb carried by said body; and means carried by said body between said cells for moving said body to elevated position wherein said lamp bulb is lighted.

15. A flashlight comprising an outer casing; a body movable in said casing between depressed position and elevated position; a plurality of battery cells carried by said body in parallel spaced relation; a lamp bulb carried by said body between said cells; and means carried by said body between said cells for moving said body to elevated position and for closing the electric circuit through said bulb and cells when said body is in elevated position.

16. In a flashlight; a rectangular flat type casing having a closed bottom and an open top; a movable body within said casing; a bulb carried by said body; a rectangular translucent dome carried by said body and substantially filling the top of said casing; and means for automatically elevating said body with respect to said casing.

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