Dec. 10, 1946. R. B. BATTERSBY ET AL 2,412,313

POCKET FLASHLIGHT

Filed May 7, 1945

Fig. 1.

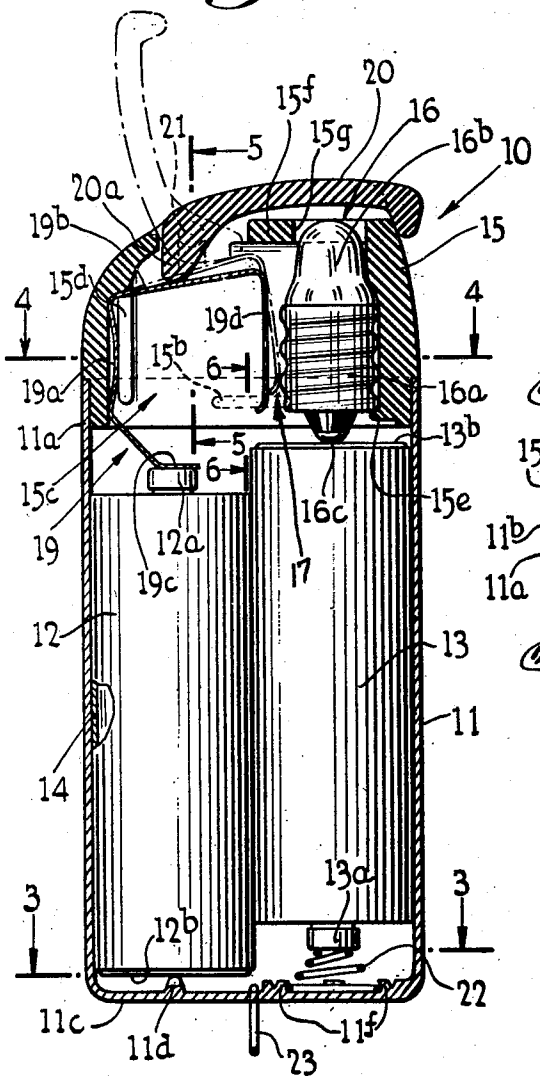


Fig. 2.

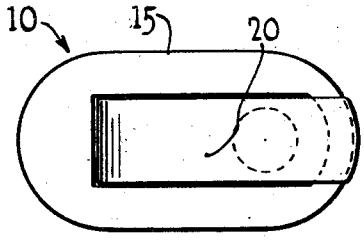


Fig. 5.

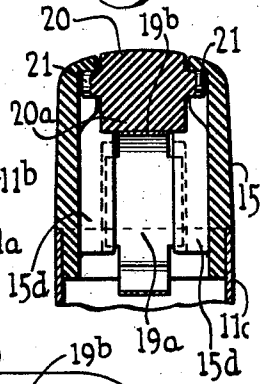


Fig. 6.

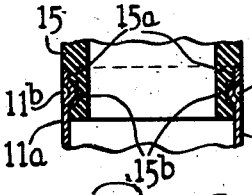


Fig. 2a.

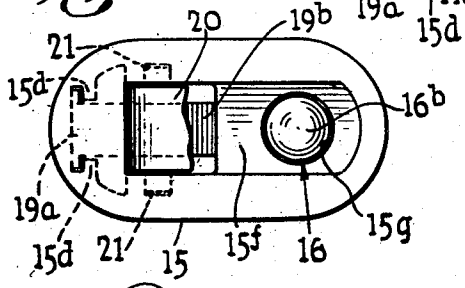


Fig. 4.

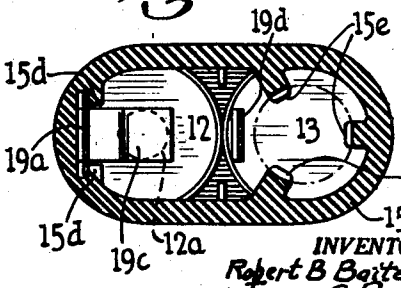
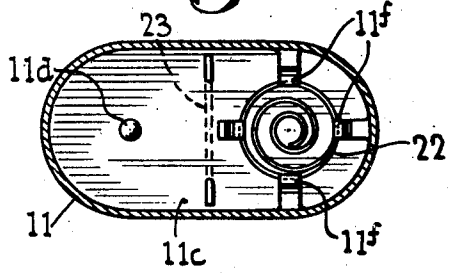


Fig. 3.



INVENTOR.
Robert B Battersby
BY and James C. Prior

Louis Barnett
ATTORNEY

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POCKET FLASHLIGHT

Robert B. Battersby, Noroton Heights, and James C. Prior, Stamford, Conn., assignors to Sidney Schwartz, New York, N. Y.

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5 Claims. (Cl. 240—10.65)

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This invention relates to portable lighting devices and more particularly is directed to pocket battery flashlights.

Among the objects of the invention is the provision of an improved device of the character described comprising few and simple parts which shall be easily assembled to form a reliable and dependable lighting means capable of withstanding rough and hard usage yet which shall be small and compact so that it can be readily carried in the pocket or in handbags, which shall be neat in appearance, convenient to handle and operate, cheap to manufacture, and practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter described and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention:

Fig. 1 is a cross-sectional view taken through a pocket flashlight constructed to embody the invention showing the cover in closed position with the switch portions in open circuit and in the dotted line the cover is shown in retained open position with the switch portions in closed circuit for lighting the incandescent lamp.

Fig. 2 is a top plan view of the improved flashlight shown in Fig. 1.

Fig. 2*a* is a top plan view like Fig. 2 with the cover partly broken away to expose the under structure.

Figs. 3 and 4 are cross-sectional views as seen along lines 3—3 and 4—4, respectively, in Fig. 1, and

Figs. 5 and 6 are fragmentary cross-sectional views showing detailed constructions taken on lines 5—5 and 6—6, respectively, on Fig. 1.

Referring to the drawing, 10 denotes a pocket flashlight of a type that can conveniently be carried in a vest pocket or in a woman's handbag, constructed to embody the invention. Said flashlight 10 may comprise a suitable outer body casing 11, as here shown, being formed of a one-piece sheet metal, enclosing a standard electric battery of reversed polarity positioned dry cells 12 and 13, that is being arranged for series connection, each cell preferably insulated by a wrapper 14 of paper or fiber material. Upper end 11*a* of said casing 11 extends beyond the

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carbon and zinc terminals 12*a* and 13*b* of cells 12 and 13, respectively, to provide a removable seated anchorage for head portion 15. The latter carries a standard miniature incandescent lamp 16 and a switch 17 for making and breaking the circuit from said battery cells 12, 13 to the lamp 16 on opening and closing respectively, of a pivoted cover 20 in the manner hereinafter described.

Said flashlight head portion 15 is preferably made of a suitable plastic molded material formed with an integral cut-back edge or rabbeted rim flange 15*a* extended around the exterior of an open side thereof and neatly fitted to extend into the upper casing end 11*a* to firmly seat the head portion 15 in position on the casing 11. Said flange 15*a* and upper casing end 11*a* may be provided with a readily detachable connection means, as for example, recessed blind slots or grooves 15*b* molded in exterior surfaces of rim flange 15*a* forming a coupling engaging with inwardly projecting bosses 11*b* provided on interior side walls of upper casing end 11*a* for removably retaining the head portion 15 in said seated position as shown in Figs. 1 and 6. The material and construction of the upper casing end 11*a* and said slotted flanges 15*a* is such that the head portion 15 can be readily snapped in and out of cooperating assembly for replacing the battery cells 12, 13 or the lamp 16.

As shown in Figs. 1, 2 and 2*a*, said flashlight head portion 15 is structurally formed to have a cavity 15*c* extending in from the open side thereof and is elongated to conform to the oval-like shape of a cross section of the casing 11. One end of said cavity 15*c* may have integral molded on the interior wall therein spaced ledges 15*d*, projecting toward one another into the depth of the cavity 15*c* to form a slideway and being of a sufficient length to provide a rigid anchorage for a vertically extending mid-portion 19*a* of a suitable spring conductor switch member 19. The other end of said cavity 15*c* is provided on the interior wall opposite said ledges 15*d*, with a suitable lamp holder means, as for example, a plurality of spaced lugs 15*e* adapted to form a seat for the screw base end 16*a* of lamp 16 when the latter is in assembled position with the bulb 16*b* thereof projecting through opening 15*g* in partition wall portion 15*f* of head portion 15 overlying the lamp bulb 16*b* as shown in Fig. 1. The lugs 15*e* and partition wall portion 15*f* are integrally molded with the interior walls of said last mentioned cavity end as seen from Figs. 2, 2*a*, and 4.

The flashlight head portion 15 is also provided with the elongated snap closure cover 20 which extends over partition wall opening 15g. Said cover 20 is pivotally mounted as by means of trunnion bearing 21 so that an end 20a terminating the cover 20 beyond said bearing 21 projects freely into the cavity 15c for contacting with and flexing a horizontally extending intermediate portion 19b of spring member 19. The other or free cover end may be provided with finger grip or lip which facilitates opening the cover 20 for swinging the latter from close to open position, as shown in full and dotted lines, respectively, in Fig. 1.

The spring conductor switch member 19 is preferably formed from a beryllium copper strip or the equivalent and besides having the vertically mid-portion and horizontally extending intermediate portion 19a and 19b, respectively, is also formed with a lower free contact end 19c which is positioned when the member 19 is firmly anchored in assembled position to be spring pressed against the center or carbon contact 12a of battery cell 12 as shown in Figs. 1 and 4. The other free end of member 19 forms a blade 19d which may be bent to extend downwardly alongside the ferrule contact of lamp base 16a. Thus as seen from Figs. 1, 2a, 4 and 5 spring switch member 19 is constructed with double contacts, one at each end, the anchored mid-portion 19a being formed with edge extensions securely retained in slideway 15d provided in the walls of the cavity 15c for allowing the lower contact end 19c to positively connect the member 19 in the battery circuit and for allowing spring contacting blade 19d to have a rubbing circuit making connection with the ferrule lamp base 16a when the cover 20 is manually swung open while permitting a positive circuit breaking connection thereat when the cover 20 is snapped shut after the cover end 20a passed beyond the dead point on its swinging closure movement, as is clear from Fig. 1.

The casing 11 may be made of aluminum or other suitable metal and besides being formed with bosses 11d on the upper end 11a thereof has an integrally formed closure bottom 11c provided with a battery contact boss 11d projecting upwardly therewithin which is positioned to align centrally with zinc terminal 12b of battery cell 12. Spaced anchorages 11f also project upwardly within said bottom 11c under the center or carbon terminal 13a of cell 13 for permanently anchoring a helical spring 22, the latter making contact with said terminal 13a, as shown in Figs. 1 and 3. The casing 11 and head portion 15 are so proportioned that the battery cells 12 and 13 are under sufficient compression between the spring end 19c and boss 11d, and between said helical spring 22 and the lamp center contact, 16c respectively, the latter bearing on the zinc terminal 13b of dry cell 13 so as to positively assure a continuous series circuit from the switch member 19 through the battery cell 12 casing bottom 11, battery cell 13 and hence to the lamp 16, as is clear from Fig. 1.

The practical operation of the invention will now be apparent. With the head portion 15 removed from the casing 11, the battery cells 12 and 13 are inserted in the latter in relatively reversed polar positions for series connection through casing bottom 11. A lamp 16 is inserted under the partition wall 15f of the head portion 15 with the lamp bulb 16b extending into the opening 15g and the lamp base 16a retained by

the lugs 15e, while spring member 19, which has its anchoring mid-portion 19 made slightly wider than intermediate portion 19b or lower end portion 19c can be firmly mounted in place by sliding and wedging said mid-portion 19a in the slideway between ledges 15d. The rim flange 15a of head portion 15 can then be seated on the casing upper end 11a and snap locked by the detachable coupling connection of bosses 11b in grooves 15b. The lower end 19c of spring number 19 will then be in tight contact with the carbon cell terminal 12a and zinc cell terminal 13b tightly pressed against the lamp center contact 16c, forming a continuous series circuit as described above. When the cover 20 is in closed position, the switch 17 is in open circuit at the ferrule of the lamp base 16a as shown in full lines in Fig. 1.

To operate the flashlight 10 for lighting the bulb, the cover 20 is manually swung open on the trunnion bearing 21. As the cover 20 swings to its open position, shown in dotted lines Fig. 1, cover end 20a flexes the spring member intermediate portion 19b downwardly and the end blade 19d is brought into rubbing contact with the ferrule contact of lamp base 16a completing the electric power circuit and lighting the lamp 16 for giving illumination through the uncovered opening 15g. The spring member 19 is so arranged and constructed so as to permit a minimum flexing leverage movement by the projecting cover end 20a for greatest or maximum movement at the end blade 19d to increase the sweep thereof in making and breaking the circuit connections. The cover 20 is automatically swung to either full open or full closed positions when the end 20a is moved off the dead center line with respect to the axis of the trunnion bearing 21 as seen from Fig. 1.

If desired a suitable ring or bail 23, may be pivotally mounted to extend from the casing bottom 11c for suspending the flashlight 20 from a chain or the like.

It should be noted that the flashlight construction 10 is not only of improved simple construction but also lends itself to form a neat and attractive designed article for the purposes described.

It will thus be seen that there is provided a flashlight construction in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In a portable flashlight construction of the character described, a head portion comprising a one-piece molded insulating structure having an elongated cavity extending in from an open side thereof, an interior wall at one end of said cavity having spaced ledges extending therefrom to provide a slideway, a metallic conductor strip having a mid-portion firmly secured in said slideway and a flexibly movable end contact blade, the interior wall at the other end of said cavity having integrally formed spaced lugs and a partition with an opening, an incandescent lamp having a base formed with a ferrule and center

contacts and bulb mounted with the bulb extending into said partition opening and said base retained by said lugs with the ferrule positioned in the path of movement of said blade, and pivoted means on said structure for flexing the blade to make a scraping contact with said lamp base ferrule.

2. The portable flashlight construction as defined in claim 1 including a casing having coupling means for detachably securing said head portion thereon, said casing comprising a one-piece metallic battery housing having an integral closed bottom and open top on which said head portion is seated, dry cells fitted into said housing in relatively reversed polar relation, a boss integrally formed to upstand from the interior side of the housing bottom aligning to connect with a terminal of one of said cells, integrally formed anchorage means to upstand from the interior of the housing bottom spaced from said boss, and a spring secured by said anchorage means aligning to connect with a terminal of another of said cells, the other terminal of last mentioned cell connecting with the lamp base center contact, said conductor strip having a spring contact on the end thereof opposite said blade contacting with the other terminal of the first mentioned cell.

3. In a portable flashlight of the character described, a head portion adapted to be detachably mounted on a casing housing electric battery cells comprising a molded insulating structure having an elongated cavity extending in from an open side thereof, a one-piece metallic switch blade, mounted in said cavity, an interior wall at one end of said cavity having integrally formed spaced ledges to provide a slideway constructed and arranged to anchor said metallic switch blade therein, an incandescent lamp having a bulb and base ferrule, mounted in said cavity and spaced from said slideway, the interior wall at the other end of said cavity having integrally formed spaced lugs and a partition with an opening of less diameter than said lamp base constructed and arranged to mount said incandescent lamp with the bulb thereof extending into said opening and with said lamp base and ferrule retained by said lugs whereby the lamp base is positioned for being contacted on flexing said blade.

4. In a portable flashlight construction, a molded insulated head portion, a metallic battery casing on which said head portion is detachably seated, battery cells fitted into said casing connected in series circuits through said metallic casing, a circuit closing mechanism carried by said head portion including a conductor strip having a mid-portion thereof anchored to the head portion, a lower end extending from said mid-portion contacting with one terminal of said battery cells, an incandescent lamp having base ferrule and center contacts carried by said head portion spaced from said anchored mid-portion with said lamp center contact connecting with the other terminal of said battery cells, said mid-portion also having an intermediate spring portion extended in a direction toward but normally short of said lamp base ferrule contact, said intermediate portion having a spring end blade for making and breaking the circuit at said lamp ferrule contact, a cover pivoted on said head portion to provide a removable closure over said lamp and having a projecting end, said cover in closed position having said projecting end thereof engaging the strip intermediate-portion for flexing same to actuate said blade to circuit open position, said cover on movement to expose the lamp actuating said blade to closed circuit position.

5. In a portable flashlight construction an insulating head portion having a pivoted cover adapted to be removably mounted on a battery casing, said head portion having integrally formed ledges arranged and constructed to serve as a slideway, a spring conductor strip having a mid-portion formed with edge extensions serving as a wedging means for anchoring said mid-portion in said slideway, a lower spring end extending from said mid-portion adapted to contact a battery cell terminal in said casing, an intermediate portion extending from said mid-portion opposite said lower spring and adapted to be flexed with said mid-portion as a fulcrum, and an end blade terminating said intermediate portion adapted to serve as a switch part for said flashlight, said mid-portion forming resilient means positioned in the path of movement of an end of said cover to bear thereagainst for releasably retaining said cover in an open and closed position while being flexed to operate as said switch part.

ROBERT B. BATTERSBY.
JAMES C. PRIOR.