March 14, 1939. H. W. BATCHELLER 2,150,644

POCKET FLASHLIGHT

Filed Dec. 26, 1934

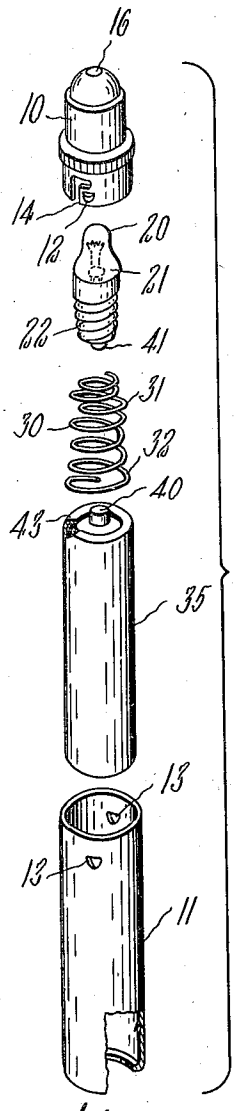


Fig. 1.

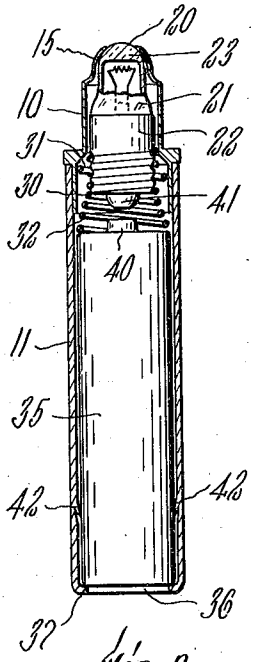


Fig. 2.

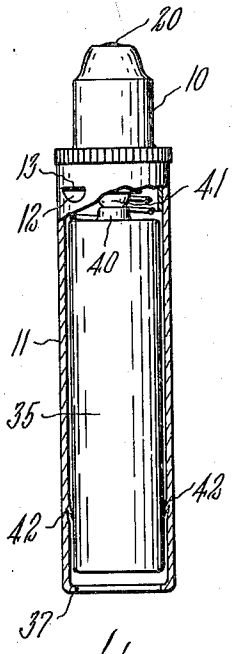


Fig. 3.

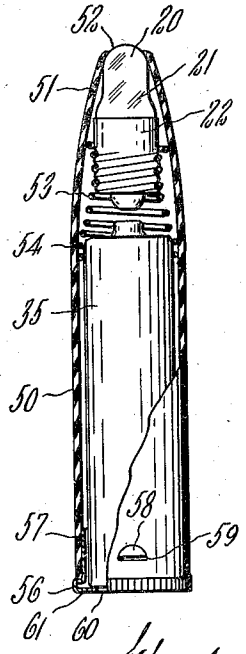


Fig. 4.

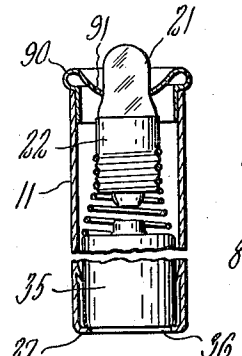


Fig. 7.

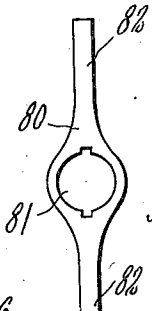


Fig. 6.

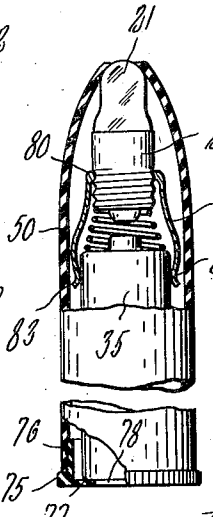


Fig. 5.

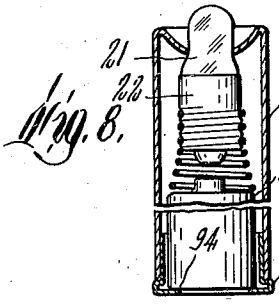


Fig. 8.

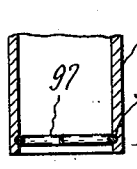


Fig. 9.

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POCKET FLASHLIGHT

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Application December 26, 1934, Serial No. 759,154

4 Claims. (Cl. 240—10.68)

This invention relates to an improved pocket flash light characterized by simplicity of structure, small size, and convenience of operation.

For a more complete understanding of the invention, reference may be had to the disclosure thereof in the following description, and to the drawing of which

Figure 1 is a perspective view of the parts of a flash light embodying the invention.

Figure 2 is a section on a vertical plane of the assembled flash light of which the parts are shown in Figure 1.

Figure 3 is an elevation of the flash light shown in Figure 2, a portion of the casing being broken away to show the position of the parts when the light is in use.

Figure 4 is an elevation, partly in section, of a modified embodiment of the invention.

Figure 5 is an elevation, partly in section, of another modified form of the invention.

Figure 6 is a plan view of a blank for a connecting member.

Figures 7 and 8 are sectional views of further modified forms of the invention.

Figure 9 is a fragmentary sectional view of a casing member of modified form.

In the form of the invention illustrated in Figures 1, 2 and 3, a metal casing is employed consisting of an upper member 10 and a lower member 11. These two members are detachably secured together by any suitable means such as a pair of outwardly projecting lugs 12 on the lower portion of the member 10 which engage in suitable lateral apertures 13 in the upper portion of the member 11. The lugs 12 may be formed on flaps 14 which are adapted to yield inwardly so as to facilitate the assembling of the two parts 10 and 11 of the casing. The upper part of the casing member 10 is reduced in diameter toward its upper extremity as at 15, there being a central aperture 16 at the upper extremity of the member 10. Seated in the aperture 16 is the upper extremity 20 of an electric light bulb which consists of a vitreous globe 21 mounted on a conventional base 22, this base preferably having the usual screw thread formed in the lateral shell thereof. Preferably I employ in my improved flash light a light bulb, the globe 21 of which is approximately bell-shaped and is thickened at the extremity 20 to form a magnifying lens 23 as indicated in Figure 2. This acts as a condensing lens to concentrate a considerable portion of the light emanating from the lamp filament so that a concentrated beam of light is projected from the extremity 20 of the bulb. The light bulb is loosely disposed within the casing member 10, the upper portion of the vitreous globe 21 being pressed against the interior surface of the casing wall surrounding the aperture 16. In order to hold the upper end of the light bulb seated in the aperture 16, I may employ resilient means such as a coiled spring 30, this spring preferably having two or three upper coils adapted to engage in the thread groove of the lamp base 22. One of the coils 31 of the spring may be made larger than those engaging the lamp base so as to engage the inner surface of the casing wall and thus to center the lower portion of the lamp bulb, and to connect the lamp base electrically with the casing member 10. The coiled spring 30 is also provided with additional turns 32 which extend downward below the base 22 of the light bulb. The lower end of the coil 30 engages the upper end of a battery cell 35 which fits loosely in the casing member 11. The lower end of the casing member 11 is open as at 36, there being provided at this point suitable supporting means to retain the battery cell 35 therein. This supporting means may comprise one or more inwardly projecting elements on which the rim of the bottom of the battery cell 35 rests. As shown in Figure 2, the supporting means comprises an annular flange 37 projecting in from the lower end of the side wall of the casing member 11. The width of this flange is comparatively small so as not to obstruct the opening 36, the purpose of the latter being to provide for direct access to the bottom of the battery cell 35, whereby the cell may be pushed upwardly by the operator's finger against the pressure of the spring 30 until the central contact point 40 of the battery makes electrical contact with the central contact element 41 of the lamp base 22, as shown in Figure 3. The spring 30, which has a portion enwrapped about the base 22, provides an electrical connection between the lateral shell of the base 22 and the metal casing 10 and 11. In order to provide a good electrical connection between the casing member 11 and the shell of the battery cell 35, I may provide contact elements 42 on the inner surface of the casing member 11 against which the side of the battery cell will scrape when the cell is pushed upwardly into contact with the light bulb. These contact elements 42 are preferably sharp so as to scrape through any film of oil, dirt, etc. which may be on the surface of the battery cell. The contact points 42 may be struck up from the inner surface of the wall of the casing member 11, or formed by indenting the wall from the outside or otherwise.

Instead of relying on the casing as a conducting member to form part of the lighting circuit through the lamp, I may curl the upper rim of the battery shell inward as at 43, so that it will be engaged directly by the lower end of the spring 30 and will thus be electrically connected directly to the lamp base through the spring. The flash light thus constructed is exceedingly simple in structure and has few parts. No separate lens is employed, the lens being an integral portion of the globe of the electric light bulb. The lamp bulb and the battery are both loosely disposed in the casing and are pressed apart against the opposite extremities of the casing by the spring 30. In order to light the light, the bottom of the battery is pressed, as by a finger of the operator or otherwise, so as to move the contact elements 40 and 41 into contact with each other. This completes an electric circuit through the filament of the lamp, a substantial portion of the light from the filament being collected by the lens element 23 and projected in a concentrated beam through the aperture 16. Since the bottom of the battery cell, which must be pressed to light the lamp, is within the casing, the chances of accidental lighting with the resultant waste of current are slight.

If desired, the casing may be differently formed as indicated in Figure 4. The casing illustrated in this figure may be made of insulating material, preferably a moldable plastic such as Bakelite. As shown, the casing comprises an elongated member 50 made of insulating material, the upper portion of this member being reduced in diameter as at 51 and having a terminal aperture 52 to receive and support the end portion 20 of an electric light bulb by annular contact therewith when the bulb is seated in the aperture, the bulb having a diameter greater than that of the aperture. As shown, the casing member 50 is of sufficient length to receive an electric light bulb 21, a battery cell 35 and a spring 53 which may be somewhat similar to the spring 30. The lower end of the spring may engage the curled-in rim 43 of the battery 35 to connect the lamp base to the shell of the battery cell. If desired, however, the spring 53 may be provided with coils 54 at its lower extremity adapted to surround and resiliently grip the upper portion of the battery cell 35 so as to ensure a good electric connection between the shell of the lamp base 22 and the shell 35. In order to support the battery within the casing against the pressure of the spring 53, a support member 56 may be provided. As shown in Figure 4, this support member may be stamped from sheet metal. It is provided with a skirt 57 which fits snugly within the lower end of the casing member 50 and is attached thereto as by lugs 58 which spring into suitable apertures 59 in the side wall of the casing member 50. The support member 56 is provided with a large aperture 60 in the bottom thereof, surrounded by an inwardly projecting flange 61 against which the rim of the bottom of the battery 35 bears, the aperture 60 being of sufficient size to admit the end of a finger of the operator by which the battery can be pushed into operative contact with the light bulb.

Instead of the support member 56 illustrated in Figure 4, a support member 75 may be provided as illustrated in Figure 5, this member having a threaded portion 76 in threaded engagement with the lower end portion of the casing member 50. The member 75 is also provided with an inwardly extending flange 77 surrounding a substantial opening 78 for operating access to the bottom of the battery 35.

Figures 5 and 6 also illustrate a modified form of electric connection between the lamp base 22 and the shell of the battery 35. This consists of a stamping 80 of sheet metal having a central portion with an aperture 81 through which the lamp base 22 may be screwed, and one or two resilient arms 82 the lower end portions of which are adapted to press resiliently against the shell of the battery 35 as at 83.

Figure 7 shows another form in which the invention may be embodied. As shown, this consists of a substantially cylindrical casing member 11 in which the battery 35 is loosely disposed. The casing member 11 may be provided with an opening 36 at its lower end surrounded by a supporting element 37 as hereinbefore described. Detachably secured to the upper end of the casing member 11 is a cap 90. The upper end of this cap is dished or concave as 91 and is provided with a central aperture large enough to permit a portion of the bell-shaped globe 21 of the electric bulb to project through so that the edge of the aperture seats on the shoulder of the bulb. As the portion of the bulb projecting through the aperture contains a filament of the lamp, the lamp rays emanating laterally from the bulb will be reflected outward by the concave surface 91 which is preferably polished for this purpose. The cap 90 may be screw-threaded into the upper end of the casing member 11 or may be attached thereto by means similar to that illustrated in Figure 1.

Figure 8 shows a further modified form somewhat similar to that shown in Figure 7 except that the joint between the two casing members comes near the bottom of the casing rather than near the top. Thus the principal casing member is a hollow cylinder 92, the upper end of which is concaved and centrally apertured to permit a considerable portion of the bell-shaped globe 21 to project through. Attached to the lower end of the casing member 92 is a closure member 93 which may be identical with or similar to the member 56 illustrated in Figure 4. As shown, the closure member 93 is provided with an inwardly projecting support element 94 which may be in the form of a narrow inward flange, one or more inwardly projecting lugs, or any other suitable element engageable by the rim of a battery cell within the casing.

Instead of supporting means for the battery cell integral with the lower end of the casing, I may provide removable means as illustrated in Figure 9. This figure shows the lower end portion of a casing 95 having near its lower extremity a circular groove 96 into which is snapped a split ring 97 adapted to retain a battery cell within the casing.

It is evident that various other modifications and changes in detail and form can be made without departing from the spirit or scope of the invention as defined in the following claims.

I claim:—

1. A pocket flashlight comprising an elongated casing member of insulating material open at the bottom and having at its upper extremity a reduced diameter and a central aperture, a second casing member detachably secured to the first said member at the lower end thereof, the second said member having a substantial central aperture and inwardly projecting support means for a battery cell, an electric light bulb compris-

ing a base and a vitreous globe loosely disposed in the upper portion of said casing, the extremity of said globe being seated in the aperture at the upper extremity of the casing, a battery cell loosely disposed in said casing below said bulb and engaging said support means, and means directly engaging and yieldingly pressing said bulb and battery cell apart.

2. A pocket flashlight comprising a casing having an aperture at the upper end thereof, an electric light bulb and a battery cell loosely disposed in said casing, resilient means in said casing pressing said bulb toward the upper end of the casing and the cell toward the lower end, and means electrically connecting the base shell of said light bulb to the shell of said battery cell, said last-named means consisting of a piece of resilient sheet metal having a portion engaging the base shell of the bulb and an arm extending down between the casing wall and the battery cell, said arm being bent so as to be pressed firmly against the side of said cell by its engagement with said casing.

3. A flashlight comprising an elongated casing including two detachable parts for the insertion and removal of a battery cell, said casing having an aperture at each extremity thereof of lesser diameter than the interior diameter of the main portion of the casing, an electric light bulb having its upper end portion seated in one said aperture, a battery cell having its lower end seated across the other said aperture, and means directly engaging the base of said bulb and said battery cell to press said bulb and cell resiliently apart and electrically connecting the shell of the lamp base and the shell of the battery cell.

4. A flashlight casing enclosing a filament containing lamp and an electric dry cell both insertable from the base end thereof comprising a generally tubular portion of sufficient length to receive the dry cell, a bulb enclosing head integral therewith having a portion of decreased diameter terminating in a light transmitting opening smaller than the diameter of the lamp bulb to engage and position the lamp therein and a dry cell retaining closure for the base end of the tubular portion to hold the lamp and dry cell within the casing when inserted through said base end.

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