June 27, 1939. N. H. SWANSON 2,164,148

COMBINED POCKET FLASHLIGHT AND KEY CASE

Filed March 31, 1937

Fig. 1.

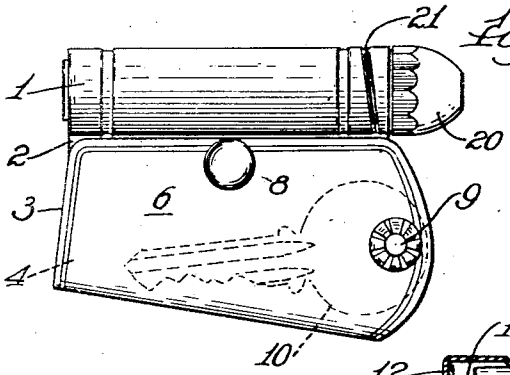


Fig. 12.

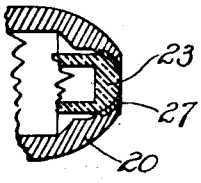


Fig. 2.

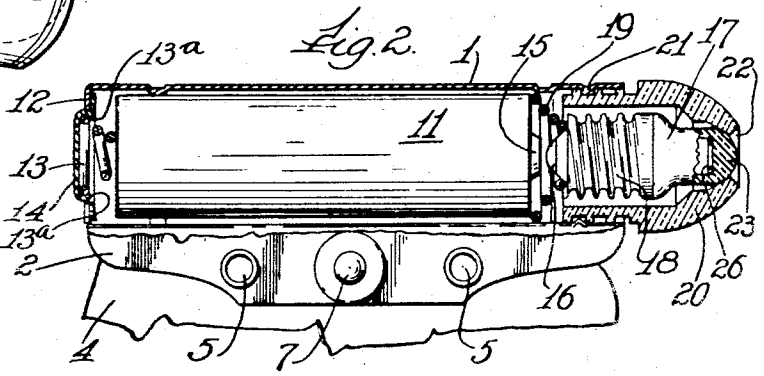


Fig. 3.

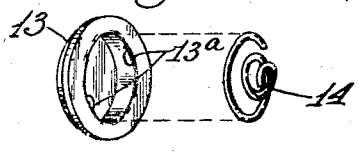


Fig 4

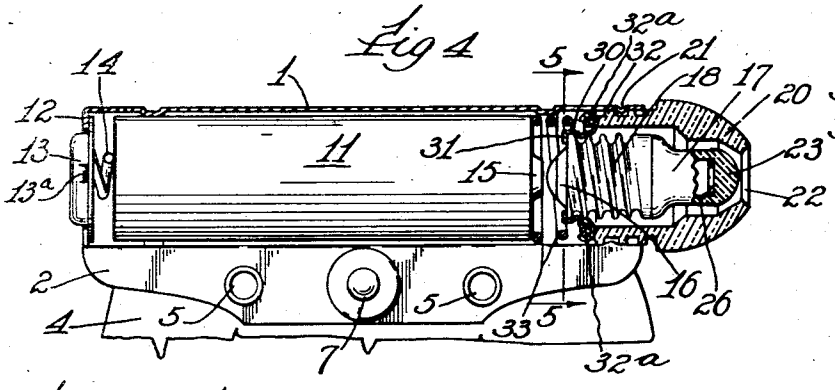


Fig. 5.

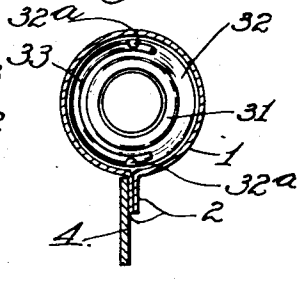


Fig 6

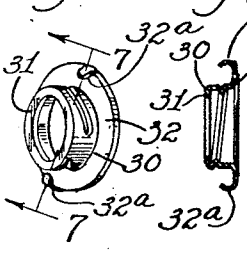


Fig 7

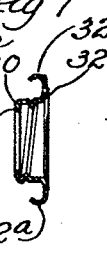


Fig. 8.

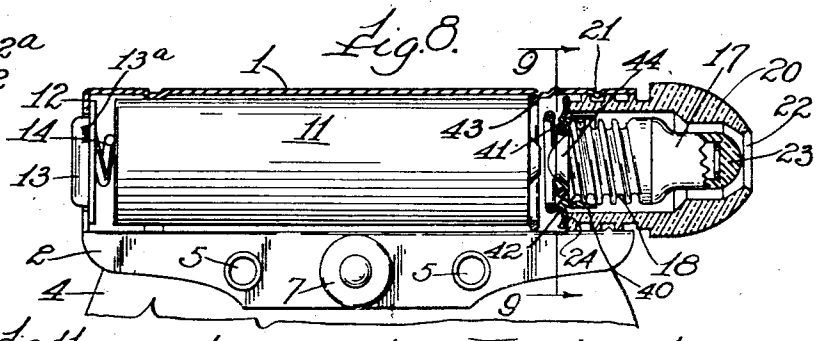


Fig 10

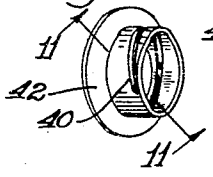


Fig 11.

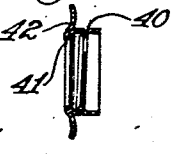
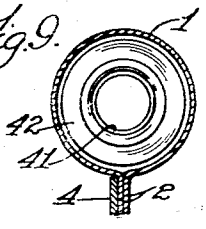


Fig. 9.



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240. ILLUMINATION,
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COMBINED POCKET FLASHLIGHT AND KEY CASE

Nels H. Swanson, Chicago, Ill.

Application March 31, 1937, Serial No. 134,110

5 Claims. (Cl. 240—10.68)

This invention relates to a portable flashlight which, as shown herein, is designed for combination with another article such as the leather key case illustrated in the drawing. This invention, however, is concerned primarily with the structure and operation of the elements of the flashlight itself. One object of the invention is to provide a cushioned mounting for the battery and lamp in the outer shell; another object is to provide switching means for connecting the lamp to the battery either momentarily or for a longer period, at will. Another object is to arrange for means for mounting the lamp in a definite position whenever it is removed and replaced so as to insure satisfactory operation of the parts. The invention consists in certain features and elements of construction in combination, as herein shown and described and as indicated by the claims.

In the drawing:

Figure 1 is a side elevation showing a flashlight combined with a key case in accordance with this invention.

Figure 2 is a longitudinal section taken axially with respect to the cylindrical shell of the flashlight.

Figure 3 is a detail perspective view showing a push-button and its spring in disassembled relation.

Figure 4 is an axial section similar to Figure 2, showing a modified structure for supporting the lamp.

Figure 5 is a transverse section taken as indicated at line 5—5 on Figure 4.

Figure 6 is a detail perspective of the lamp-supporting collar.

Figure 7 is a section taken as indicated at line 7—7 on Figure 6.

Figure 8 is an axial section of the flashlight showing another form of lamp-supporting structure.

Figure 9 is a transaxial section taken as indicated at line 9—9 on Figure 8.

Figure 10 is a detail perspective view showing the lamp-supporting collar of Figure 8 on a larger scale.

Figure 11 is a detail section taken at line 11—11 on Figure 10.

Figure 12 is a fragmentary detail showing a modified structure of the hood or tip for securing a decorative effect.

As shown in Figures 1 and 2, the flashlight embodying this invention includes a cylindrical shell or casing, 1, which may be made of sheet metal bent into cylindrical form and provided with a pair of radially projecting flanges, 2, which extend in closely parallel planes from the lower side of the cylinder, 1, for attachment of a key case, 3. As shown, this case may consist of a folded piece of sheet material such as leather, or imitation leather, one leaf, 4, being secured to the flanges, 2, by suitable rivets, 5, and the other leaf, 6, being secured in closed position by means of a two-part snap fastener having one part, 7, mounted on the flanges, 2, and the other part, 8, secured in the leaf, 6. A suitable pivot, 9, is shown for securing the keys in position, one such key being indicated in dotted ouline at 10 in Figure 1.

A cylindrical battery, 11, is carried slidably in the cylindrical shell, 1, as seen in Figure 2. One end of said shell has an inturned flange, 12, which confines a flanged push-button, 13, whose central portion is protruded through the end opening in the shell bounded by said flange, 12. A spirally coiled spring, 14, is pocketed at one end in the push-button, 13, and at the other end bears against the end of the battery, 11. At the opposite end the battery is provided with a center contact element, 15, adapted to engage the center contact, 16, of the incandescent lamp bulb, 17. The bulb is shown as formed with the usual threaded base, 18, but in the structure shown in Figure 2 the threads are not utilized. However, the metallic shell constituting the base, 18, is inturned at the end of the lamp so that a spirally coiled spring, 19, interposed between the battery, 11, and the lamp, 17, serves as a conducting element in the circuit between the lamp and the battery, contacting both with the annular edge of the metallic shell of the battery, 11, and with the inner surface of the cylindrical casing, 1, which is electrically connected with the battery by way of the push-button, 13, and spring, 14. Thus, it is only necessary to shift the lamp or the battery so as to bring their center contacts, 15 and 16, together to complete the circuit and light the lamp.

The lamp is held in position against the reaction of the spring, 19, by a hood or tip, 20, which is preferably of translucent material, such as Catalin, Pyralin, Celluloid or glass. The inner end of the tip, 20, is externally threaded, and engages a pressed thread, 21, in the end portion of the shell, 1. The outer end of the tip may be of any desired contour to provide an ornamental appearance, and is centrally apertured at 22 for emission of the direct rays from the lamp, 17. The lamp is shown as of the type having a reduced end portion, with the glass wall thick-

ened at the extreme end forming a lens at 23 serving to concentrate the light emitted through the opening, 22, in the tip or hood, 20. The aperture, 22, is smaller than the diameter of the end portion of the lamp so that the inner surface of the hood, 20, surrounding the aperture, 22, forms a stop shoulder against which the lamp is pressed by the spring, 19.

The spring, 14, is preferably somewhat stiffer than the spring, 19, so that inward pressure upon the push-button, 13, is transmitted through the spring, 14, to the battery, 11, and shifts the latter axially to carry its center contact, 15, into engagement with the contact, 16, of the lamp and close the circuit. Instantly upon release of the pressure at 13 the battery will be returned to its original position by expansion of the spring, 19, and the circuit will be opened. Thus, when the circuit is closed by means of the button, 13, the finger pressure upon the button must be exerted continuously as long as the light is wanted. But, when desired, the tip or hood, 20, may be screwed farther into the shell, 1, compressing the spring, 19, so as to bring the lamp contact, 16, into engagement with the battery contact, 15. With the construction shown in Figure 2 the pressure for making this contact is transmitted from the hood or tip, 20, through the reduced end portion of the lamp adjacent the opening, 22, and thence through the lamp body and its base, 18, to the spring, 19. If the tip, 20, should be screwed in farther than necessary—that is, after contact is established between the elements, 15 and 16—the excessive movement will be absorbed by the slight compression of the spring, 14, at the opposite end of the battery, 11; thus, there is no serious danger of crushing the lamp, 17, under such circumstances.

However, it is preferable that pressure on the glass portion of the bulb, 17, be avoided at all times. This result is accomplished by the construction shown in Figures 4 and 5, in which the threaded base, 18, of the bulb, 17, is screwed into a collar, 30. The collar has an inturned flange, 31, against which the inner end of the threaded base, 18, abuts, thus definitely positioning the lamp in the collar. The collar also has an outwardly extending flange, 32, which may be slightly concave toward the battery, 11, to serve as a seat for a coil spring, 33, whose opposite end engages the end of the battery, 11, and the inner surface of the shell, 1, in the same manner as the spring, 19, in Figure 2. Thus, when the tip or hood, 20, is screwed inwardly into the threaded end of the shell, 1, the inner end surface of the hood, 20, at 24, presses against the flange, 32, of the collar, and thus carries the lamp bodily toward the battery for engagement of its center contact, 16, with contact, 15, of the battery. With this arrangement the parts may be so proportioned that the inner surface of the hood, 20, does not touch the lamp, 17, at any point, but affords clearance which insures that the glass portion of the lamp bulb shall not be subjected to pressure or twisting strains in the adjustment of the parts or in use of the flashlight. The lamp is centered in the shell, 1, by means of the flange, 32, of the collar, this flange being fitted approximately to the inner diameter of the shell, 1, with only sufficient clearance to permit it to pass the inwardly pressed thread at 21. It will be understood that with this arrangement the push-button, 13, and its spring, 14, may be employed in the same manner as in the structure of Figure 2.

Figures 8 to 11 show a slight modification of the collar for supporting the lamp within the hood or tip, 20, but out of contact therewith. In this construction the collar, 40, is formed with a threaded annular portion to receive the threaded base, 18, of the lamp, 17. At one end the collar is crimped inwardly, as seen at 41, to form a stop shoulder defining the limiting position of the lamp base when screwed into the collar, and the material then extends outwardly in a flange, 42, which fits the inner diameter of the shell, 1, with sufficient accuracy for centering the lamp, but with clearance which permits removal of the collar and lamp from the end of the shell past its thread, 21, when desired. A coil spring, 43, might be made to react between the end of the battery, 11, and the flange, 42, of the collar, but, as shown, it is spirally coiled so that its largest turn engages the end of the battery, 11, and the inner surface of the shell, 1, while its smallest turn presses against the insulated surface, 44, of the lamp base just inside the crimped stop shoulder, 41; thus the coils are adapted to collapse very closely without interference when the battery, 11, is shifted by means of the push-button, 13, or the lamp, 17, is shifted by screwing the tip, 20, into the threaded end of the shell, 1. With this construction also, the hood, 20, is formed internally to avoid all contact with the lamp, 17, so that it controls the position of the lamp solely by pressure of its end surface, 24, against the outwardly extending flange, 42, of the collar, 40.

For the ornamental effect I prefer to make the hood, 20, of translucent material, as already mentioned, and, preferably, this material may be made in various colors. Without, in any way, decreasing the efficiency of the lamp, 17, and its direct rays emitted through the opening, 22, in the hood, the color of the latter gives a very pleasing appearance to the article, whether the lamp is lighted or not. And for further ornamental effect I may have the lamp made with an annular band of color applied either inside the lens element, 23, as indicated at 26, or applied outside the lamp as a coating of color, or else as an inserted ring of transparent colored material, as seen at 27 in Figure 12, so that the circle of light which is projected through the lens, 23, and the opening, 22, is given a margin of color, adding interest and beauty to the effect.

In all three forms of the device the spring, 14, and the push-button, 13, may be removably secured together by forming two or more dents at 13^a in th annular wall of the push-button, these dents being positioned to overhang the large coil of the spring, 14, which is pocketed in the recess of the part 13. This adds to the convenience in the handling of these parts whenever the battery, 11, is removed and replaced by a fresh battery, or if any other adjustment of the device becomes necessary.

A somewhat similar expedient may be applied to the spring, 33, and collar, 30, of the structure shown in Figure 4. The edge of the flange, 32, is formed with short prongs 32^a, which are bent back slightly to overhang the first coil of the spring, 33, which is seated against the flange, 32, thus connecting the spring positively to the flange. The terminal coil at the opposite end of the spring, 33, is a fairly close fit in the casing, 1, so as to frictionally engage the casing, although it may be readily withdrawn when the hood or tip, 20, is removed for replacement of the battery. On such ocasions the permanent assembly of the

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spring, 33, and the collar, 30, facilitates handling of the parts, and prevents the collar and lamp, 17, from being snapped out of the casing by the force of the spring, 33, when the tip, 20, is unscrewed.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and re-arrangements of the parts may be made without departing from the spirit and scope of the invention, and that the same is not limited to the particular form herein shown and described, except in so far as indicated by the appended claims.

I claim:

1. In an electric flashlight, a tubular casing, a battery in the casing, stop means at one end of the casing engaging one end of the battery, the other end of the casing being threaded and the battery having a central contact element adjacent the threaded end of the casing, a lamp bulb provided with a center contact, a collar fixed on the base of the lamp bulb and having an outwardly extending flange, a spring reacting between the lamp base and the end of the battery to hold the lamp and battery contacts normally apart, and a hood fitting loosely over the lamp and threaded at one end for engaging the threaded end of the casing, the inner end of said hood abutting the flange of the collar for rotation relative thereto when the hood is screwed inwardly in the casing.

2. In an electric flashlight, a tubular casing, a battery in the casing, stop means at one end of the casing engaging one end of the battery, the other end of the casing being threaded and the battery having a central contact element adjacent the threaded end of the casing, a lamp bulb provided with a center contact, and having a threaded base, a collar engaged with the thread of the lamp base and including an inturned portion forming a stop shoulder to limit the insertion of the lamp base in the collar, said collar having also an outwardly extending annular flange, a spring reacting between the lamp base and the end of the battery to hold the lamp and battery contacts normally apart, and a hood fitting loosely over the lamp without direct contact therewith, said hood being threaded at one end for engaging the threaded end of the casing, the inner end of said hood abutting the flange of the collar for adjusting the lamp toward the battery in opposition to the spring when the hood is screwed inwardly in the casing.

3. In a flashlight comprising a metallic shell with a lamp hood at one end, a lamp enclosed in the hood, a battery in the shell aligned with the lamp, a spring normally separating the end of the battery from the end of the lamp to avoid closing the circuit between them by contact of their aligned terminals, the opposite end of the shell having an inturned annular flange and a push-button carried loosely in said end of the shell and formed as an inwardly open cup with a rim flange engaged and retained by said inturned flange of the shell, together with a spring interposed between said push-button and the battery, said spring being in the form of a coil fitting snugly in the cup form of the button, and the button havinng inwardly protruding bosses spaced from its end wall for engaging the first coil of the spring to retain the latter in assembled relation to the button.

4. In an electric flashlight, a tubular casing, a battery in the casing, stop means at one end of the casing engaging one end of the battery, the other end of the casing being threaded and the battery having a central contact element adjacent that end of the casing, a lamp bulb provided with a center contact, a hood over the lamp dimensioned internally to afford clearance laterally and between the outer end of the lamp and said hood, a collar fixed on the lamp base and having an outwardly extending portion forming a shoulder which engages the inner end of the hood so that rotative adjustment of the threaded portion of said hood in the threaded end of the casing will shift the lamp toward the battery, and spring means for separatinng the lamp and battery upon reverse rotation of the hood.

5. In an electric flashlight, a tubular casing, a battery in the casing, stop means at one end of the casing engaging one end of the battery, the other end of the casing being threaded and the battery having a central contact element adjacent that end of the casing, a lamp bulb provided with a center contact, a hood over the lamp dimensioned internally to afford clearance laterally and between the outer end of the lamp and said hood, a collar fixed on the lamp base and having an outwardly extending portion forming a shoulder which engages the inner end of the hood so that rotative adjustment of the threaded portion of said hood in the threaded end of the casing will shift the lamp toward the battery, and a spring reacting between the outwardly extending portion of said collar and the end of the battery for separating the lamp and battery upon reverse rotation of the hood.

NELS H. SWANSON.