

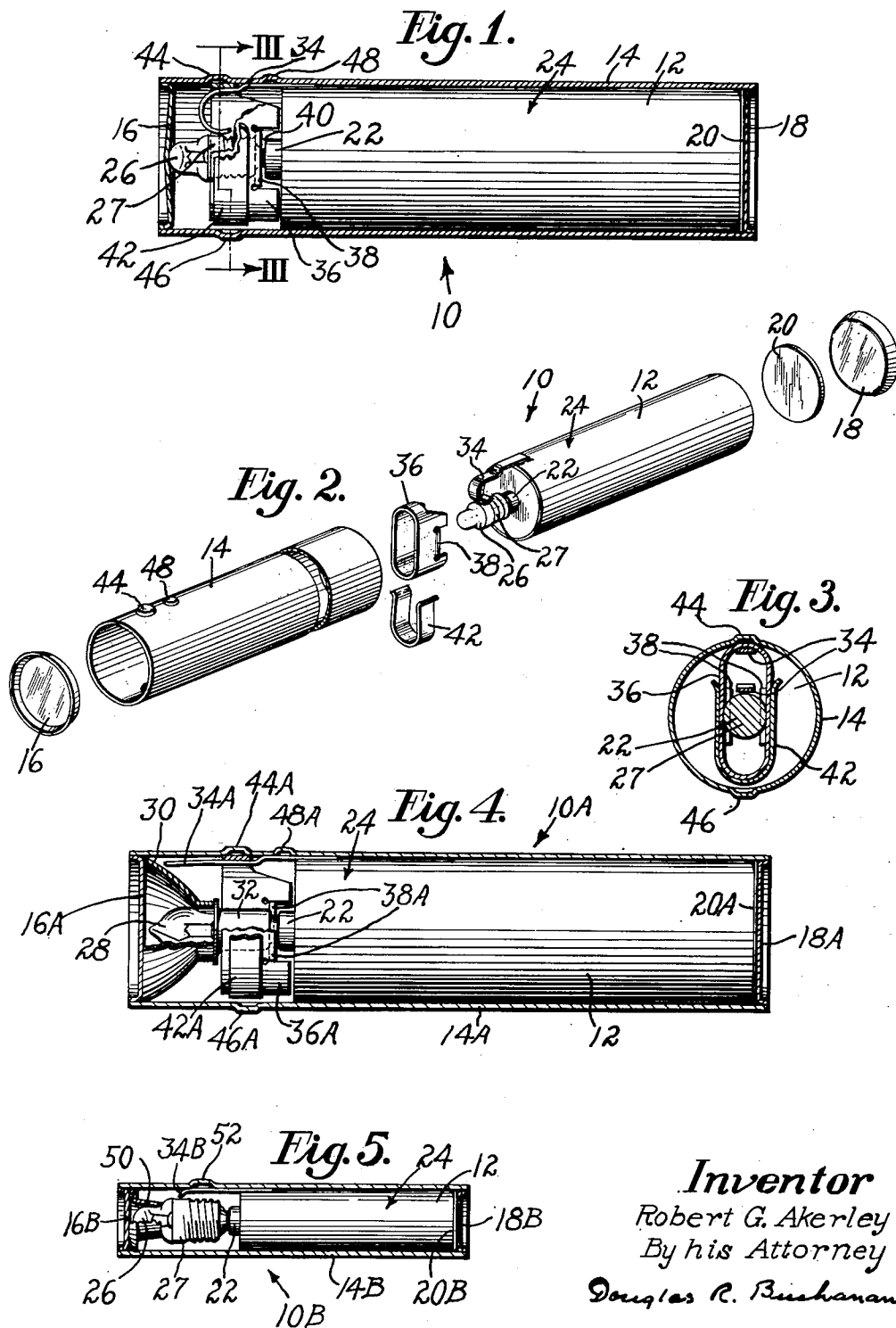
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FLASHLIGHT HAVING A SEALED FLEXIBLE CASING

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FLASHLIGHT HAVING A SEALED FLEXIBLE CASING

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3 Claims. (Cl. 240—10.68)

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The present invention relates to flashlights and consists in the novel features hereinafter described, reference being had to the accompanying drawings which illustrate embodiment of the invention, selected for purposes of illustration, said invention being fully disclosed in the following description and claims.

In the accompanying drawings:

Fig. 1 is a longitudinal median section of one form of flashlight embodying my invention;

Fig. 2 is an exploded view showing in perspective the various parts of the flashlight illustrated in Fig. 1;

Fig. 3 is a section on line III—III of Fig. 1;

Fig. 4 is a longitudinal median sectional view showing a slightly different type of flashlight having a prefocused bulb and a reflector as distinguished from a bulb having a magnifying tip which does not use a reflector such as illustrated in Figs. 1 and 2; and

Fig. 5 is a longitudinal sectional view showing another type of flashlight somewhat similar to that shown in Figs. 1 and 2.

The illustrative flashlights 10 (Fig. 1), 10A (Fig. 4) and 10B (Fig. 5) which embody the present invention are of the "non-refillable" type and are thrown away once dry cells or batteries 12 used in them fail.

The flashlights 10, 10A and 10B have casings comprising cylindrical tubes 14 (Figs. 1, 2 and 3), 14A (Fig. 4) and 14B (Fig. 5) and transparent front caps or disks 16, 16A and 16B and rear caps or disks 18, 18A and 18B, the front caps serving as lenses and the rear caps serving as windows for viewing advertising upon the outer sides of labels 20, 20A and 20B which in the finished flashlights are interposed between the rear ends of the batteries and the rear caps. The tubes 14, 14A and 14B, the front caps or disks 16, 16A and 16B and the rear caps 18, 18A and 18B are preferably made of dielectric, nonflammable, water- and gas-resistant plastic which is sufficiently rigid to stand up against wear but which has considerable flexibility for the purpose of operating the flashlights, as will be hereinafter explained.

Each of the batteries 12 has a cross-section approximately the same as that of the inside of its associated tube and is of suitable size to fit in and to be forced slidably into the respective tubes 14, 14A and 14B, each of said batteries also having a contact or terminal 22 and an outer shell 24 which constitutes the other or second contact or terminal. In the flashlight shown in Figs. 1, 2 and 5, bulbs 26 of the "bull's-eye" type are used, said bulbs having bases 27 and a magnifying tip,

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In the flashlight shown in Fig. 4, there is disclosed a bulb 28 which is of the prefocused type and has associated with it a reflector 30 made of conducting material. The reflector 30, which also serves as a spacer, is forced against or secured to the base 32 of the bulb 28 and may be described as constituting part of such base since contact made with the reflector for the purpose of closing the bulb circuit will be conducted to the base of the bulb.

The bases 27, 32 of the bulbs 26, 28, respectively, are soldered to the contact 22 of the battery 12 and flexible conductors or switches 34, 34A and 34B are soldered to the contact 24 of said battery. Forward unsupported ends of the conductors 34, 34A and 34B extend well forward of their associated batteries 12 and along the inner walls of the tubes 14, 14A and 14B, respectively.

In the manufacture of the flashlight 10 (Figs. 1 and 2) the flange of the cap or disk 16 is dipped, for the purpose of activation, in acetone or some other suitable solvent and is inserted under pressure and "sprung into" the forward end of the tube 14, the solvent on the flange activating the end part of the tube with which the flange engages, a water- and gas-tight joint being formed between the cap 16 and the tube 14. The assembled battery 12, bulb 26 and conductor 34 are then slid into the tube 14, and after inserting the label 20 into the tube behind the battery, the rear cap 18, the flange of which has been activated with acetone, is forced into the tube 14 with sufficient pressure to cause the magnifying tip of the bulb slightly to "blow out" the cap 16, said rear cap being held under pressure in forced engagement in the tube for a sufficient period to permit the proper adhering together of the tube and the cap and the forming of a water- and gas-tight joint between the tube and the rear cap.

Extending approximately from one side of the tube 14 to the other and surrounding or straddling the base 27 of the bulb 26 is a loop slide or frictionally resistant member 36 made of relatively rigid dielectric plastic, said loop at one side of the tube being interposed between the unsupported projecting portion of the metal conductor 34 and the tube. The loop 36 is provided with inwardly extending flanges 38 which project into a notch 40 formed between the contact 22 of the battery 12 and the base 27 of the bulb 26, thereby insuring that the loop shall be retained in approximately the same position lengthwise of the tube 14. Surrounding a substantial portion of the loop 36 and forcing with substantial pressure the loop against

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the base 27 of the bulb 26 is a spring metal binding yoke 42 which serves to maintain the loop in its adjusted position transversely upon the base of the bulb but permits, when pressure is applied against the ends of the loop by bringing pressure to bear against identified portions of the outside of the tube, hereinafter referred to, the loop to slide transversely sufficiently to move the end of the conductor 34 into engagement with the base 27, thereby igniting the bulb. The loop 36 holds the conductor 34 in position until said loop is pushed in a reverse direction by applying pressure at an opposite identified portion of the tube to permit the unsupported portion of the conductor 34 to move away from the base of the tube. In order to insure that the flashlight user may readily press the tube 14 at the proper position to light and put out or extinguish the bulb 26, the tube is provided with red and black blisters 44 and 46 arranged at opposite sides of the tube. When it is desired to ignite the bulb 26 without causing the conductor 34 to be automatically held against the base 27 of the bulb 26 as above described, there is provided a blue blister 48 which, when pressed, moves the conductor 34 against the bulb base 27 without effecting movement of the loop 36, the conductor springing away from the base as soon as pressure is removed from said blue blister.

By providing a casing which is water- and air-proof, and soldering the bulb, battery and the conductor together and retaining them fixed against relative displacement in the casing, it has been found that the life of the battery is greater than that of correspondingly sized batteries of flashlights now in use.

The flashlight 10A shown in Fig. 4 is similar to the flashlight 10 and is assembled in the same general manner that the flashlight 10 is assembled. Instead of having the magnifying tip bulb 26, the flashlight 10A has the above-mentioned prefocused bulb 28 requiring the use of the reflector 30 which may be forced against or secured to the base of the bulb and considered part of the bulb, the reflector as it is assembled in the tube 14A being forced against the front transparent cap 16A of the flashlight. Instead of pressing the conductor 34A against the base 32 proper of the bulb 28 as in the flashlight 10 above described, the conductor 34A is moved into engagement with the reflector 30 upon pressing red and blue blisters 44A and 48A, respectively, of the tube 14A which correspond to blisters 44 and 48 of the tube 14 thereby moving said conductor into electrical communication with the base of the bulb. A black blister 46A of the flashlight 10A corresponds to the black blister 46 of the tube 14 and operates a loop slide or frictionally resistant member 36A and yoke 42A similar to the loop 36 and the yoke 42 which collectively may be referred to as a slide.

The flashlight 10B shown in Fig. 5 is similar in many respects to the flashlight 10 but instead of having its magnifying tip bulb 26 forced against the front transparent cap 16B of the casing, said bulb extends into and interfits with a frusto-conical collar 50 serving as a support and centralizer for the tube, the collar during assembly of the flashlight being forced against the cap 16B and serving to insure against the crushing of the forward end of the flashlight should heavy pressure be applied against said flashlight. No provision is made in the flashlight 10B for causing it to shine steadily unless continuing pressure is applied against a red blister 52, such pressure

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causing the conductor 34B to be forced against the base 27 of the bulb 26.

In order that the user may readily "find" the various blisters in the tube, it is contemplated to apply fluorescent paint to said blisters.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a flashlight, a flexible casing, a battery having two contacts, a bulb having a base which is in engagement with one contact of the battery, a flexible conductor which is in engagement with the other contact of the battery and which is arranged adjacent to the casing, and a dielectric slide which straddles and is forced against the base of the bulb and which is interposed between a portion of the flexible conductor and the casing, said casing having one identified portion against which pressure is brought to force the flexible conductor away from said slide and against the base of the bulb to ignite the bulb so long as pressure is maintained against said identified portion, said casing having a second identified portion against which pressure is brought to move the slide transversely of the casing on the base of the bulb to move the flexible conductor into contact with said base, said slide being adapted to hold the conductor in contact with the base even though pressure against the second identified portion of the casing is released, said casing having a third identified portion against which pressure can be brought to move the slide in an opposite direction and accordingly to move the flexible conductor away from the base of the bulb thereby extinguishing the bulb.

2. In a flashlight, a flexible casing, a battery having two contacts, a bulb having a base which is in engagement with one of said contacts, a flexible conductor which is in engagement with the other of said contacts and one portion of which is arranged adjacent to the casing, and a dielectric slide which straddles and is forced frictionally against the base of the bulb and which is interposed between the casing and a second portion of the flexible conductor, said casing having one identified portion which is forced against said one portion of the conductor to force said conductor away from said slide and against the base of the bulb to ignite the bulb so long as pressure is maintained against said one identified portion, said casing having a second identified portion against which pressure is brought to force the slide against said second portion of the conductor and to move the slide and the conductor transversely of the casing on the base of the bulb thereby causing the conductor to engage said base, said slide being adapted to hold the conductor in contact with said base even though pressure against the second identified portion of the casing is released.

3. In a flashlight, a battery having a pair of contacts, a bulb having a base which is in engagement with one of said contacts, a casing housing the battery and the bulb, a flexible conductor which is secured to the other contact of the battery and has a portion arranged adjacent to the casing, a loop of dielectric material which is housed in said casing, straddles the base of the bulb and has one portion positioned adjacent to the casing and interposed between the casing and the conductor, and resilient means for forcing said loop against the base of the bulb, one identified portion of the casing adjacent to said one portion of the loop being yieldable to enable pressure exerted against said one portion of the

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casing to move the loop in one direction to force said conductor against the base of the bulb thereby causing the bulb to be ignited, said casing having a second identified portion which is arranged adjacent to said portion of the conductor and is yieldable to force independently of the loop the conductor against said base of the bulb thereby causing said bulb to be ignited only so long as pressure is exerted against said second identified portion.

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