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C. E. MANHART ET AL

2,765,481

FLOATING SIGNAL LIGHT

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FIG. 1.

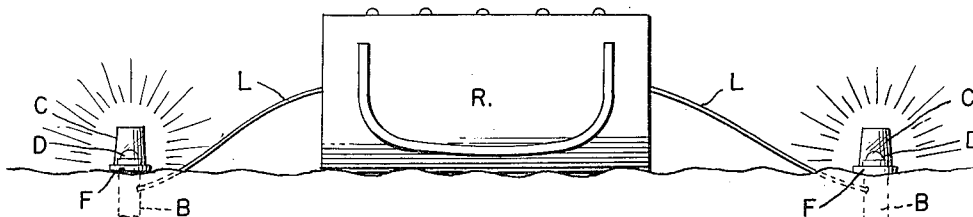


FIG. 3.

FIG. 4.

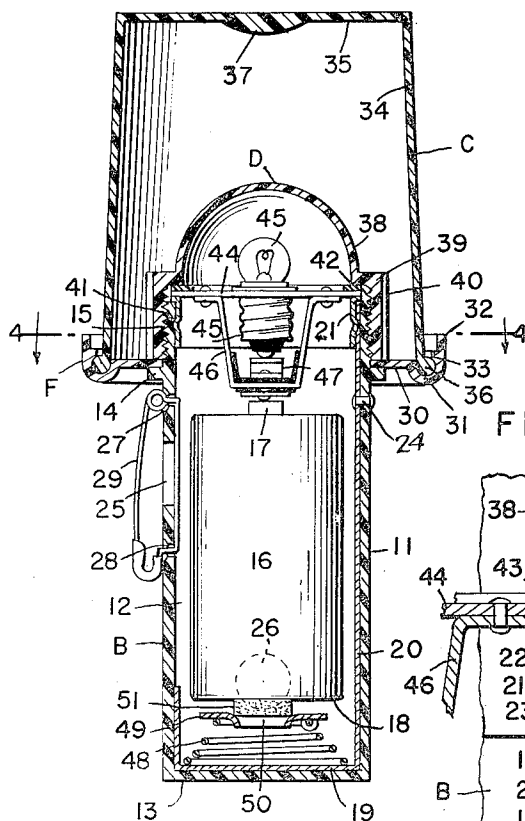
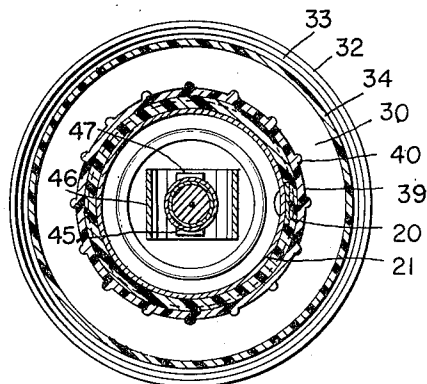


FIG. 6.

FIG. 5.

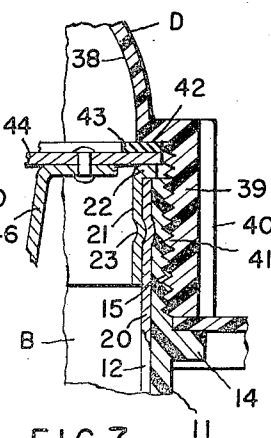
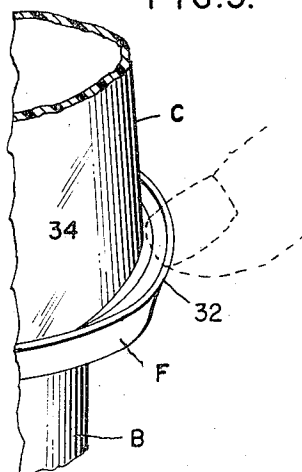
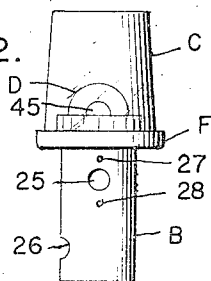
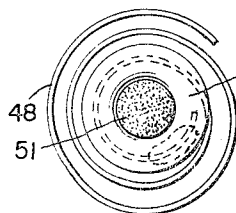


FIG. 2.

FIG. 7.



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FLOATING SIGNAL LIGHT

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5 Claims. (Cl. 9—8.3)

This invention relates to flashlights, but more particularly to that type of flashlight that is useful to occupants of airplanes that may come down at sea, namely, flashlights that automatically light themselves when immersed.

So one of the objects of this invention is to devise such a flashlight having a water-penetrable compartment bearing a water-soluble element that only when undissolved maintains the light circuit open, but when dissolved allows the circuit to close, while the light bulb and its compartment remains sealed against the entrance of water. Another object is to devise such a flashlight so balanced and arranged that the water-sealed compartment wherein the light is located floats above the water-level and thus remains unsubmerged. A further object is to devise details of construction that render the flashlight cheap and easy to make, while producing a flashlight that is highly dependable, yet easy to assemble as well as to disassemble. A still further object is to make such a flashlight that can be worn on a person's clothing.

These objects, and possibly others, are reliazable by a battery-bearing water-penetrable body with a bottom and an open top, closed by a bulb-bearing metallic disc that is in contact with a conductor strip leading internally to the bottom of the body while between the strip and the battery are spring means terminating at one of its ends in a non-conductor-receiving and -holding means adapted to receive and hold a non-conductor element operating when undissolved to keep the spring means out of circuit-making position but which when dissolved allows such circuit to be made. A transparent dome fits water-tightly over the bulb. Secured exteriorly on the body adjacent its open top is an annular cup having a flexible flange to which is removably but water-tightly secured a flotation-inducing rim-bearing transparent cover means that enclose the bulb-covering means. All of these components are so constructed and arranged that when the body is immersed the dome and cover remain unsubmerged.

The flashlight is also useful for attachment not only directly to persons, but to life-rings as well as life-rafts.

The invention has been illustrated in the accompanying drawings in which Fig. 1 is an elevational view of a floating life-raft to which are attached by lines, two flashlights of this invention. It can be seen how the flashlights float with the body thereof immersed but with the light-emitting dome and cover unsubmerged. Fig. 2 is a vertical view of the flashlight, while Fig. 3 is a vertical sectional view thereof. Fig. 4 is a transverse sectional view taken along the line 4—4 in Fig. 3. Fig. 5 is an isometric view of a detail. Fig. 6 is a partial vertical sectional view, with parts broken away. Fig. 7 is a plan view of the coil spring in the bottom of the flashlight body with its water-soluble pellet in place.

While the best embodiment of the invention now known to us has been illustrated, it is to be noted that the illustrations are for imparting information as to the preferred embodiment, so they are not to be taken in a limiting sense, for obviously changes in details and in construc-

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tion can be made without departing from the spirit and scope of the invention as defined by the claims, so they are to be interpreted as including all conjointly co-operative equivalents of the elements and combinations claimed.

In the drawings, B represents the barrel-like or cylindrical body of the flashlight made up of a cylindrical wall portion 11, with an internal bore 12, and a bottom 13. The upper portion of the wall is provided with an outer flange 14, and above that with an external threaded portion 15. 16 indicates a dry battery adapted to be housed in the bore of the body B having an upper or top terminal 17, and a bottom contact plate 18. On the bottom of the body, and internally thereof, is a contact strip 19 of copper or other conducting metal that has a portion 20 thereof running up the side of the bore 12 sunk into a channel in the wall 11, so that its outer surface is flush with the bore 12. As this strip approaches the mouth of the body it passes under a metallic sleeve member 21 having an out-turned flange 22, for the purpose of making good electrical contact therewith, and to assure this, the sleeve is punched at 23 to merge with the strip, which, in turn, is merged with the wall 11. The strip is further riveted to the wall 11, as at 24. The body B has on its wall 11, a lower aperture 26 and an upper aperture 25 for the entrance of water therethrough into the bore of the body, when the latter is immersed. Two other apertures, 27 and 28, are provided for attachment to the body of a safety-pin 29, or other device for attaching the flashlight to the body of a wearer thereof.

Supported from above the flange 14, is a deformable flexible plastic annular flange-bearing cup element indicated generally by the letter F, made up of a flange portion 30 merging into an internally grooved portion 31 terminating in an upstanding collar portion 32, and an intumed bead 33. To the cupped element F is water-tightly secured a transparent stiff plastic cover assembly C made up unitarily of a cylindrical wall 34 and a top 35 more or less tumbler-shaped, terminating in a beaded edge 36, which beaded edge is adapted to fit snugly into the grooved portion 31 of the cupped element F, which curved portion hugs the beaded rim 36. The tumbler-shaped plastic cover C is of the shell-glow type of plastic that has a tendency to diffuse light passing therethrough. The tumbler element C may or may not have a button or boss-like protuberance 37 depending from the center of its top 35 for further diffusing light. The tumbler-element or cover C can be seated on the cupped element F due to the deformability of the collar portion 32, and it can be disassembled by means of the same construction. Fig. 5 shows such disassembly.

The plastic cupped element F is held tightly against the flange 14 of the body B by means of a dome assembly D of transparent but stiff plastic made up of a dome 38 terminating in a collar 39 having outer ribs 40 thereon and internal threads 41 adapted to be screwed over the threads 15 at the top of the body B. An annular seat 42 is provided on the dome element D for clamping a plastic washer 43 for holding between the dome element D and the terminal edge of the body B in a water-tight manner, a metallic disc 44 through which is screwed an electric bulb 45. 46 represents a metallic strap depending from the disc 44 adapted to hold a contact spring 47 that makes contact with the top terminal 17 of the dry battery 16.

In the bottom of the body B is a coil spring 48 upstanding from contact with the metallic strip 19 in the bottom, terminating in a contact plate 49, having a seat 50, adapted to have frictionally seated therein a water-soluble non-conducting pellet or tablet 51, such as an aspirin tablet. Fig. 1 shows a floating life-raft R to which are attached by suitable lines L, two flashlights embodying this invention.

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Since the cover assembly C and the dome element D are water-tightly fastened to the body B of the flashlight, air is trapped thereon so that when the flashlight is immersed, they serve as floatation-inducing chambers, and the flashlight floats with its body immersed, but with the cover C and the dome D unsubmerged, as shown in Fig. 1. The cover element C has an annular flange 30 extending laterally a significant distance from the body of the flashlight with the cup and its flange presenting an annular shoulder to the adjacent water when the flashlight is submerged. This shoulder co-operates with the cylindrical body of the flashlight to produce a ballasted and stabilizing effect on the flashlight. When not in use, the non-conducting pellet or tablet 51 holds the spring 48 and its contact plate 49 out of contact with the bottom contact plate 18 on the battery 16, so that the flashlight remains unlighted. But upon submergence, water enters the apertures 25 and 26 in the body of the flashlight, whereupon the water attacks and dissolves the pellet 51, with the result that the spring, in the absence of the pellet, makes contact between the contact plate 49 and the contact plate 18 on the bottom of the battery, whereupon the flashlight lights. The circuit is made in one direction through the coil spring 48, the strip 20 in the body, and the collar 21 to the disc 44, to the bulb 45. In the other direction, the circuit is completed through the bulb 45, and the contact spring 47 to the top terminal of the battery 16.

To disassemble the entire flashlight, the cover assembly C is first unshipped from the rim assembly F (as shown in Fig. 5); the dome assembly D is then unscrewed by means of the operator's fingers gripping the ribs 40; the bulb-bearing disc 44 falls out; and then the flange assembly F is unscrewed from its seat on the flange 14 on the body B. The battery can then be removed, as well as the coil spring 48. To assemble, these steps are carried out in the reverse order.

We claim:

1. A water-operable flashlight comprising a substantially cylindrical battery-bearing water-penetrable body with a bottom and an open top, a bulb-bearing metallic disc closing the open top, a conductor strip extending in-

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ternally from the bottom of the body to the disc, spring means extending upwardly from the strip on the bottom terminating at one of its ends in a non-conductor-receiving and -retaining means, a water-soluble non-conductor element in the latter means operating when undissolved to keep the spring means out of circuit-making position but which when dissolved allows such circuit-making to be made, an annular cup secured exteriorly to the body adjacent its open top and having a flexible flange extending a significant distance from the body with the cup and flange presenting an annular shoulder to the adjacent water when the flashlight is immersed, a transparent dome for the bulb water-tightly fitted to the open end of the body holding the cup on the body, and a floatation-inducing rim-bearing transparent cover means enclosing the dome while its rim is removably but water-tightly held in the flange of the annular cup, whereby when the body is immersed the dome and cover remain unsubmerged and whereby the laterally extending shoulder cooperating with the cylindrical body produces a ballasted and stabilizing effect on the flashlight.

2. A flashlight according to claim 1, wherein the cup has its flange resiliently deformable.

3. A flashlight according to claim 1, wherein the flange of the cup is internally grooved to receive grippingly the rim on the cover.

4. A flashlight according to claim 1, wherein the floatation-inducing cover is tumbler shaped.

5. A flashlight according to claim 1, wherein the body is apertured to permit water to enter therinto through the apertures.

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