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3,122,736

SAFETY SIGNALING DEVICE

Filed July 10, 1961

2 Sheets-Sheet 1

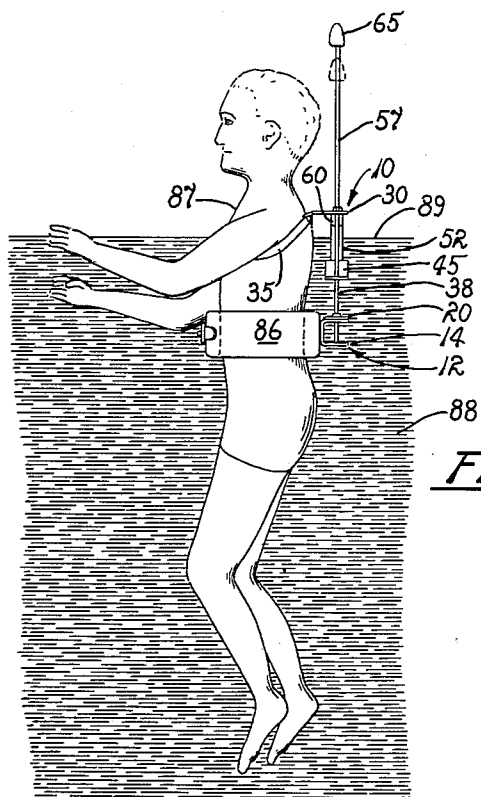


FIG. 1.

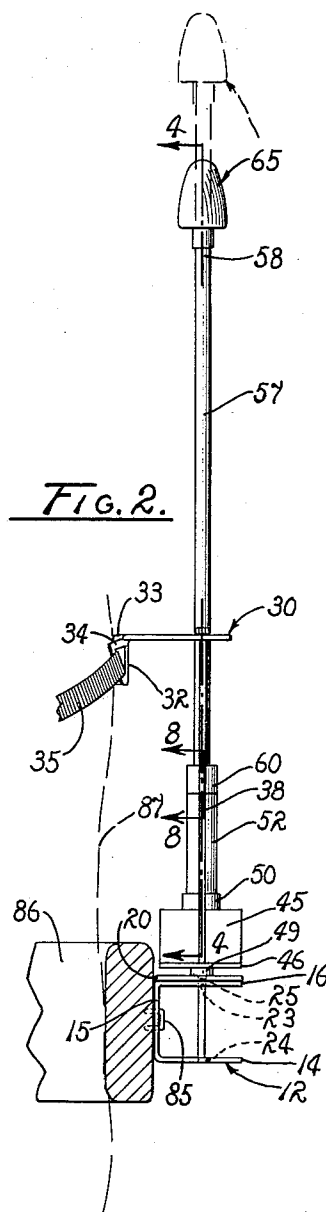


FIG. 2.

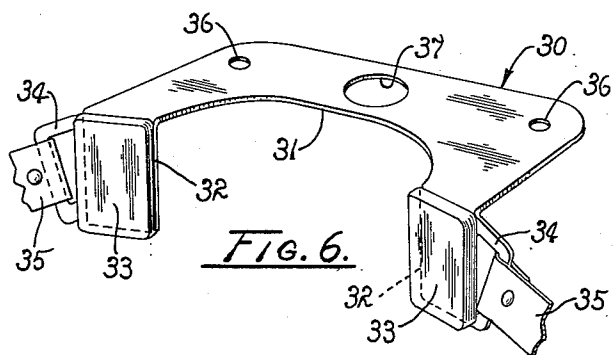


FIG. 6.

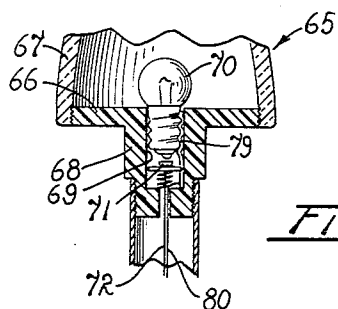


FIG. 7.

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3,122,736

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2 Sheets-Sheet 2

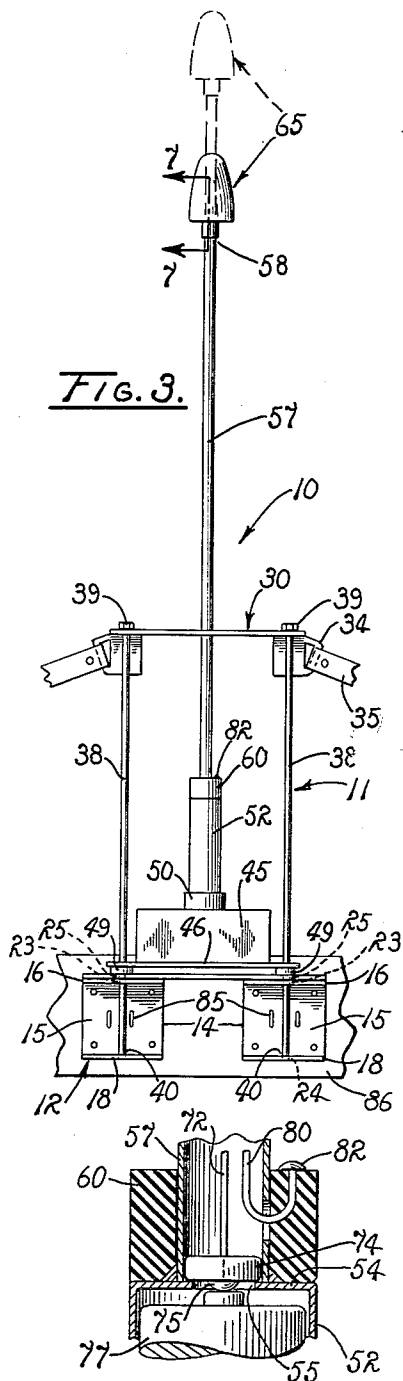


FIG. 3.

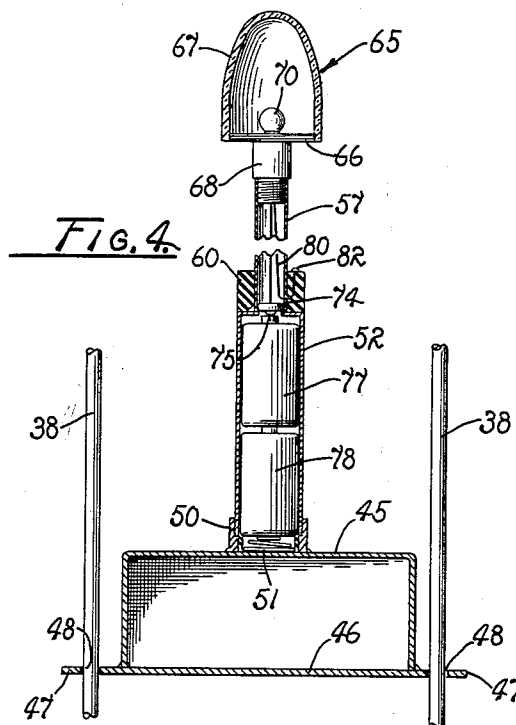


FIG. 4.

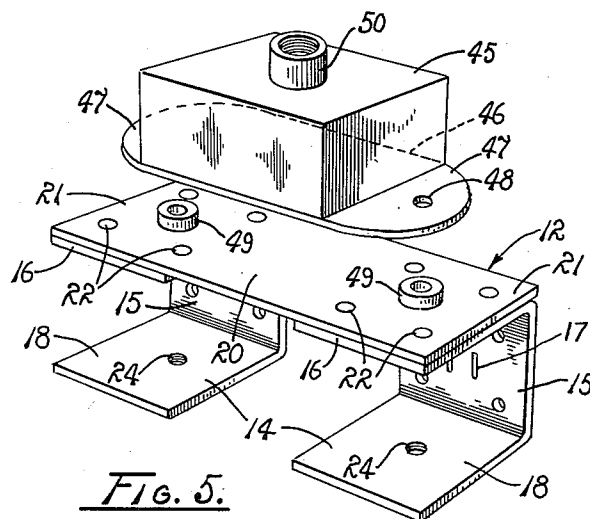


FIG. 5.

FIG. 8.

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1

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SAFETY SIGNALING DEVICE

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1 Claim. (Cl. 340—366)

The present invention relates to a safety signaling device and more particularly to a safety signaling device for objects adapted to float upon bodies of water which is automatically actuated into a signaling position immediately upon launching the object into the water.

It is therefore an object of the present invention to provide a signaling device which is immediately and automatically actuated to a signaling position upon launching.

Another object is to provide a safety signaling device which is readily distinguishable under adverse conditions.

Another object is to provide a safety signaling device which is maintained in a non-signaling position by gravity and is elevated without springs, cranks, or motors.

Another object is to provide a safety signaling device which is readily adaptable to manufacture in any desired size.

Another object is to provide a signaling device which is readily adapted for connection to conventional life preservers, channel markers, buoys and the like.

Another object is to provide a signaling device providing an electrically energized signaling system which is automatically actuated upon immersion of such device in the water.

Another object is to provide a safety signaling device which is lightweight, virtually leak-proof, durable in construction, easily manufactured, and convenient in use.

Other objects and advantages of the present invention will become more fully apparent in the subsequent description in the specification.

In the drawings:

FIG. 1 is a side elevation of a safety signaling device embodying the principles of the present invention shown in a signaling position and mounted upon a conventional lifebelt worn by a person immersed in a body of water.

FIG. 2 is an enlarged side elevation similar to FIG. 1 showing the device of the present invention in full lines as being in a retracted or non-signaling position and fragmentarily illustrated in broken lines as being in an extended or signaling position.

FIG. 3 is a rear elevation of the signaling device shown in full lines as being in the non-signaling position of FIG. 2 and fragmentarily illustrated in broken lines as being in an extended or signaling position.

FIG. 4 is a further enlarged foreshortened fragmentary vertical section taken on line 4—4 of FIG. 2.

FIG. 5 is a further enlarged perspective of the lower signal support member and the signal actuating member as shown in FIG. 3 in a disassembled condition.

FIG. 6 is a further enlarged perspective of the upper signal guide mounting plate of the present invention as shown in FIG. 3 separated from the lower signal support member illustrated in FIGS. 3 and 5.

FIG. 7 is a further enlarged fragmentary vertical section through the illuminating member of the present invention taken on line 7—7 of FIG. 3.

FIG. 8 is a further enlarged fragmentary vertical section of the lower contacts of FIG. 4 taken on line 8—8 of FIG. 2.

Referring more particularly to the drawings, a safety signaling device embodying the principles of the present invention is indicated generally at 10. The signaling device includes a lightweight frame 11 of suitable material having a composition or outer finish which is water resistant and preferably even resistant to salt water and

2

other harmful impurities found in bodies of water. The frame includes a lower support bracket 12 having a pair of substantially U-shaped strap members 14 each of which provide a central vertically disposed portion 15 having a plurality of mounting slots 17 therein. The central portion interconnects a pair of upper and lower legs 16 and 18 respectively. A substantially rectangular flat plate member 20 having opposite ends 21 disposed congruently upon the upper legs 16 of the straps, is rigidly secured thereto by a plurality of rivets or other suitable connecting members indicated at 22. The longitudinal length of the plate is of a dimension substantially greater than the combined width of the straps 14 so that the straps are spaced from each other in substantially parallel relation. Vertically aligned apertures 23 and 24 are centrally disposed through the upper and lower legs of each of the straps 14 in alignment with similar apertures 25 in the plate.

As best shown in FIG. 6, an upper guide plate or bracket 30 of substantially rigid sheet material is adapted to be disposed in vertically spaced aligned relation with the lower support bracket 12. The upper bracket 30 provides an arcuately disposed inner edge 31 which forms a pair of outwardly disposed oppositely spaced depending legs 32 on the bracket. A resilient pad 33 is rigidly secured to each of the legs for a purpose soon to be described. The legs individually provide a loop member 34 outwardly extended therefrom. The legs are in diverging relation to each other and the loop members mount the ends of a flexible mounting strap 35. A pair of apertures 36 are provided in the upper bracket in equally spaced relation on opposed diametrically related sides of a central bore 37 therethrough. The apertures 36 are adapted to be aligned with the apertures 23, 24, and 25 in the lower support bracket 12. A pair of opposite guide rods 38 are received within the apertures 36 and the apertures 23, 24, and 25 to maintain the upper and lower brackets in the desired vertically aligned assembled position. The rods include head portions 39 which engage the upper surface of the guide bracket 30, and oppositely spaced lower ends 40 having screw threads thereon which are received within corresponding threads in the apertures 24 in the lower legs 18 of the straps 14.

As best shown in FIGS. 4 and 5, a substantially rectangular container 45 is rigidly secured to an elongated plate 46, as by welding, in fluid-tight sealing relation thereto. The plate 46 provides a pair of opposite arcuately shaped ears 47, each having an aperture 48 which is adapted to receive a guide rod 38 for flotation movement of the container 45 upon the rods between the upper and lower guide and support brackets. A pair of resilient grommets 49 are interposed between the ears 47 and the plate 46 on the rods to act as a buffer therebetween. A tubular internally screw-threaded projection 50 providing a lower end rigidly mounted on the container, as by welding, upwardly extends therefrom in circumscribing relation to a conical spring 51 loosely received therein.

As shown in FIGS. 4 and 8, a cylindrical casing member 52 includes an externally screw-threaded lower end which is received in the tubular projection 50. The casing member extends upwardly from the container and terminates in a radially inwardly projecting upper end wall 54 having a concentrically disposed opening 55 therein. An elongated reduced diameter hollow mast 57 has a lower end portion rigidly secured, as by welding, to the upper wall 54 of the casing in register with the opening 55. The mast extends upwardly therefrom through the central bore 37 in the upper guide bracket and terminates in an internally screw-threaded outer end 58. A spool 60 of resilient material such as rubber or the like, is positioned about the mast to rest upon the upper wall 54 of the casing for a purpose soon to become apparent.

3

A signal head indicated at 65 includes an enlarged circular base portion 66 having a screw-threaded outer periphery which mounts a light-reflective bowl 67 thereon. The base also provides an integral concentrically depending, externally screw-threaded, nipple 68 having an inner bore 69 which is adapted screw-threadably to receive the base of a conventional flashlight bulb 70. When so received, the threaded end of the bulb abuts a spring loaded upper contact 71. An insulated electric wire 72 is connected, as by soldering or the like, to the upper contact 71 and is downwardly extended through the mast to provide a positive lead line to the bulb. As best shown in FIG. 8, a circular plug 74 of any suitable insulating material is press-fitted in the lower end of the mast and mounts a lower contact 75 thereon. The lower contact extends within the casing 52 through the opening 55 therein and is connected, as by soldering or the like, to the lower end of the positive lead wire 72 through the insulating plug 74.

As best shown in FIG. 4, the casing 52 is adapted to receive a pair of conventional flashlight batteries 77 and 78 with the positive pole of the battery 77 being held in engagement with the lower contact 75 by the spring 51. An electric buss bar 79 is provided within the threaded base bore 69 to provide suitable ground connection for an insulated ground wire 80 downwardly co-extended with the positive lead wire 72. The lower end of the ground wire is directed through a suitable hole in the casing and outwardly thereof through the resilient spool in return looped fashion for connection with an external switch contact 82 located on the upper surface of the resilient spool 60 facing the upper guide bracket 30. From the description so far, it is evident that with the proper grounding of the contact 82, the electric bulb 70 is energized by the above described circuit.

Operation

The operation of the described embodiment of the subject invention is believed to be clearly apparent and is briefly summarized at this point. As best shown in FIGS. 2, 3 and 5, the mounting slots 17 in the central portions of the lower bracket are adapted to receive suitable connecting members such as are indicated at 85 to mount the signaling device on a buoyant member 86. The buoyant member is shown in FIG. 1 as being a conventional life-belt which is adapted to be mounted about the waist of a wearer, indicated at 87, who may be a fallen water skier or any other person floating in a body of water. The wearer is disposed within a body of water fragmentarily shown and indicated by the reference numeral 88 which has a surface 89. To impart stability to the signaling device, the pads 33 on the upper bracket engage the shoulders of the wearer with the belt 35 being secured about the chest of the wearer to maintain the bracket in such position. It is evident that the lifebelt 86 disposed a substantial distance beneath the surface of the water, is not adequate for attracting attention to the wearer.

With the signaling device of the present invention so mounted and with the wearer out of the water, the device assumes the retracted or non-signaling position shown in full lines in FIGS. 2 and 3. Upon subsequent immersion

4

of the wearer 87 in the water 88, the buoyant container 45 floats upwardly along the rods 38 towards the surface 89 of the water. Such elevational movement continues until the ground contact switch 82 abuts the upper guide plate 30 which contact is cushioned by the resilient spools 60. When such contact is made, the electrical circuit is completed or closed and the bulb 70 is energized by the batteries 77 and 78 to illuminate the reflector bowl 67. The bulb is preferably of the conventional flashing type which is not only conducive to the more effective attraction of attention but which also conserves energy in the batteries.

From the foregoing, it is evident that the signaling device of the present invention provides a readily observable attracting member which is automatically actuated to a signaling position upon immersion of the device into a body of water. The buoyant container 45 may be constructed of any desired size as long as the container is fluid-tight and buoyant in water and may be employed in numerous installations ranging in size for use on the smallest life belts to ocean marker buoys. In addition, the device may be equipped with the electrical system of the above described embodiment which also is automatically energized by movement of the attracting member to a signaling position.

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

A flotation actuated, gravitationally biased signaling device for use with a personal life preserver adapted for human wear on the body of a person, the device comprising; a pair of brackets; means mounting one of the brackets on the life preserver; means retaining the other bracket on the body of such a person in a position vertically spaced from the other bracket, thereby providing upper and lower brackets; rod means interconnecting the brackets and defining a path of travel therebetween; a buoyant fluid-tight container mounted on the rod means for movement along said path incident to flotation of the container upon submergence of the lower bracket, the container normally being gravitationally biased toward said bracket; resilient pads carried on the lower bracket to support the container in its lower biased position; a mast rigidly secured to and upwardly projected from the container; guide means on the upper bracket constraining the mast to a path of travel parallel to the rods; an electrically actuated signal carried by the mast; an electrical operating circuit for the signal including a normally open switch carried by the container and operable to a closed position incident to flotation of the container to a position abutting the upper bracket; a dry cell battery; and water-tight support means carried by the container enclosing the battery.

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