

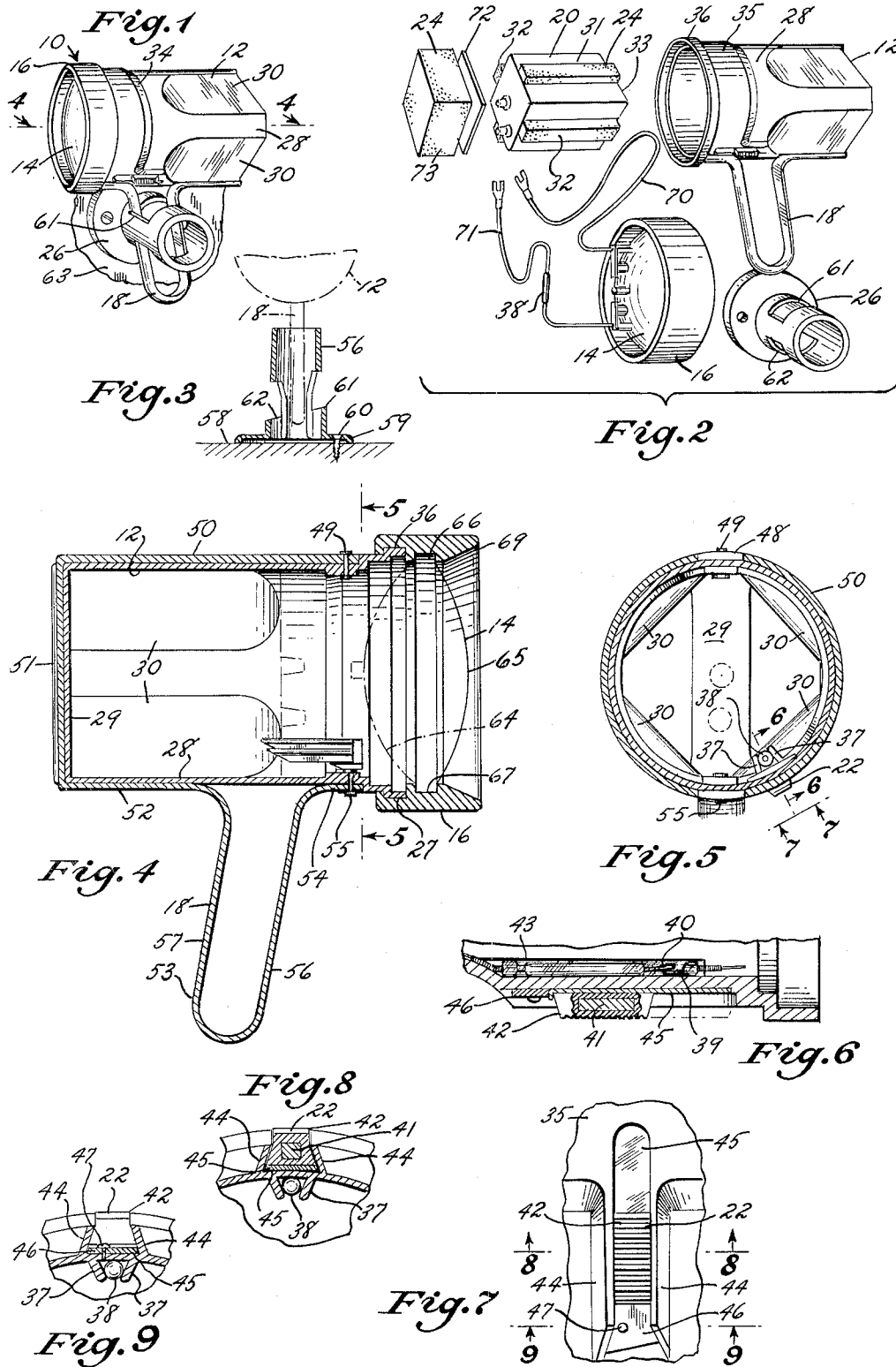
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PORTABLE LIGHT

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1

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PORTABLE LIGHT

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1 Claim. (Cl. 240—11.2)

This invention relates generally to illumination, and more particularly to improvements in self-contained lighting units especially adapted for nautical use.

In connection with boating, it is desirable to have a powerful beam-type illuminator which has a self-contained source of energy so that the illuminator may be independent of the electrical supply on the boat, and this is what the present device accomplishes.

It is among the objects of the present invention to provide a self-contained lighting unit which is completely waterproof, providing reliable illumination both on board a boat and underwater as well.

Another object of the present invention is the provision of a lighting device which will withstand underwater pressures of substantial depths.

A further object herein is the production of a self-contained, completely sealed lighting unit in which the switching is indirectly magnetically activated, avoiding sliding or moving seals. In accordance with the present invention, the switch contacts are hermetically sealed, thereby avoiding corrosion or short circuiting.

Another object herein is the provision of an improved mounting support element or mounting bracket which allows deck or vertical mounting and bulkhead or horizontal mounting at the option of the user.

Another object herein lies in the provision of a novel and useful sealing and retaining element which positions the light-emitting element in a recessed arrangement to protect the same against accidental shock if the light should be dropped.

These objects, and other incidental ends and advantages, will more fully appear in the progress of this disclosure and be pointed out in the appended claim.

In the drawing, in which similar reference characters designate corresponding parts throughout the several views:

FIGURE 1 is a perspective view of an embodiment of the invention.

FIGURE 2 is an exploded view with the light-emitting element and sealing and retaining element rotated 180° about a vertical axis.

FIGURE 3 is a vertical sectional view of the mounting support element, for deck mounting.

FIGURE 4 is a central vertical sectional view as seen from the plane 4—4 on FIGURE 1.

FIGURE 5 is a vertical sectional view as seen from the plane 5—5 of FIGURE 4.

FIGURE 6 is an enlarged fragmentary sectional view as seen from the plane 6—6 on FIGURE 5.

FIGURE 7 is an enlarged fragmentary elevational view as seen from the plane 7—7 on FIGURE 5.

FIGURE 8 is a fragmentary sectional view as seen from the plane 8—8 on FIGURE 7.

FIGURE 9 is a fragmentary sectional view as seen from the plane 9—9 on FIGURE 7.

In accordance with the invention, the portable light generally indicated by reference character 10 comprises broadly a main casing element 12, a light emitting element 14, a sealing and retaining element 16, a handle element 18, a source of electrical energy 20, circuit control means 22, cushioning means 24, and a mounting and support element 26.

The main casing element 12 is of generally cup shape, having a side wall 28 and a rear wall 29. The side wall 28 is generally of cylindrical shape but has a plurality of

2

flat portions 30. These flat portions 30 are preferably four in number to correlate with the four side walls 31 of the source 20 and their internal diametrical spacing is greater than the distance between opposed walls 31. The cushioning members 32 are preferably composed of a light resilient material such as polyvinyl foam, or polyurethane foam. The members 32 are normally of greater bulk than the spaces between the flat portions 30 and walls 31 so that under compression they maintain the battery source 20 in place with its bottom surface 33 against wall 29.

The forward end of the main casing element includes a flared portion 34, an enlarged portion 35 and a radially projecting peripheral rib 36, which is adapted for detachable water-tight engagement with the sealing and retaining element 16.

The casing element 12 is preferably a casting of insulating synthetic resin and at the forward portion thereof is provided with a switch support 37 which holds the hermetically sealed switch 38 frictionally in place between the two support members of the support 37.

The switch 38 includes a relatively stationary contact 39, and a movable contact blade 40 which is composed of magnetically responsive material, being attractable by the magnet 41, when the latter is in the "on" position of the switch. The "on" position is when the button 42 is in the forward position thereof, as indicated by the dot-dash lines on FIGURE 6. Since the movement of the contact blade 40 is magnetically produced, no direct physical connection with it is necessary so that it is disposed within a hermetic chamber 43, where it will remain unaffected by moisture or corrosion. The magnet 41 is completely encased within the button 42 which is composed of synthetic resin. Not only does the button 42 form a convenient grip for underwater manipulation, but it also protects the magnet 41 from contact with the water to prevent corrosion. The button is maintained between the guides 44 so that it may reciprocate longitudinally of the device 10, and is retained in adjusted positions thereof by a spring 45. The spring 45 is held between the guides 44, as is the button 42, by the detent 46 which is held in place by the pin 47. The forward ends of the guides 44 merge into the enlarged portion 35.

The handle element 18 is preferably formed from a strip of metal. At its upper forward end 48 it is connected by the rivet 49 to the casing element 12, and then it extends rearward through its upper portion 50, down at its rear portion 51, forward at its lower portion 52, forming a downward loop 53, to terminate at its lower end 54 in connection by rivet 55 to the casing element 12. This construction reinforces the casing element 12, and allows the forward and rear handle portions 56 and 57 to flex slightly toward each other to allow the loop 53 to be detachably engaged in the mounting support element 26.

The mounting support element 26 is preferably composed of a unitary casting of synthetic resin, and has a tubular socket portion 56 with a flange base 59 adapted to be attached by screws 60 to a horizontal surface 58 such as a deck. Because of the balance of the assembled device, it may stand in the position shown in FIGURE 3 without the screws 60. When the flange base 59 is attached to a vertical surface, then the loop 53 is passed through the openings 61 and 62 which are angularly displaced with respect to each other so that the upper bulkier portion of the device 10 will be offset from the bulkhead or vertical surface 63.

The light emitting element 14 is a so-called "sealed beam unit" in which the reflector 64 and lens 65 enclose the filament so that the assembly is watertight. The rim 66 is engaged in a watertight manner in the annular groove 67 in the element 16.

The sealing and retaining element 16 is best composed of natural or synthetic rubber and is adapted to be a tight resilient fit on both the element 14 and the peripheral rib 36. It will be noted that the edge 69 projects a substantial distance forward of the element 14, so that if dropped this forms a protective bumper for the element 14.

Servicing and operation of the unit 10 is simple and convenient. To replace the battery, the rear edge of the element 16 may be lifted with the user's fingers and the element 16 removed from the casing element 12. The conductors 70 and 71 may be removed from the old battery without disturbing the switch 38. The new battery is replaced into the casing element placing the cushioning 32 in its original position as shown in FIGURE 2. Following this, the conductors 70 and 71 are reconnected on the terminals of the battery, and the fiber buffer plate 72, and resilient foam block 73 are put back in the relationship shown in FIGURE 2.

Following this, the sealing and retaining element 16 is put back in place with the annular groove 27 engaged upon the peripheral rib 36. This places the block 73 under compression so that the source 20 is properly maintained in position and will not shift around. The replacement of the element 16 restores the watertight condition of the device 10.

Since the switch 38 is of itself hermetically sealed, and the main casing element is sealed by the light emitting element 14 and the sealing and retaining element 16, the switch is doubly sealed, operation thereof being accomplished solely by the magnetic interaction from the button 42. Since the button 42 and spring 45 are exposed, they may be readily cleaned of dirt, sand or salt.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person

skilled in the art to which the present invention relates.

I claim:

A portable light construction comprising: a main casing element with an inner wall; a light-emitting element; a source of electricity disposed within the casing element; circuit control means including an hermetically sealed switch detachably secured to the inner wall of the casing element, the switch having a relatively stationary contact at one end and a movable contact blade composed of a magnetically responsive material at the other end; and a magnet reciprocally mounted on the exterior of the casing in proximity to the movable contact blade; whereby reciprocal movement of the magnet from an "off" position to an "on" position will allow the magnet to cause the blade to move into contact with the circuitry, thus completing the electrical circuit, and movement of the magnet to the "off" position repositions the magnetic field so it does not influence the blade, which then moves out of contact with the circuitry, thus breaking the electrical circuit.

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