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UNDERWATER ELECTRIC LANTERN

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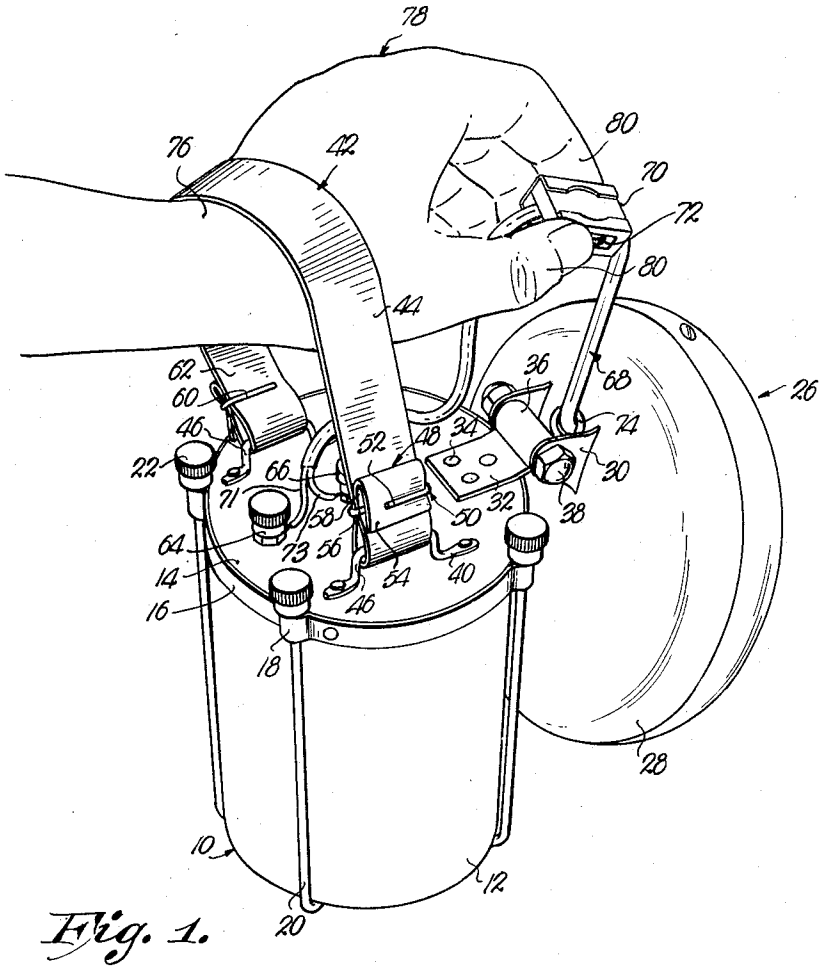


Fig. 1.

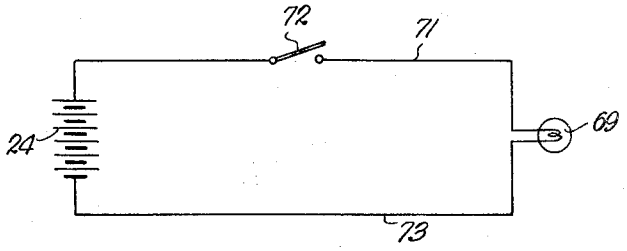


Fig. 2.

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UNDERWATER ELECTRIC LANTERN

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6 Claims. (Cl. 240—10.66)

This invention relates to lantern structure and more particularly, to an electric lantern adapted for underwater use.

The most important object of this invention is to provide an electric lantern which is adapted to be suspended from the wrist of a user and which includes novel switch structure disposed in a position so that the user may operate the switch thereof with his corresponding hand so that his other hand and wrist are left completely free.

Another important object relates to the provision of a lantern as described which is constructed so as to be completely water-tight, thereby rendering the lantern useful for underwater operations.

A further important object of the invention is to provide an underwater lantern having a looped wrist strap connected thereto and a looped electrical conductor suitably coupled with the components of the lantern and having a switch interposed therein in a position whereby when the user employs the strap to suspend the lantern from one of his wrists, he may actuate the switch with his corresponding hand, thereby freeing his other hand and wrist.

Other important objects of the present invention include the provision of a lantern as described which includes a case and a lamp swingably mounted thereon and wherein the conductor is coupled to the lamp and the case to the end that the lamp may be swung free in a predetermined arc relative to the case by virtue of the play in the conductor; the provision of such a lantern wherein the wrist strap on the case is disposed in a position so that a plane therethrough is substantially parallel with a plane through the lens of the lamp so that the beam of light emanating from the lamp is in substantial alignment with the user's arm whereby the latter may aim the light by merely moving his arm to point in the required direction; the provision of a flexible strap on the uppermost part of the case which is constructed so that the length thereof may be adjusted at will and thereby permit the user to expand the loop a sufficient amount that he may move the strap upwardly on his arm until the lantern is in an out-of-the-way position during swimming and other operations; the provision of a switch control on the lantern which is manually movable to and from "off" and "on" positions so that if the lantern is accidentally displaced from the user's wrist when the lantern is "on," he may readily recover the same by virtue of the beam of light emanating from the lamp; the provision of a water-proof lantern which is inexpensive, rugged and trouble-free in operation and which is also adapted for use in many situations not requiring underwater operation; and other less important objects and details of construction which will become apparent as the following specification progresses.

In the drawing:

Fig. 1 is a perspective view of the instant invention illustrating the way in which the same is suspended from one of the user's wrists and also, the manner in which the switch control is readily accessible to the user's fingers of his corresponding hand; and

Fig. 2 is a schematic diagram of the wiring forming a part of the present invention.

An electric illuminating device in the nature of an underwater lantern is broadly designated in the drawings by the numeral **10** and includes a metallic, cup-shaped, hollow, cylindrical case **12** provided with an opening at the uppermost end thereof normally closed by a top wall **14** which in turn has a continuous, downwardly projecting flange (not shown) joined to the outer peripheral edge thereof and adapted to engage the outer surface of the upper portion of case **12**.

A circular band **16** is suitably secured to the flange of top **14** in surrounding relationship thereto and is provided with a series of outwardly struck, integral, equally spaced loops **18** adapted to receive corresponding uppermost ends of a plurality of U-bolts **20**. The uppermost ends of bolts **20** are preferably threaded in a manner to receive respective screw caps **22** above each of the corresponding loops **18** so that, upon threading of caps **22** onto bolts **20**, top wall **14** is drawn down tightly against the uppermost end of case **12**. It is to be pointed out that rubber gasket means or the like (not shown) is provided between the upper edge of case **12** and top wall **14** to render the interior of case **12** water-tight.

Case **12** receives a source of electrical energy in the nature of battery **24** indicated schematically in Fig. 2 of the drawing, and a lamp, broadly designated **26**, is swingably secured to cover plate **14**. Lamp **26** includes an outer housing **28** and a pair of spaced, upstanding lugs **30** secured to the rear face of housing **28** in offset relationship to the central axis thereof.

An elongated mounting bracket **32** is attached to the uppermost face of top wall **14** by fastening means **34** and includes a bearing **36** at the outermost end thereof pivotally receiving elongated bolt and nut means **38** passing through bearing **36** and suitable, aligned perforations in lugs **30**.

A pair of diametrically opposed, spaced, substantially U-shaped hanger elements **40** are secured to the upper face of top wall **14** in parallel relationship to the longitudinal length of bracket **32** and receive the free ends of an elongated, flexible bail or loop member broadly designated **42**.

Bail member **42** comprises an elongated, flexible strap **44** constructed of rubber or similar material and the free ends thereof are looped under the bights **46** of hanger elements **40** in a manner so that the portions of strap **44** adjacent elements **40** are swingable with respect to the latter. As clearly shown in Fig. 1, the outermost free ends of strap **44** are rebent upon themselves to present a substantially S-shaped portion **48** at each end of the hanger elements **40**.

Means for holding each of the S-shaped portions **48** in a designated position relative to the remainder of strap **44** preferably takes the form of a substantially S-shaped clip **50** having a length **52** in overlapping relationship to the stretch **54** of S-shaped portions **48**, a length **56** located between stretch **54** and a stretch **58** of portions **48** and a length **60** positioned against the main stretch **62** of strap **44**.

A pair of electrical conductor poles **64** and **66** are provided in cover plate **14** beween elements **40** and disposed in parallel relationship to the latter and are electrically connected with battery **24**. An elongated, looped, flexible electrical conductor or cable **68** is coupled with lamp **26** and case **12** and includes a pair of leads **71** and **73** which are operably connected with poles **64** and **66** and bulbs **69** within housing **28**.

As clearly shown in Fig. 1, conductor 68 passes through housing 28 between lugs 30 and is of sufficient length to form a loop extending upwardly above the uppermost face of cover plate 14 in perpendicular relationship to strap 44. Interposed in conductor 68 intermediate the ends thereof, is a control switch 70 having a rotatable switch control or member 72 movable to and from "off" and "on" positions.

A rubber washer or the like 74 is provided at the point where conductor 68 enters housing 28 to provide water integrity and suitable means is provided at the points where leads 71 and 73 are connected with respective poles 64 and 66 to prevent entrance of water into case 12.

The wiring diagram of lantern 10 is illustrated in Fig. 2 and includes the battery 24, leads 71 and 73, bulb 69 and switch 72, it being noted that cable 73 serves as a ground between bulb 69 and battery 24.

In operation, lantern 10 is adapted to be carried in a position as shown in Fig. 1 and is constructed so that the same may be suspended from the wrist 76 of the user's hand 78 in a position so that switch control 70 may be readily grasped by the user's fingers 80. It can now be seen that because of the fact that lantern 10 may be suspended from the user's wrist 76 with switch control 70 located in a readily accessible position for operation by his fingers 80, the user's other hand remains free and unincumbered in any manner whatsoever.

Inasmuch as strap 44 is located so that a plane therethrough is substantially parallel with the lens of lamp 26, the beams of light emanating from bulb 69 are in substantial alignment with the user's forearm. Thus, the direction of the beams emanating from bulb 69 may be directed in a specific direction by merely moving the arm in that direction. Furthermore, because of the looped nature of conductor 68, switch control 72 may be readily grasped in fingers 80 without the user's other hand being necessary to turn bulb 69 off and on.

Another important feature relates to the fact that because of the looped nature of conductor 68, lamp 26 may be swung freely about the axis of bolt and nut means 38 without in any manner interfering with the operation of conductor 68 and control switch 72.

Inasmuch as the length of strap 44 may be varied by adjusting stretches 54 and 58, the distance at which lantern 10 is suspended from the user's wrist 76, may be varied at will. In this manner, the length of strap 44 may be extended if desired, so that the strap may be pushed upwardly upon the user's arm to a point where it will not in any manner interfere with swimming operations or the like. By the same token, the effective length of strap 44 may be shortened if it is desired to more firmly attach lantern 10 to the wrist 76 to preclude loss or displacement of the same from the user's hand 78.

Bolts 20 provide an effective seal between top wall 14 and case 12 and because of the rugged construction thereof, lantern 10 will withstand considerable shock and wall 14 is not subject to easy dislodgment during underwater operations.

Although other types of control switches could be utilized, one employing a rotatable switch member such as 72, is preferable because of the ease with which the same may be turned off and on while lantern 10 is suspended from the user's wrist 76. If lantern 10 is accidentally dislodged from the user's wrist it can be appreciated that if bulb 69 is lighted, the beam emanating therefrom will lead the user to the location thereof even in murky water, this being true because switch control 70 remains in the "on" position even when not held in the user's fingers 80.

Thus, it can now be appreciated that lantern 10 is advantageous over previously disclosed lanterns of this type because the same may be carried and operated by the same hand.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In combination, a case having a top wall and containing a battery; a lamp alongside said case and mounted on the top wall; a pair of spaced, diametrically opposed hanger elements secured to the top wall; an elongated, flexible strap having opposed ends, each swingably attached to a corresponding hanger element, the strap extending upwardly from the top wall, forming a first loop adapted for loose suspension from one wrist of a user, and disposed to direct light beams emanating from the lamp outwardly beyond said wrist in alignment therewith; a flexible, conductive cable operably coupling the battery with the lamp and having one end thereof terminating at the top wall between said elements, said cable extending upwardly from the top wall, forming a second loop between the lamp and the strap substantially in alignment with said wrist and said light beams; and a switch interposed in said cable intermediate the ends thereof for ready accessibility to that hand of the user adjacent said one wrist when the strap is looped over the latter, thereby leaving the other hand and wrist free.

2. In a combination as set forth in claim 1 wherein said switch requires manual resetting to an open or closed position.

3. In a combination as set forth in claim 2 wherein said switch includes a rotatable disc control member whereby the user may readily operate the switch with his thumb and forefinger.

4. In a combination as set forth in claim 1 wherein is provided means adjustably securing opposed ends of the strap to the hanger elements whereby the user may vary the effective length of said first loop.

5. In a combination as set forth in claim 4 wherein said means includes a U-shaped bracket for each end of the strap, secured to said casing and receiving a respective end of the strap and an S-shaped clip on each end of the strap above a corresponding bracket for releasably maintaining the outer extremities of the strap in predetermined, overlapped relationship relative to the central portion of the strap.

6. In an electric lantern including an electric battery having a pair of electrical terminations, an electric lamp having a pair of electrical terminations, structure mounting said lamp on said battery, and electrically conductive means for electrically coupling one termination of said battery with one termination of said lamp, the improvement of which comprises a first flexible, looped cable including an electrical conductor electrically coupled with the other termination of said lamp, said cable extending from the lamp rearwardly and upwardly to an intermediate bight portion thereof and thence rearwardly and downwardly to a point of electrical coupling of said conductor with the other termination of said battery; an electric switch interposed in said bight portion of said cable and electrically coupled in series with said conductor; and an elongated, flexible, bail member having a bight part disposed rearwardly of and extending transversely relative to said bight portion of the cable, and a pair of downwardly extending side leg parts physically coupled with said battery, said bail member being adapted to receive the wrist of a user for suspending said battery and lamp on the latter from the user's wrist in orientation permitting convenient accessibility of the user's corresponding hand to said switch for controlling the latter.

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