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2,850,621

RUNNING LIGHT FOR SMALL BOATS

Filed June 10, 1954

3 Sheets-Sheet 1

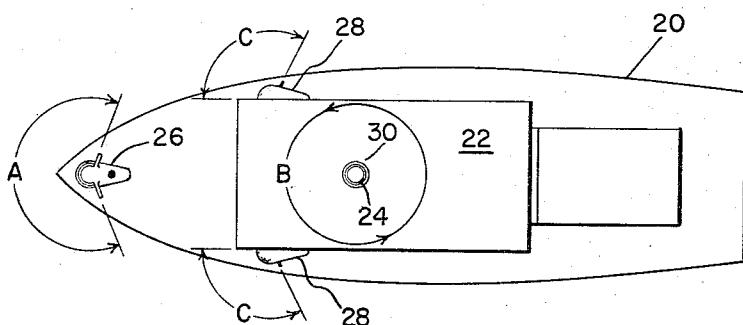


FIG. 2.

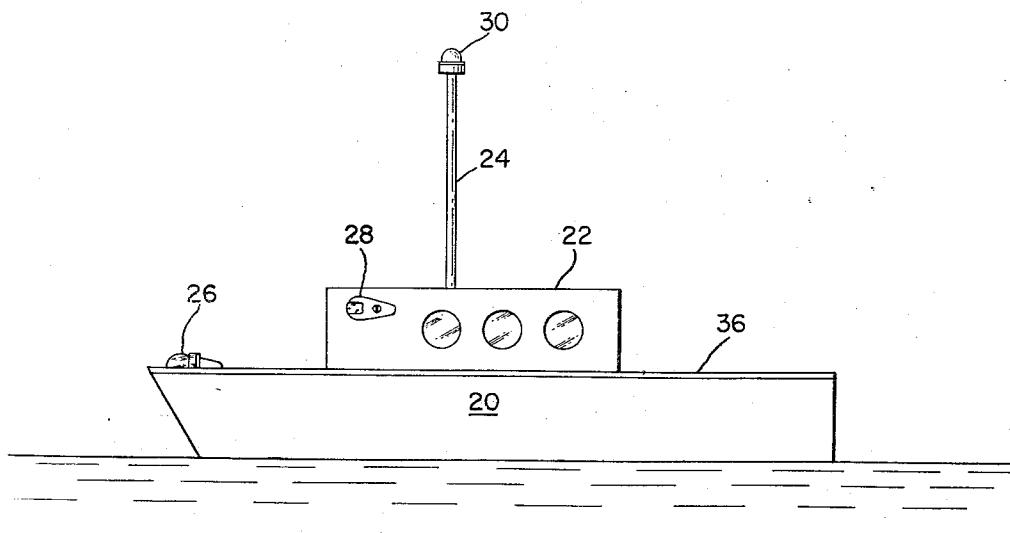


FIG. 1

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3 Sheets-Sheet 2

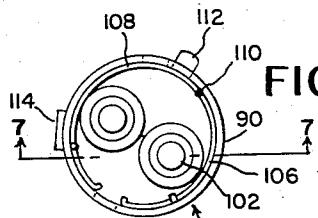


FIG. 6.

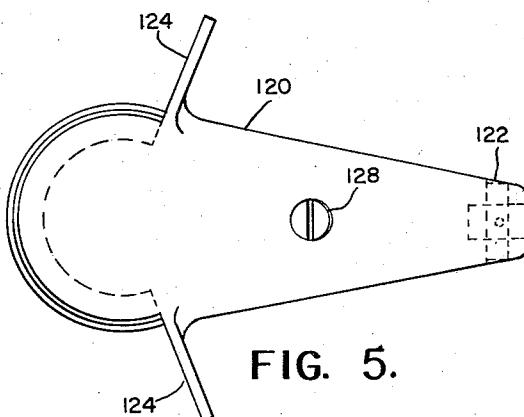


FIG. 5.

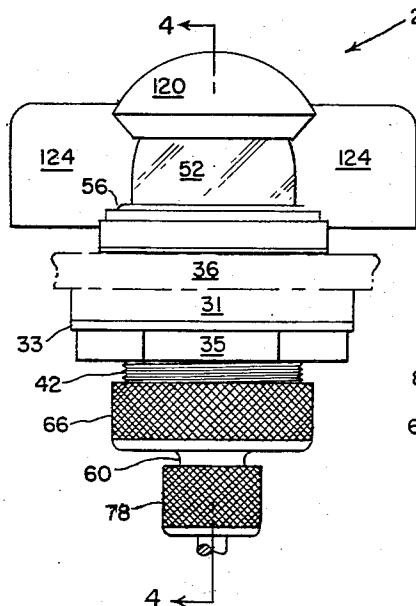


FIG. 3.

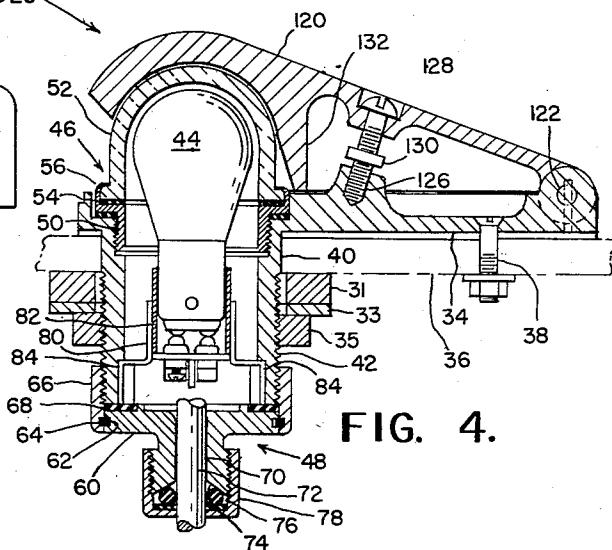


FIG. 4.

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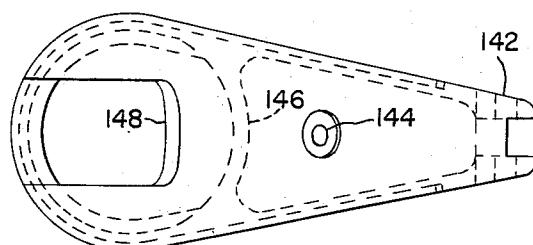


FIG. 10.

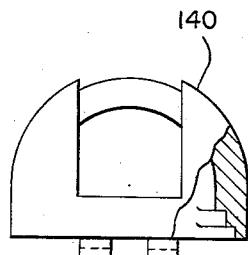


FIG. 9.

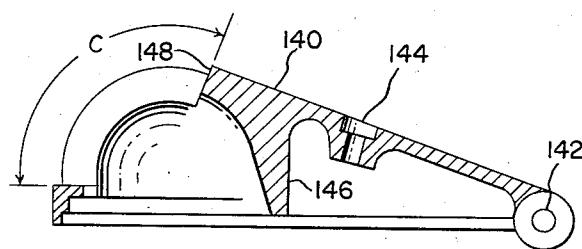


FIG. 8.

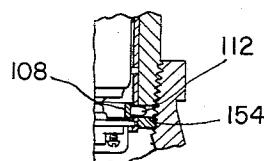


FIG. 11.

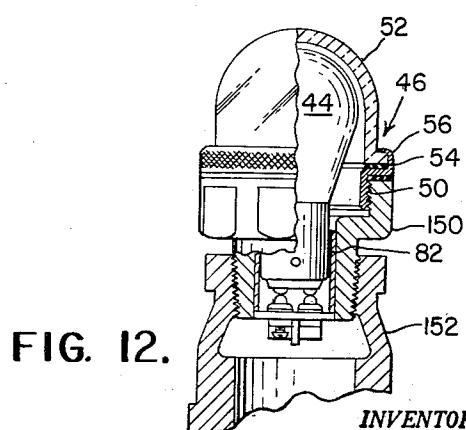


FIG. 12.

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## RUNNING LIGHT FOR SMALL BOATS

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2 Claims. (Cl. 240—7.5)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to running lights for small boats and more particularly to novel light fixtures wherein lamps can be changed in a simple and expeditious manner.

The prior art discloses lamp fixtures for small boats which provide for removal of burned-out lamps only from the outboard side of the fixture. The changing of lamps in such fixtures is a difficult task since the workman must stand on a small ledge and since the boat movements are erratic, it is necessary that he support himself by one hand while changing the lamp with the other. The situation is aggravated by the fact that the glass globe and globe retainer, gaskets and screws or bolts utilized in securing the parts in an integral unit, are all separate and are therefore free to fall upon being loosened. The globe retainer clamps the globe in position and globe breakage frequently results because of the pressure exerted on the base or the upper portion of the globe by metal parts. The lamp socket is an integral part of the fixture and defects occurring in the socket require replacement of the fixture, and further, because the structure is integrally formed, the lamp cannot be changed inboard of the fixture, as from within the cabin or hull of the boat.

The present invention eliminates the above described disadvantages and deficiencies by providing a waterproof and shockproof lamp fixture having the removable parts assembled into a single compact unit which can be inserted and removed from the fixture by a single operation. The improved device includes a detachably mounted lamp holder and the structure is arranged for lamp removal either inboard or outboard of the fixture. Objectionable metal to glass contacts have been removed and the inclusion of a new light directing deflector in the apparatus provides the necessary distribution of light relative to the boat. The fixture is adapted for mounting on a mast, cabin or hull of a boat requiring navigational lights.

It is therefore an object of the invention to provide an improved navigational light for use on small boats.

It is a further object of the invention to provide apparatus for simply and conveniently replacing burned-out lamps from either the inboard or outboard side of the light fixture.

Another object of the invention is the provision of a unitary globe holder comprising a plurality of normally separate parts for providing ease and safety in obtaining access to the lamp in a light fixture.

A still further object of the invention is the provision of a watertight fitting for preventing entry of water into a light fixture.

Another object of the invention is the provision of a removable lamp holder adapted for properly aligning a lamp in a light fixture.

Still another object of the invention is the provision

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of new light directing deflectors for providing proper distribution of light relative to a boat.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Figure 1 is a view in elevation showing the relative disposition of navigational lights on a small boat;

10 Figure 2 is a plan view of the boat shown in Figure 1 showing the arc of light made by each of the navigational lights;

Figure 3 is a front view showing a bow lamp adapted for positioning on the forward end of the boat;

Figure 4 is a cross-sectional view partly in elevation taken on lines 4—4 of Figure 3;

Figure 5 is a plan view of the light directing deflector or shield used for directing the light outwardly from the fixture shown in Figure 4;

20 Figure 6 is a plan view of a holder or socket for holding the lamp shown in Figure 4;

Figure 7 is a sectional view partly in elevation and taken on lines 7—7 of Figure 6 showing details of the lamp socket;

25 Figure 8 is a plan view, partly in section, of a starboard light shield or deflector adapted for use with the lamp fixture shown in Figure 4;

Figure 9 is a front view of the light deflector or shield shown in Figure 8;

30 Figure 10 is a side view of the light reflecting shield shown in Figure 8;

Figure 11 is a socket locking arrangement for fixing the socket within the lamp housing in a predetermined position; and

35 Figure 12 is a view in elevation, partly in section, showing details of the masthead light used on the boat.

Referring to the drawings wherein the same characters designate like or corresponding parts throughout the several views, there is shown in Figures 1 and 2 a boat 20 having a hull 20 provided with a deck 36, a cabin 22 and a mast 24. Disposed on various parts of the boat, as clearly shown in Figures 1 and 2, are a plurality of navigational lights comprising a bow light 26, port and starboard running lights 28 and a masthead light 30. Each of the above mentioned lights are designed to emit an arc of light throughout a predetermined area and the distribution of the light is achieved by use of deflectors or shields placed thereon, as more fully described hereinafter. Such arcs are respectively designated A, B, and C for the various lights.

Referring now to Figures 3 through 7, there is shown a bow light 26 comprising a housing 34 adapted for attachment to the boat deck 36. The boat is appropriately apertured at 40 for receiving threaded cylindrical portion 42 of the housing 34 so that access may be had to the inner portion of member 42 from either inboard or outboard of the deck 36. The housing 34 is rigidly attached to the boat deck by means of a spacer 31, washer 33 and nut 35, and an aligning bolt and nut member 38 is provided for properly orienting the light fixture on deck 36. The housing portion 42 is of such size and shape as to conveniently receive a lamp 44 and is adapted to be closed at one end by means of a globe assembly 46 and at its other end by cap assembly 48.

65 The globe assembly consists of a compact assemblage of parts which is detachably fitted in watertight relationship with the outer end of housing 42. The assembly 46 comprises an externally threaded ring or globe holder 50 for supporting a transparent or translucent globe 52. A gasket 54 is positioned between globe 52 and globe holder 50 thereby forming a shockproof and waterproof unit, and the upper edges 56 of the globe holder are turned

or spun over the lower edges of the globe for permanently joining the parts in a single unit. Removal of the globe assembly is therefore achieved merely by unscrewing the complete unit from housing 34.

The cap assembly 48 comprises a tube 60 set flush with the inboard side of cylindrical member 42 and is provided with a groove 62 formed in the outer periphery of the tube for receiving retaining ring 64. An internally threaded retaining cap 66 engages the inner end of cylindrical member 42 for compressing gasket 68 between member 42 and tube 60 thereby forming a watertight fit. Tube 60 is additionally provided with a central bore 70 for receiving cable 72 carrying electrical conductors to the lamp assembly inside the housing. This end of tube 60 is also made waterproof by providing a beveled edge 74 which is contacted by O-ring 76. Cable cap 78 compresses the O-ring against beveled edge 74 and cable 72 thereby achieving a leakproof joint.

The retaining cap 66 is permanently attached to tube 60, after initial assembly, by means of the retaining ring 64. In order to achieve such structure, the retaining ring is initially placed and compressed in the groove 62 provided in tube 60 and the latter then moved into the open end of tube 60. When the mating grooves come into alignment with one another, the ring snaps into position and it is thereafter impossible to physically separate these two parts.

The principal advantage obtained by permanently assembling the parts in this manner is that a reliable watertight fit is simply obtained, tube 60 can be readily affixed to the housing by ring 66 without imparting a twisting action to the cable 72 and the lamp 44 is made accessible from a position inboard of the fixture.

A lamp assembly is provided for the fixture and comprises a lamp holder adapter 80 positioned within the housing for supporting and aligning a lamp holder 82. The adapter 80 is removably mounted within the housing by means of the tube 60. It is desirable to align the lamp holder adapter 80 in a predetermined position, as hereinafter described, and such position is achieved by providing oppositely disposed slots 84 on the inner walls of the housing. The adapter 80 is fitted within such slots thereby precluding subsequent rotary movement of the adapter.

Referring now to Figures 6 and 7 of the drawings, the lamp holder 82 shown therein comprises a holder shell 90 provided with a bayonet slot 92 and having an insulating terminal board 94 secured in the bottom end thereof. The terminal assembly mounted on the terminal board 94 comprises a pair of housing 96, each being provided with a terminal screw for receiving conductors for the lamp holder and being separated from one another by an insulating strip 100. In order to provide for differences in the size of contacts on the bottom of a lamp, each of the housings 96 are provided with a plunger 102 biased to an outward position by means of spring 104 positioned within the terminal housing. The housings within the holder are insulated from one another by means of O-type rubber rings 106. In order to prevent brittleness or crystallization of the material in the springs, the housings are designed in such manner as to have current flow from the terminal strip to the lamp by way of the material in the housing. In some installations of the invention, it is desirable to position the lamp filament in a plane as closely as possible to and in parallel with the light deflectors or shields for each of the lamps. In pursuance with this, the lamp socket or holder 82 is oriented in a particular position within the adapter 80 by a positioning pin or button fitted on the lamp holder. The structure comprises a latch spring 108 located within the housing and held therein by means of studs 110 welded or otherwise secured to the inner periphery of the lamp holder. Integrally formed on the spring is a spring latch button 112 extending through an opening in the holder shell 90 for engaging a like and similar open-

ing in the lamp holder adapter. When the lamp holder 82 is positioned within adapter 80, the button 112 engages the opening in the adapter and any rotary or axial movement therebetween is thereafter precluded. A snug fit between the lamp holder and adapter 80 is obtained by a bent out spring member 114 which frictionally engages the inner walls of the adapter.

It is necessary to provide each of the lamps on the boat with light deflectors or shields for radiating light outwardly through various arcs relative to the boat. The shield for the bow lamp shown in Figure 5 comprises a deflector or shield 120 pivotally mounted on the housing by means of a pin 122. A pair of wings 124 extend outwardly from the fixture for radiating light in an arc, as shown by A in Figure 2. The housing is threaded at 126 for receiving screw 128 which clamps the deflector in a fixed position on the housing and to prevent the deflector from being moved away from the lamp fixture when the boat is operating in rough weather. A nut 130 is permanently attached to screw 128 for preventing the screw from becoming separated from deflector 120 when the lamp is being replaced. The lamp fixtures of the prior art utilizing a shield of the general type disclosed herein provide for clamping the deflector in contact with the glass globe which is used for transmitting light into a predetermined arc relative to the ship. It is evident that the metal to glass contact frequently results in breakage to the glass globe, and in order to eliminate such breakage, applicants have provided a depending portion 132 on the bottom side of the deflector which contacts the main housing. The size of the depending portion 132 is such that it spaces the deflector from the globe when the deflector is placed in an operating position.

The light deflector or shield 140 shown in Figures 8, 9 and 10, is adapted for use on one of the side lights on the boat. This deflector includes an opening 142 for insertion of the pin whereby the deflector is pivotally mounted on the light fixture, and it also includes an opening 144 for reception of a screw which secures the deflector to the housing. Depending member 146 spaces deflector 140 from the glass globe which is used in radiating light. The reference character C shows the arc of light emitted by a lamp when this deflector is used on a side light. It will be noted that there is an absence of wings on the deflector. It has been found that a beveled portion 148 on deflector 140 adequately provides the proper distribution of light for the fixture.

The light fixture shown in Figures 11 and 12 is adapted for mounting on top of a mast and since the fixture requirements include distribution of light in a complete circle, a deflector is not included in the structure. The details of this lamp fixture are exactly the same as that shown and described in Figure 4; therefore, the same reference characters are used throughout in order to clearly show the corresponding parts. The only difference in the structure is that a coupling member 150 is interposed between the globe assembly 46 and the top of mast 152 for supporting the fixture in a proper position. Since it is not necessary to provide an adapter for the lamp holder 82, an aperture is appropriately supplied in the side of coupling 150, and the button 112 on spring 108 engages this aperture for holding the lamp holder in a fixed position within the lamp fixture.

It will be clear from the drawings and the above description that the parts of the lamp fixture disclosed herein are not susceptible of being lost since such parts are all assembled into a compact unit. The globe 52 and globe holder 50, for example, are assembled into a unitary structure and is removed by a single operation when a lamp is replaced from the exterior side of the fixture. Likewise, the cap assembly 48 is removable as a unit, thereby eliminating the possibility of twisting the conductors when the assembly is detached from the hous-

ing. It is evident that the lamp can be changed from either inside the cabin or from the outside depending on circumstances under which the lamp is replaced. Because of the liberal and proper use of gaskets, the fixture is made waterproof and shockproof and positively eliminates breakage to any of the glass parts.

It will be clear that in order to replace a lamp the only procedure necessary is that of releasing the screw 128 from the housing, moving deflector 120 away from the globe and unscrewing globe assembly 46 from the housing. Access can then be had to the burned out lamp within the socket. This operation is reversed when a new lamp is inserted. As aforementioned, in the event it is desired to change the lamp from inside of the cabin, the retaining ring 66 is backed off from the housing, tube 60 removed, and access is then had to the lamp from the inner portions of the boat. In the case of the masthead lamp shown in Figure 12, the lamp can only be replaced by removing globe assembly 46 positioned on the top of the mast.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A light fixture for use on small boats comprising, a housing adapted for mounting on a wall of said boat, said housing having a cylindrical portion thereof adapted to fit within an opening in said wall and having inboard and outboard portions extending beyond said wall, a lamp socket removably mounted in the inboard cylindrical portion of the housing and having a lamp removably mounted therein for removal therefrom from the outboard side of the housing, said socket and the inboard portion of the housing having means thereon interconnecting such members for free movement of the socket and lamp inboard of the housing while limiting outboard movement of the socket relative to the housing, a removable cover closing the inboard side of the housing and having a cable extending therethrough for providing a source of power to the lamp, said removable cover having a portion thereof engaging the socket for removably holding the socket within the inboard end of the housing, a lamp globe removably mounted on the outboard side of the housing in watertight relationship therewith, light deflector means pivotally attached to the outboard side of the housing and positioned adjacent the lamp globe for directing light in a predetermined arc outwardly from the boat, said light deflector means having at least a portion thereof positioned to shield the lamp globe, means removably connecting the light deflector to the housing in spaced relation to the lamp globe, said housing and said light deflector having interengaging means thereon for removably holding the shield portion of the deflector in spaced relation to the lamp

globe, the construction and arrangement of the housing, the deflector, the lamp socket and the removable cover being such that the lamp per se is removable from the outboard side of the fixture whereas the socket with the lamp attached thereto is removable as a unit from the inboard side of the fixture by selectively removing the globe or the cover.

2. A waterproof light fixture for use on small boats comprising, an open ended cylindrical housing adapted for mounting on the boat in a manner that opposite ends of the housing are accessible from inboard and outboard, respectively, of the boat, a lamp assembly including a lamp and a lamp holder removably supported in the housing for movement into and out of the housing from the inboard side thereof, said lamp and said lamp holder having interconnecting means thereon removably holding the lamp within the holder in a manner as to render the lamp removable from outboard the housing, a removable cover closing the inboard end of the housing and removably holding the lamp holder within such end of the housing, means on said cover forming a watertight fit with an electrical cable adapted to pass therethrough for energizing the lamp, a globe assembly comprising a permanently joined globe and globe holder removably fitted in watertight relationship within the outboard end of the housing, a light deflector having an open side for radiating light from the globe, said deflector being pivotally attached to the outboard end of the housing and having a first portion thereof of the same general contour as the globe for shielding the globe, and a second portion thereof radiating from the globe and spaced therefrom in a manner as to distribute light radiated from the globe assembly into a predetermined area relative to the boat, and means on the light deflector coacting with the outboard end of the housing for maintaining the shield portion of the deflector in predetermined spaced relation to the globe assembly, said light deflector being pivotally attached to the outboard side of the housing in a manner as to render the globe assembly and the lamp accessible for removal from the outboard side of the housing.

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