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Chastain

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[54] **STABILIZED LAMP**

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[21] Appl. No.: **394,840**

[52] **U.S. Cl.** ..... **240/62.2,** 240/7.1 LJ, 240/7.5, 240/41.6, 240/73 JC

[51] **Int. Cl.** **F21v 21/20**

[58] **Field of Search** ..... 240/7.1 LJ, 62.2, 62 R, 240/62 B, 69, 41.6, 73 JC, 73 QD, 7.5, 41.62, 73 R, 2 S

[56] **References Cited**

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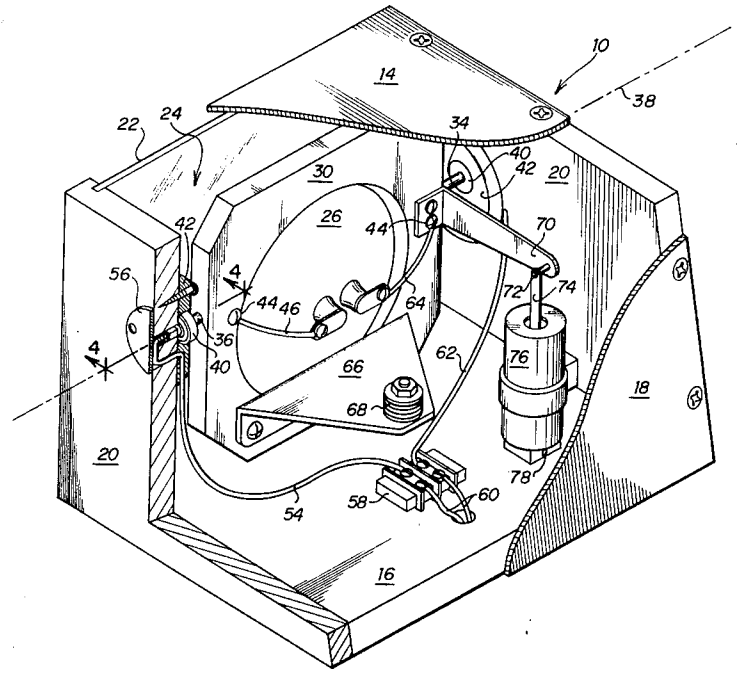
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Assistant Examiner—E. M. O'Connor
Attorney, Agent, or Firm—Richards, Harris & Medlock

[57] **ABSTRACT**

A vehicle mounted stabilized lamp assembly having a housing enclosing a lamp and a supporting frame. The frame is pivotally mounted in the housing on horizontal shafts. Electrical power is supplied to the lamp through tapered brushes contacting the shafts. A dampener is attached to the frame to resist undesirable oscillations. A plurality of weights can be attached to the frame to change the center of gravity and adjust the attitude of the lamp.

7 Claims, 6 Drawing Figures



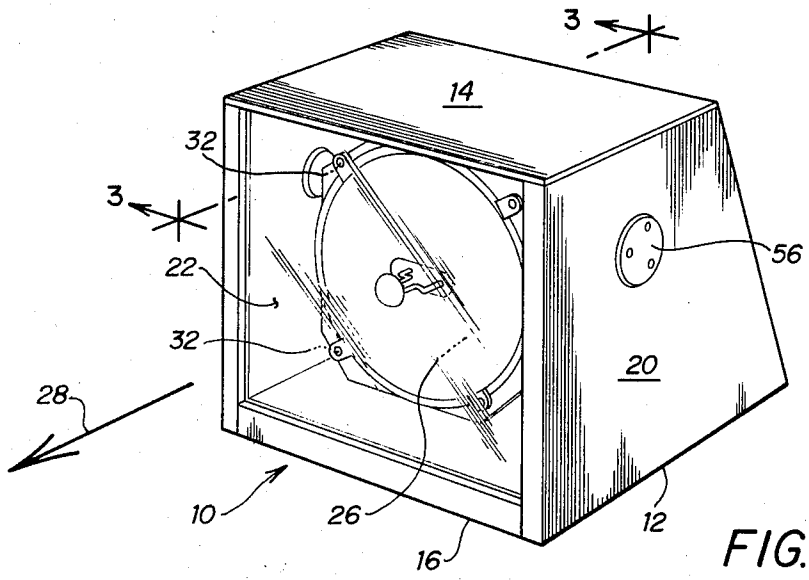

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FIG. 1

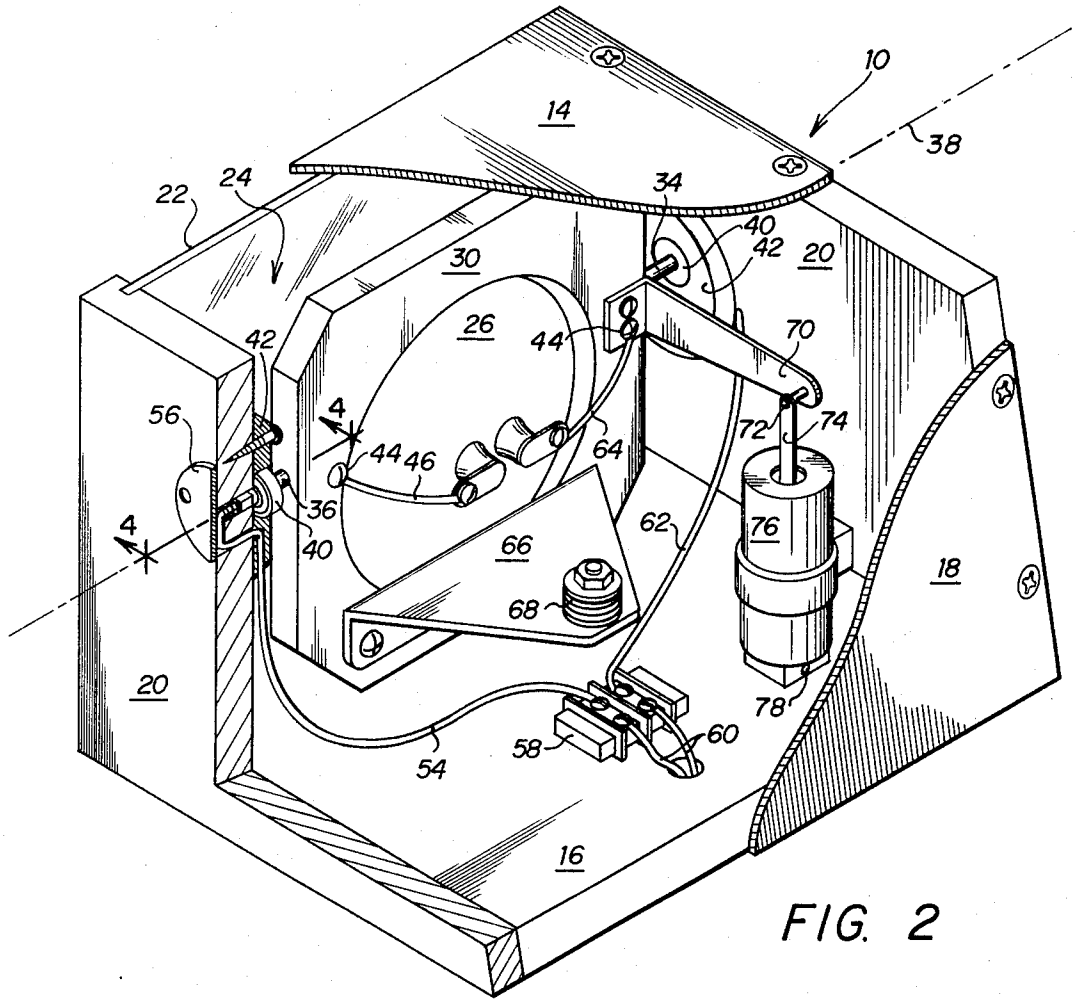

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FIG. 2

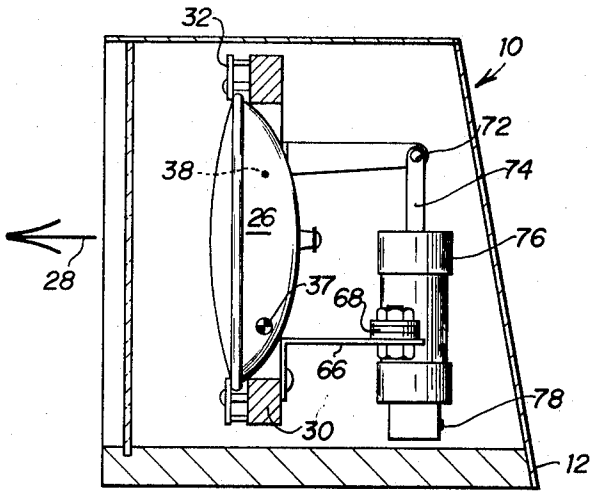


FIG. 3

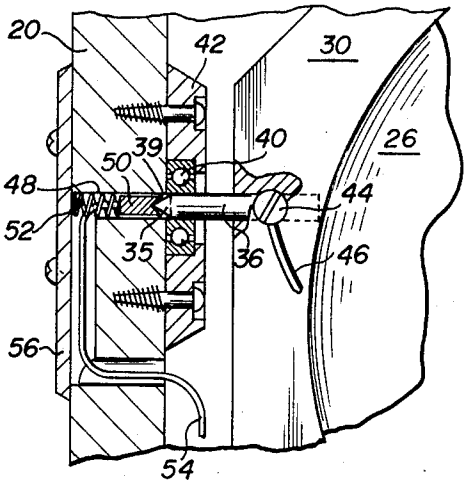


FIG. 4

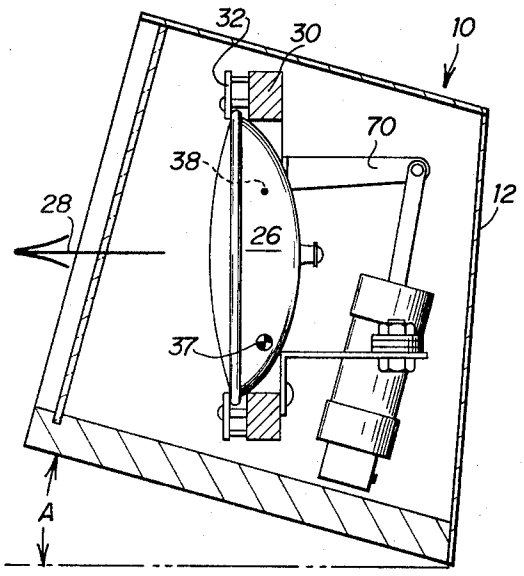


FIG. 5

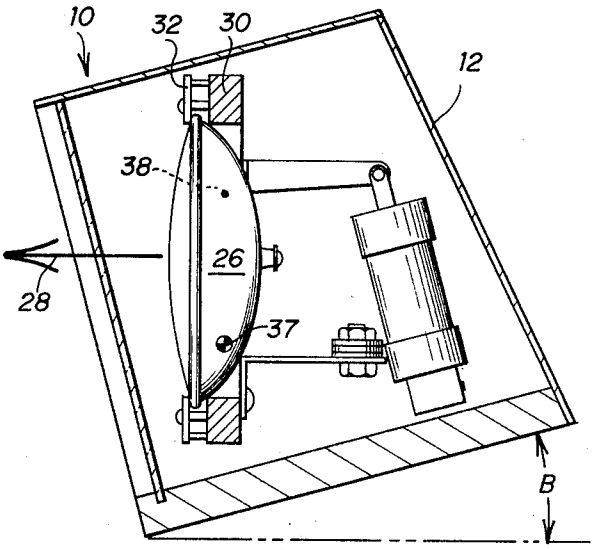


FIG. 6

STABILIZED LAMP

The present invention relates to improvements in directional beam lamps. More particularly, the present invention relates to an improved directional beam lamp and mounting for attachment to a vehicle to maintain the attitude of the lamp fixed during vehicle movement.

In the provision of a directional beam lamp on a vehicle, it is of particular importance to mount the lamp such that it is aimed or directed to illuminate the path in front of the vehicle to reduce the risk of collision with objects in the path. This is of particular importance in the operation of vehicles such as boats in that floating objects, stumps, and other boats create navigational hazards causing damage to the boat and injury to its occupants.

To reduce the navigational dangers, it is desirable to mount a spotlight in a position to illuminate the water in front of the boat during travel. Although such a lamp system adequately performs when a boat is traveling at a constant speed, undesirable results are produced when the boat is operated in rough water or its speed is changed. In these situations the attitude of the boat changes during operation. If the lamp is fixed on the boat, the lamp will be aimed in various directions unless the lamp is continuously adjusted. In addition, during rough water, the boat tends to rock and pitch, causing any lamp fixed to the boat to accordingly rock and pitch, thus minimizing its usefulness.

To solve this problem, various configurations of gravity sensitive lamps have been provided. These lamps remain in a set orientation without regard to changes in the attitude of the boat. These lamps and their frames are pivotally mounted and suitably counterbalanced to cause the lamp to maintain a desired orientation. An example is disclosed in the U.S. Pat. to Taylor, No. 2.921,182, issued Jan. 12, 1960. Nevertheless, other problems not solved by conventional lamps are presented in the provision of lamps on moving vehicles.

Therefore, a need has arisen for an improved stabilized lamp assembly for use on vehicles. In accordance with this need, the present invention provides a stabilized boat lamp having a directional light source. The source is enclosed in a frame and the frame is supported by shafts in a housing to rotate about a horizontal axis extending perpendicular to the normal direction of travel of the vehicle. The frame is provided with a plurality of removable weights for changing the position of the center of gravity of the frame. A dampener is attached between the frame and housing to prevent unnecessary oscillations thereof. Power is supplied to the lamp through the shafts.

The objects and advantages of the improved lamp of the present invention and its particular features will be more clearly explained in the following Detailed Description by reference to the accompanying Drawings in which:

FIG. **1** is a front perspective view of the improved lamp stabilizing apparatus of the present invention;

FIG. **2** is an enlarged perspective view of the rear of the improved lamp stabilizer apparatus illustrated in FIG. **1** with a portion of the housing removed illustrating the interior thereof;

FIG. **3** is a section of the device taken on line **3—3** of FIG. **1** looking in the direction of the arrows;

FIG. **4** is a section of the device taken on line **4—4** of FIG. **2** looking in the direction of the arrows; and

FIGS. **5** and **6** are sectional views similar to FIG. **3** illustrating an apparatus in various attitudes during use.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is illustrated in FIG. **1** a lamp stabilizer assembly, which for purposes of description is identified by reference numeral **10.** The assembly **10** has a focused or directional beam lamp therein and provisions for mounting on a vehicle, such as a boat, with the lamp beam set in a desired horizontal direction to illuminate the water in front of the boat without regard to the movement of the boat.

As can be seen in FIGS. **1** and **2,** the assembly **10** has a housing **12** with a top **14,** bottom **16,** rear **18** and two side **20** walls of opaque material. These walls cooperate with a front wall **22** of transparent material to define an enclosed chamber **24.** This housing can be fixed to the vehicle to allow the lamp to be directed toward the front.

Within the chamber **24,** a sealed beam lamp **26** is mounted to transmit light energy through the front wall **22** in a direction indicated by arrow **28.** The lamp **26** is attached to a frame **30** by means of a plurality of screw clamp assemblies **32.** These assemblies **32** allow removal of the lamp **26** for replacement as desired.

Attached to the frame **30** are right hand and left hand shafts **34** and **36,** respectively, extending from opposite sides of the frame in a direction along an axis **38.** The axis **38** extends through the housing **12** in a horizontal direction transverse to the direction of travel of the vehicle.

The shafts **34** and **36** are suitably mounted in a pair of bearings **40** mounted in the side walls **20** to allow rotation of the frame **30** and lamp **26** about the axis **38.** The shafts **34** and **36** are attached to the frame **30** at a point horizontally above the center of gravity **37** of the frame so that the frame will tend to remain in one orientation with the center of gravity below axis **38.**

The bearings **40** are held in position on the side walls **20** by means of bearing plates **42** which in turn are removably attached to the walls **20** by means of fasteners.

In FIG. **4,** the left hand shaft **36** is illustrated inserted into a bore in the frame **30** and is held in position by frictional contact between the shaft and a transversely extending set screw **44.** The screw **44** provides a second function in addition to holding the shaft **36** in place in that it provides a means for connecting a conductor **46** to the shaft **36.** In addition, the shaft **36** extends through one bearing **40** and into a bore **48** located axially behind the bearing.

A movable brush element **50** is resiliently urged by means of a spring **52** in a direction to contact the end of the shaft **36.** The end of shaft **36** has a tapered portion **35** aligned to fit into a countersunk portion **39** in the end of brush **50.** The angle of the countersunk portion **39** is greater than the angle of the portion **35,** thus essentially providing point contact between the brush and the shaft. This point contact reduces friction forces therebetween to allow free rotational movement of the frame **30.** In addition, the portion **39** assists in holding its associated brush **50** in contact with the shaft **36.** A small cover **56** is attached by means of fasteners to cover the outer end of bore **48.**

Electrical power is supplied to the brush **50** from a power cable **60** through a terminal block **58** and a conductor **54.** The brush **50** contacts and conducts the power to the shaft **36** and the conductor **46.** The conductor **46** is connected to one terminal of the lamp **26** to supply electrical power thereto.

Although not illustrated, the right hand shaft **34** and its mounting are identical to that of the left hand shaft **36,** with the right hand shaft conducting electrical power from conductor **62** to conductor **64.** Conductor **62** is in turn connected to a power cable **60** at the terminal block **58** while the conductor **64** is connected to one terminal of the lamp **26.** In this manner, electrical power is supplied to the lamp **26** and free rotation of the lamp about shafts **34** and **36** is provided.

A counterbalance bracket **66** is attached to the rear of the frame **30** by a suitable fastener to extend transverse to the frame. A weight **68** in the form of a plurality of washers with a nut and bolt assembly is illustrated affixed to the extending end of the bracket **66.** The size of the weight **68** can be changed by adding to or removing washers from the bracket **66** as desired to alter the position of the center of gravity **37** with respect to the lamp and cause the lamp to be aimed in a different direction depending upon the amount of weight placed on the bracket.

In addition, an arm **70** is attached to the rear of the frame **30** above the bracket **66** to extend in the same direction. The arm **70** is pivotally attached at **72** to a piston rod **74** of a dampener assembly **76.** The dampener assembly **76** has an adjustment **78** to vary the dampener forces applied thereby. In this manner, as the frame **20** rotates about the axis **38,** the dampener **76** will retard motion and prevent swinging or the like during use.

Turning now in particular to FIGS. **3, 5** and **6,** the operation of the assembly **10** will be described. In FIG. **3,** the apparatus is shown with the lamp directed along an arrow **28** and the housing **12** held in a generally horizontal position.

If this housing **12** were attached to a boat, the boat would tend to tilt during acceleration. This tilting is illustrated in FIG. **5** and in this position, the housing **12** is tilted at an angle A. Due to the fact that the center of gravity **37** is positioned below the axis **38,** the frame and lamp assembly will rotate in a counterclockwise direction with respect to the housing to position the lamp in an attitude aimed in the direction of arrow **28.**

In a similar manner, when the boat is decelerated or tilted in a forward direction in rough water, as indicated by angle B in FIG. **6,** the housing **12** will likewise be rotated. The lamp will rotate in a clockwise direction about axis **38** with respect to the housing to the position illustrated in FIG. **6** with the lamp remaining in an attitude aimed in the direction of the arrow **28.** In this manner, the lamp will regain the same attitude during travel of the boat over rough seas or during acceleration or deceleration thereof.

Having thus described the invention, it is to be understood, of course, that other embodiments and alterations may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A self-adjusting lamp for mounting on a vehicle comprising a housing for attachment to said vehicle, a focused lamp means mounted in said housing to rotate about a horizontally extending axis, said lamp means mounted with its center of gravity located below said axis whereby said lamp means remains in a preselected attitude with respect to gravitational force as said vehicle moves; and means for varying the position of said center of gravity on said lamp means to alter the preselected attitude of said lamp means.

2. A device as defined in claim **1** where said position varying means comprises a bracket extending horizontally from said lamp means, a plurality of weights, means on the extending end of said bracket for supporting the desired number of said weights.

3. A device as defined in claim **1** additionally comprising a pair of shafts and bearings rotatably supporting said lamp means in said housing, separate brush means resiliently urged in a direction to contact each of said shafts in sliding contact whereby electrical power is supplied to said movable lamp means through said shafts, each of said shafts having a conical portion on one end, and each of said brushes having a countersunk portion which engages a conical portion on one of said shafts whereby said brushes make essentially point contact with said shafts and said brushes are retained in position on said shafts.

4. A device as defined in claim **3** wherein the apex angle of said conical portion is smaller than the apex angle of said countersunk portion.

5. A device as defined in claim **1** additionally comprising a dampener means operatively associated with said lamp means whereby swinging motion of said lamp means is resisted.

6. A device as defined in claim **5** wherein said dampener means is adjustable to vary the dampener forces applied to said lamp means.

7. A self-adjusting lamp for mounting on a vessel comprising a housing mounted on said vessel, said housing defining a sealed chamber, a transparent portion on said housing, a selectively removable wall for allowing access to said chamber, a frame mounted in said chamber, a focused lamp fixed to said frame to direct the lamp beam through said transparent portion, a pair of coaxial shafts extending from opposite sides of said frame and rotatably attached to said housing whereby said frame rotates about a horizontally extending axis, said shafts being positioned so that the center of gravity of said lamp and frame assembly is below the axis of rotation of said shafts whereby said lamp and frame assembly rotates about said axis as said vessel moves and remains in a preselected attitude with respect to the direction of gravitational force, means on said frame for varying the position of said center of gravity of said lamp and frame assembly to vary the attitude thereof, a dampener means connected to said frame whereby swinging motion of said frame is resisted, and separate brush means resiliently urged in a direction to contact each of said shafts whereby electrical power is supplied to said movable lamp means through said shafts, each of said shafts having a conical portion on one end, and each of said brushes having a countersunk portion engaging said conical portion, the apex angle of said conical portion is smaller than the apex angle of said countersunk portion.

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