

Nov. 9, 1965

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3,217,291

ANCHOR DRIFT ALARM

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2 Sheets-Sheet 1

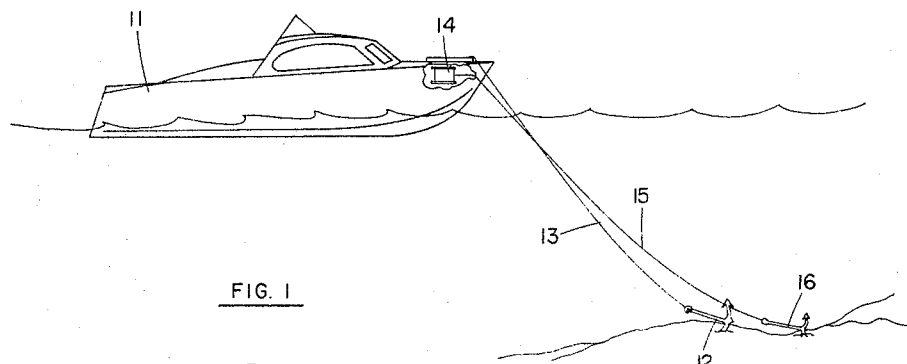


FIG. 1

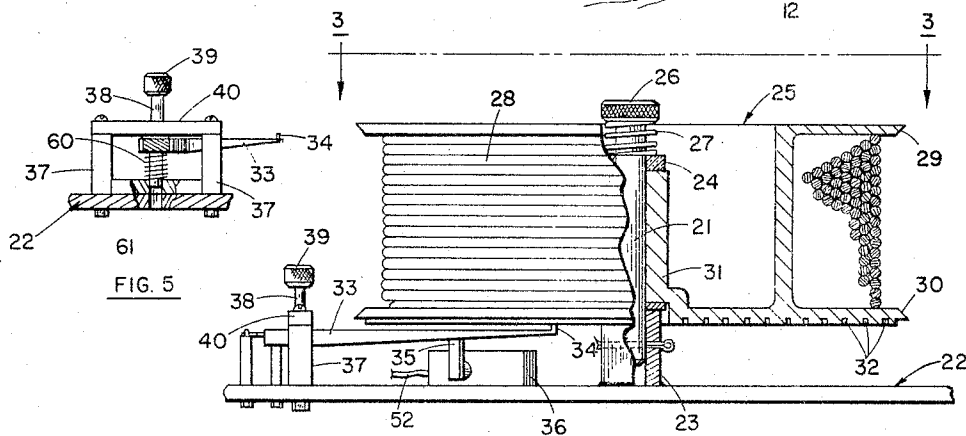


FIG. 2

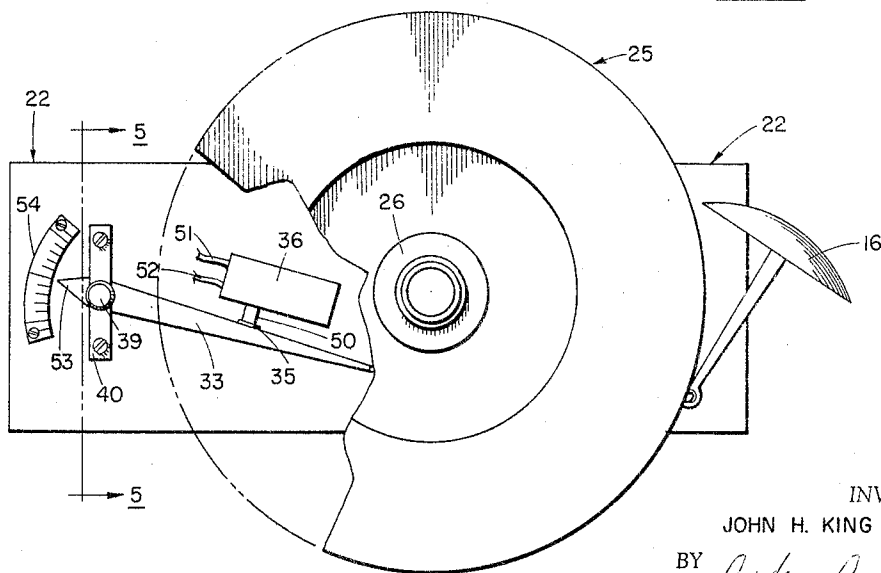


FIG. 3

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2 Sheets-Sheet 2

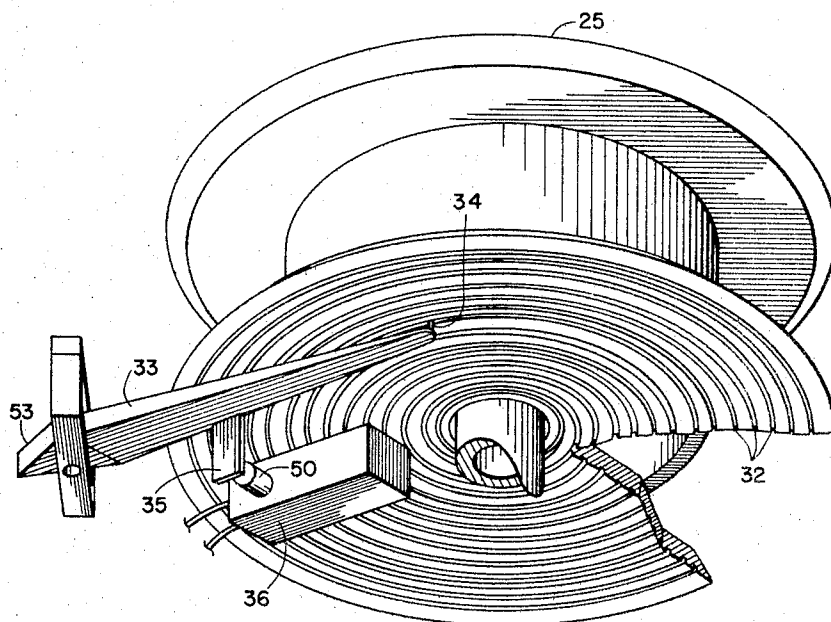


FIG. 4

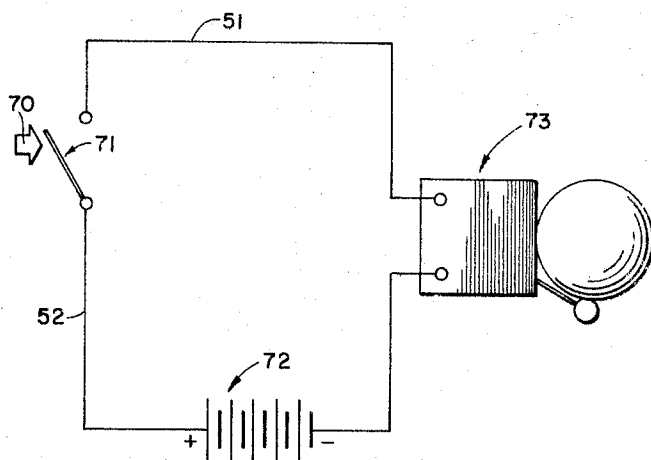


FIG. 6

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ANCHOR DRIFT ALARM

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4 Claims. (Cl. 340—29)

This invention relates to a device which detects unusual movement of a ship or other vessel at anchor. More particularly this invention is concerned with an automatic anchor alarm device which indicates excessive movement of a vessel from a fixed anchor position in any direction.

The device of this invention protects vessels from drifting off its initial anchor position due to dragging the anchor along the bottom, parting or breaking the anchor line, or improper fastening of the anchor to the vessel. The device also signals excessive movement of a vessel due to lifting of the main anchor caused by a rising tide for which insufficient anchor line slack has been provided. The device has the advantage of being adjustable to pre-set the amount of drift or movement allowable before signaling excessive movement.

In the drawings accompanying this specification,

FIGURE 1 is a pictorial view of a boat employing the anchor device of this invention, a portion of the vessel being cut away to show location of a portion of the device;

FIGURE 2 is a cross section of the reel and actuating mechanism used in this alarm device;

FIGURE 3 is a cut away top view along the line 3—3 in FIGURE 2;

FIGURE 4 is a bottom view of the novel mechanism showing the alarm switch and tracking device;

FIGURE 5 is a cross section along the line 5—5 in FIGURE 2, and

FIGURE 6 is a schematic diagram of an alarm circuit which may be employed.

Generally, the automatic drift alarm device of this invention is employed with a vessel having a main, fixed anchor and anchor line and comprises an alarm anchor line having a weighted anchor attached thereto, reel means for holding and dispensing the anchor line in response to movement of the vessel with respect to its initial anchored position, tracking means for tracking the rotary movement of the reel while dispensing line, and alarm actuating means responsive to the tracking means upon movement of the tracking means through a predetermined distance.

Referring now to the drawings, FIG. 1 shows generally a vessel 11 anchored by a main weighted anchor 12 and its associated anchor line 13 which is held at the forward end of the vessel. The cut away portion of the drawing shows the alarm reel 14 for playing out and storing the alarm anchor line 15 and its associated anchor 16 which is generally smaller and lighter than main anchor 12. Any movement of the vessel off the anchor point (which causes dragging of anchor 12) will cause the alarm anchor line to play out from the reel 14 and, after a specified, pre-selected amount of line 15 has spun off the reel 14, an alarm actuating mechanism will give notice of the movement in a manner to be fully described below.

The alarm reel is shown in detail cross section in FIG. 2, and comprises a central stationary shaft 21 mounted in any convenient manner, such as to the deck 22, of the vessel by means of the reel retaining flange 23 and, as shown in FIG. 2, by a pin through the flange 23 and shaft 21. To prevent the reel from playing out line when the vessel is stationary and facilitate lowering and pulling the line in, the device is fitted with a friction disc 24 so that the force required to rotate reel 25 may be varied by turning the knob 26 on shaft 21 against the spring 27. The reel 25 supports and holds a coiled

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line 28, which, when lowered with a small anchor, acts as the alarm anchor line (15 in FIG. 1). In the illustrated embodiment, the reel 25 has top and bottom retaining plates 29 and 30 for holding the alarm line 28, a hollow circular member 31 which can rotate around the shaft 21 and a set of concentric helical grooves 32 in the bottom plate 30, which aid in tracking the movement of the line 28.

Operatively associated with grooves 32, is a tracking arm 33, which has a tracking pin 34 at one end. The pin 34 fits into the grooves 32 and the position of the pin 34 is an indication of the rotation of reel 25, and thus the extended length of the alarm line 28. The tracking arm 33 is fitted with a downwardly extending switch actuating member 35 which contacts switch assembly 36 when the tracking arm 33 moves toward the center of reel 25.

The tracking arm 33 pivots around a fulcrum shaft 38 as it moves through the grooves 32. The fulcrum shaft 38 is mounted in a support member 40 which is in turn secured to the deck 22 by means of mounting posts 37. For convenience, the shaft 38 is fitted with an adjusting knob 39 to facilitate initial setting of the tracking arm 33. As shown in FIG. 5, the shaft 38 is held in the deck 22 through a hole 61 and the tracking arm 33 is held in position against the support member 40 by means of spring 60. The arrangement of mounting posts 37 is also shown in FIG. 5.

As shown in FIGURE 3, the end of the tracking arm 33 which is attached to the fulcrum shaft 38 (shown in FIG. 3 by setting knob 39) forms an indicator pointer 53 which is adjacent an indicator plate 54. FIGURE 3 also shows the relationship between the tracking arm 33, actuating member 35 switch 36 and switch plunger 50. Lead wires 51 and 52 from the switch 36 are also indicated in FIG. 3.

In FIG. 6 is shown electrical circuitry which will suffice to give an alarm signal when the switch 36 (in FIGS. 1, 3 and 4) is actuated by tracking arm 33 and actuating member 35. Switch plunger 50 (shown by the arrow 70 in FIG. 6) closes the contact 71 thus putting electrical current through the wires 51 and 52 from a power source (shown as battery 72) thus actuating the alarm device (shown as a bell 73). Other electrical power sources may be employed, as may other alarm devices such as a signal light or radio transmitter under appropriate circumstances.

In operation of the device, when it is desired to anchor the vessel 11, the main anchor 12 and alarm anchor 16 are lowered, preferably while the setting knob 39 is depressed so that the tracking pin 34 is disengaged from the grooves 32. To facilitate lowering the alarm anchor, knob 26 may be raised to release tension from spring 27 and allow the reel 25 to move freely. When both anchors are in place, and with the setting knob 39 depressed, the tracking arm 33 is moved to the desired position, as indicated by indicator pointer 53 and indicator plate 54 and engaged in the grooves 32 by the tracking pin 34 by releasing the setting knob 39. Knob 26 is adjusted to place sufficient tension on the reel 25 so that additional line 28 will not play out without movement of the boat. Any subsequent movement of the vessel 11 which moves the main anchor 12 from its original position will cause the reel 25 to play out additional line 28 and will move the tracking arm 33 inwardly toward switch 36. In the event the vessel "drags" the main anchor 12 a distance corresponding to the linear distance from the pre-set point of tracking pin 34 in groove 32 to point where the actuating member 35 depresses switch plunger 50, the alarm will actuate and signal anyone in attendance of the boat that corrective measures must be taken.

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To prevent damage to the tracking arm 33 and tracking pin 34, the innermost and outermost portion of grooves 32 on the bottom retaining plate 30 are made continuous so that the reel 25 may continue to rotate in either direction and retain the pin 34.

In view of the foregoing disclosures, variations and modifications thereof will be apparent to one skilled in the art, and it is intended to include within the invention all such variations and modifications except as do not come within the scope of the appended claims.

I claim:

1. A drift alarm device for vessels comprising an anchor line having a weighted anchor attached thereto, reel means for holding and dispensing said line in response to linear movement of said vessel with respect to its initial position, tracking means for tracking the rotary movement of said reel while dispensing said line, and alarm actuating means responsive to said tracking means upon movement through a predetermined distance of said tracking means.

2. A drift alarm device for vessels having a fixed weighted anchor, said device comprising an alarm anchor line having a second weighted anchor attached thereto, holding and dispensing means for said alarm anchor line in response to movement of said fixed anchor with respect to its initial position, tracking means for tracking the movement of said holding and dispensing means while dispensing said line, alarm means responsive to said tracking means so as to operate said alarm upon movement of said tracking means through a predetermined distance.

3. A drift alarm device for vessels comprising an anchor line having a weighted anchor attached thereto, reel means for holding and dispensing said line in response to linear movement of said vessel with respect

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to its initial position, tracking means for tracking the rotary movement of said reel while dispensing said line, alarm means and alarm actuating means operatively associated with said tracking means so as to operate said actuating means and said alarm means upon movement through a predetermined distance of said tracking means.

4. A drift alarm device for vessels having a fixed weighted anchor, said device comprising an alarm anchor line having a second weighted anchor attached thereto, a reel for holding and dispensing said alarm anchor line in response to movement of said fixed anchor with respect to its initial position, said reel comprising top and bottom retaining plates, one of said plates having concentric helical grooves, tracking means associated with said grooves for tracking the rotary movement of said reel while dispensing said line, electrical alarm means responsive to said tracking means so as to operate said alarm upon movement through a pre-determined distance of said tracking means.

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NEIL C. READ, *Primary Examiner.*