March 29, 1932. G. HOFFMEIER 1,851,836

BELL BUOY

Filed Sept. 11, 1931 2 Sheets-Sheet 1

Fig. 1.

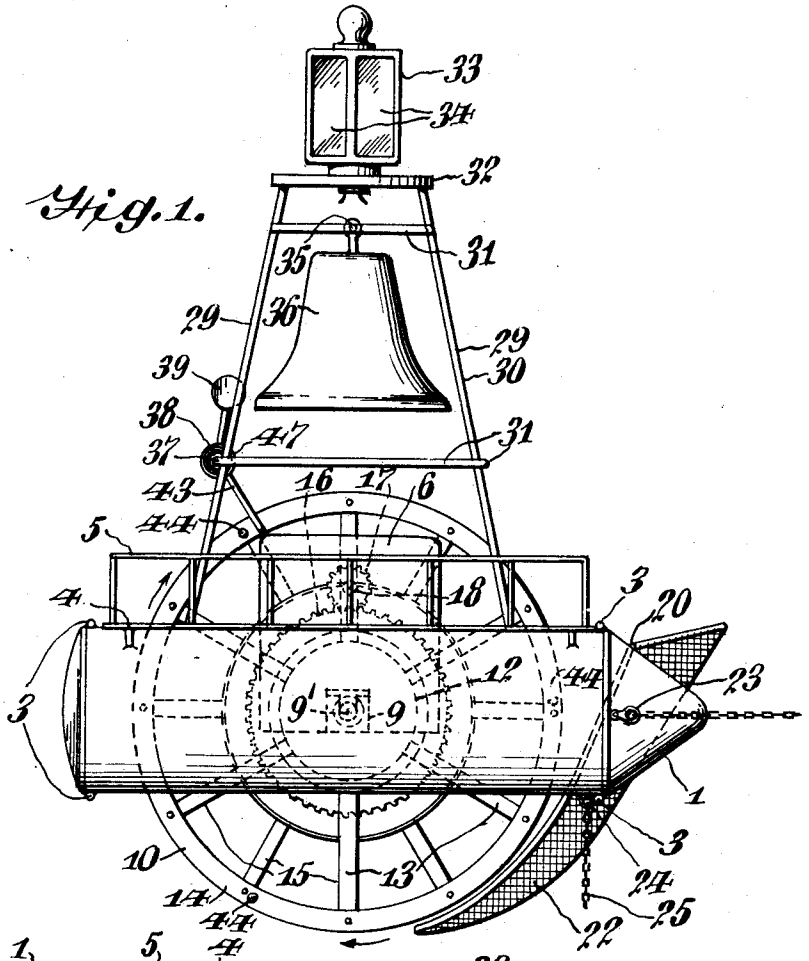

Fig. 2.

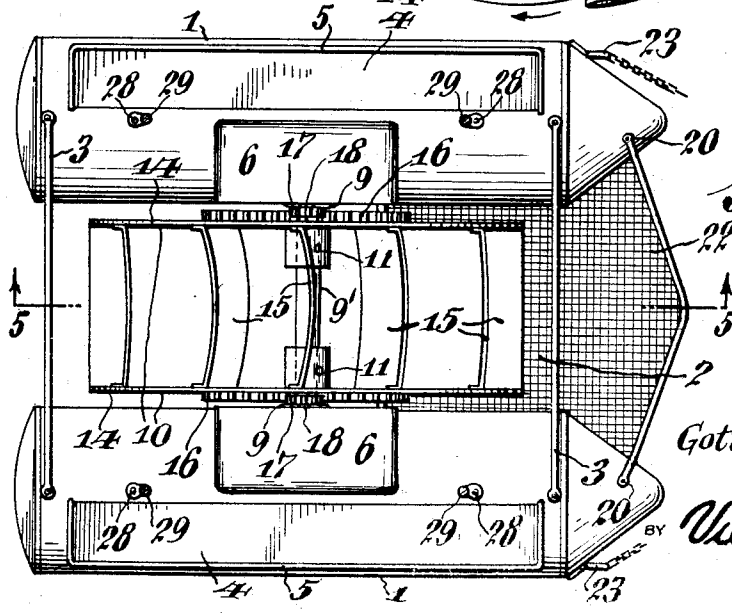

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Fig. 4.

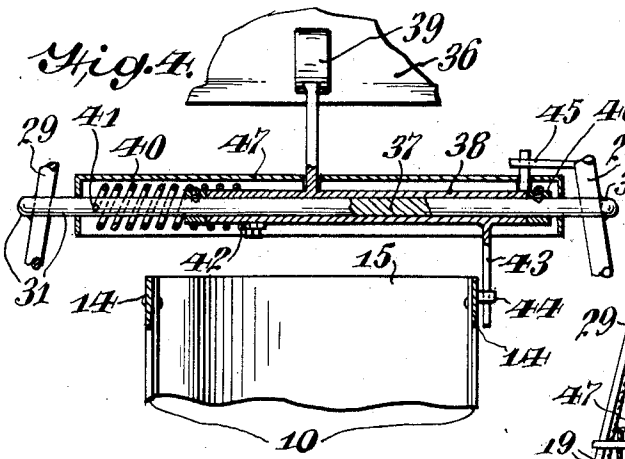


Fig. 3.

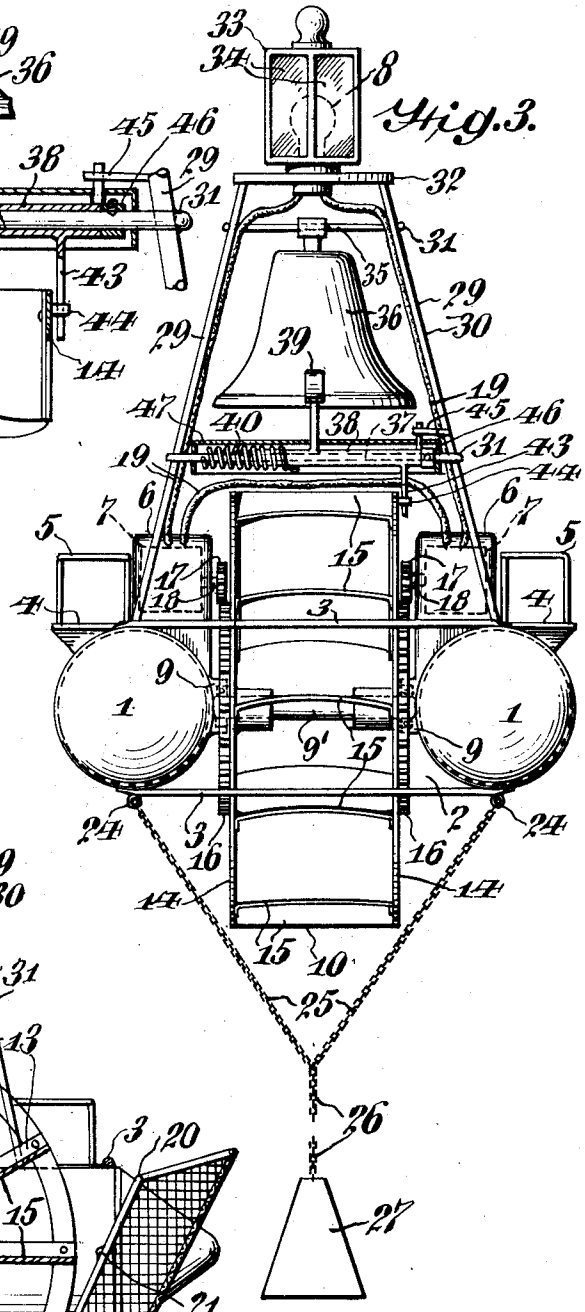
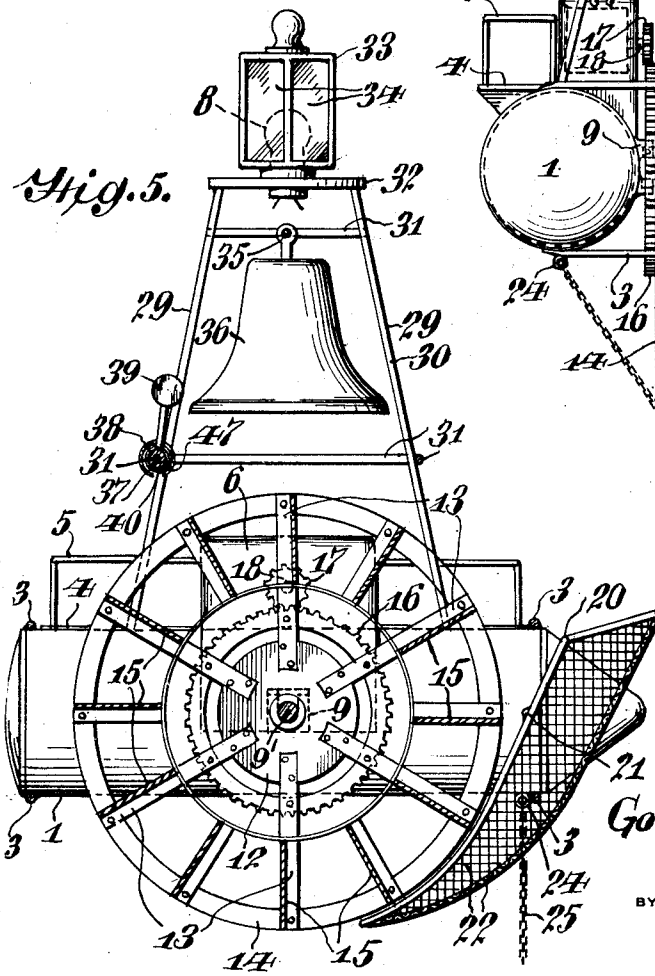


Fig. 5.



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Patented Mar. 29, 1932 1,851,836

UNITED STATES PATENT OFFICE

GOTTLIEB HOFFMEIER, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-HALF TO CAPTAIN CHARLES LUDLAM, OF PENNSGROVE, NEW JERSEY, AND EARL A. LUDLAM, OF BELLEFONTE, DELAWARE

BELL BUOY

Application filed September 11, 1931. Serial No. 562,343.

This invention relates to an improved bell buoy, adapted for use in tide water, mid stream, particularly in foggy weather, the aim being to give warning as to danger to vessels or boats.

In the present invention the transmission of a warning signal may be accomplished by light from an electric lamp or by sound from a bell, or from both.

It is the purpose of the present invention to improve and render more practical the construction and operation of the bell buoy, set forth, illustrated and claimed in the U. S. Letters Patent to Gottlieb Hoffmeier, issued March 3, 1931, Patent Number 1,795,255.

In this patent the warning signal is transmitted by a light derived from acetylene or other gas, whereas in the present invention it is the aim to utilize electrical source for generating a warning signal light.

Also in said patent above identified the air-tight float (which is cylindrical) is supported in an upright position by means of a balancing depending gravity member, whereas it is the aim in the present invention to utilize air-tight floating pontoons, which are so spaced apart relative to each other as to provide a sluice-way or channel for the passage of the water, in order to impart motion to the paddle wheel, there being a suitable mesh work guard at the forward portion of the sluice-way connected to the pontoons to prevent trash and foreign matter from passing therethrough and becoming entangled with the wheel.

Another purpose is to provide, in a bell buoy means such as motor generators mounted in containers and operated through the medium of the paddle wheel for generating electrical current for lighting a warning signal lamp mounted upon a frame supported upon the pontoons.

A further purpose is to provide gear connections between the paddle wheel and the motor generators, so as to impart movement thereto, the construction and arrangement of said gear connections being such that will transmit considerable power and speed to the motor generators, sufficient to generate electrical energy substantially for a long period.

A still further purpose is to provide an audible warning signal such as a bell, in combination with a clapper operated by the paddle wheel, for sounding the bell at intervals, thereby transmitting a warning signal to vessels or boats as to danger.

A still further purpose is to provide an improved mounting for the clapper, including means such as will guard the clapper mechanism against weather conditions, said clapper mechanism also including tensioning means for returning the clapper to its initial position, subsequently to being actuated by the paddle wheel.

It is to be understood that the particulars herein given are in no way limitative, and that while still keeping within the scope of the invention, any desired modification of details and proportions may be made in the construction of the appliance according to circumstances.

The invention comprises further features and combination of parts to be hereinafter set forth, shown in the drawings and claimed.

In the drawings:—

Figure 1 is a view in side elevation of the improved bell buoy constructed in accordance with the invention.

Figure 2 is a plan view.

Figure 3 is a view in rear elevation more clearly showing the two pontoons, as well as illustrating the means for mounting of the bell clapper, said means to be actuated by the paddle wheel.

Figure 4 is an enlarged sectional view through the mounting for the bell clapper.

Figure 5 is a sectional view on line 5—5 of Figure 2.

Referring to the drawings 1 identifies two pontoons which may be any length or of any diameter and of any shape or contour, preferably as illustrated and may be constructed of any suitable metal. The pontoons are arranged in spaced relation, thereby causing to be formed a sluice-way 2. The pontoons are held relatively spaced by means of the rods or braces 3, and supported on the pontoons are platforms 4 having railings 5.

Also mounted on the pontoons are housings or containers 6 for the reception of motor generators 7 for developing electrical current or energy, for furnishing power to a warning signal lamp 8. Suitable bearings 9 are carried by the sides of the housings or containers 6 for the support of a shaft 9, on which a paddle wheel 10 is fixed at 11 to rotate with the shaft. This paddle wheel comprises central circular plates 12 provided with radial spokes 13, which are connected to the large rings 14. Connecting certain of the spokes 13 and also arranged between the spokes and carried by the central circular plates 12 and the rings 14 are paddles 15, with which the water passing through the sluice-way impinges for imparting motion to the wheel. On opposite sides of the paddle wheel suitable gears 16 are mounted which are in meshing engagement with gears 17 on the shafts 18 of the motor generator 7, thereby imparting power to the generators for developing electrical energy for lighting the warning signal lamps 8. Suitable leads or wires 19 connect the motor generators and the warning signal lamp 8, for the purpose of transmitting current to the latter.

Supported at 20 and 21 on the forward portions of the pontoons and disposed to bridge the forward portion of the sluice-way, and to extend to the lowest point of the paddle wheel is a mesh or screen guard 22, which serves the purpose of guarding against trash, refuse or other foreign matter from passing through the sluice-way and becoming entangled with the paddle wheel. The fact is the lower portion of the mesh or screen guard merges under and in conformity to the contour of the wheel, thereby preventing the trash or refuse from being drawn up behind the guard.

Suitable eyes 23 are provided on the pontoons, to which cables or chains may be attached for the purpose of towing the bell from one location to another. Also carried by the lower portions of the pontoons are eyes 24, to which chains 25 may be connected, said chains 25 merging into a single chain 26, to the lower end of which an anchor 27 may depend, for anchoring the bell buoy in mid stream.

Rising from the pontoons and fastened thereto by anchor bolts 28 adjacent the platforms 4 are the converging beams 29 of the frame 30. This frame may be any height proportioned relative to the size of the pontoons and include transverse braces 31, the beams of the frame being in the form of angle irons, which support a circular plate or platform 32 at the upper end of the frame. This platform or plate 32 supports a prismatic housing 33, which has sides 34 of transparencies. Mounted in a socket of the housing 33 is a high candle power signal lamp 8, to which the wires or leads 19 are connected, for furnishing current to the lamp.

A suitable hanger 35 supports an audible signal in the form of a bell 36, and mounted in bearings of the frame 30 is a shaft 37 supporting a sleeve 38. This sleeve carries a bell clapper 39, and is under tension of a spring 40, which surrounds the shaft 37, with one end attached at 41 to the shaft and its other end attached at 42 to the sleeve, for returning the sleeve to its normal position. An arm 43 is carried by the other end portion of the sleeve, said arm depending in a position on the side of the paddle wheel and in the path of a multiple of lateral pins or lugs 44 carried by the side of the wheel, so that when the paddle wheel rotates the lugs or pins 44 will contact with the depending arm 43, and thereby rock the sleeve 38 on the shaft 37 against the action of the spring 40, and hence cause the bell clapper to strike the bell, and thereby give an audible warning signal as to danger. A suitable stop or abutment 45 is carried by the frame to be engaged by an abutment lug on the sleeve 38, to limit the sleeve in its return movement. A suitable collar 46 is carried by the shaft 37 for retaining the sleeve in position and against excessive axial movement.

A suitable housing 47 is carried by the frame and fits over the shaft sleeve and spring, for the purpose of protecting such parts against weather conditions.

From the foregoing the construction and operation of the improved bell buoy is clearly obvious.

The invention having been set forth, what is claimed is:

1. A bell buoy comprising floating spaced pontoons, therefore having a sluice-way therebetween for the passage of water therethrough, a paddle wheel operatively journaled in said sluice-way and including a shaft, a frame rising from said pontoons and supporting a visible warning electrical signal lamp, housings on said pontoons having motor generators therein provided with electrical conductors connected to the signal lamp, bearings on the housings for the shaft of the paddle wheel, and means carried by the paddle wheel and operatively connected with the motor generators for operating the latter for generating electrical current to be transmitted to the signal lamp.

2. A bell buoy comprising floating spaced pontoons, therefore having a sluice-way therebetween for the passage of water therethrough, a paddle wheel operatively journaled in said sluice-way and including a shaft, a frame rising from said pontoons and supporting a visible warning electrical signal lamp, housings on said pontoons having motor generators therein provided with electrical conductors connected to the signal lamp, bearings on the housings for the shaft

of the paddle wheel, and means carried by the paddle wheel and operatively connected with the motor generators for operating the latter for generating electrical current to be transmitted to the signal lamp, an audible signal carried by the frame consisting of a bell and a clapper, the latter comprising a supporting shaft, a sleeve rockable thereon and carrying the clapper, abutment means for the clapper to limit the same in its initial position, tensioning means for the sleeve to return the clapper to its initial position, an arm depending from the sleeve and having a loosely mounted section to be engaged by an element on the paddle wheel when the latter moves in one direction for actuating the sleeve and the clapper and to move idly past said element should the wheel rotate in the opposite direction.

3. In a bell buoy, a pair of pontoons having means for holding them rigidly spaced apart for causing a runway to be formed therebetween, a frame rising from the pontoons and carrying a visible warning electric signal lamp, a pair of housings supported on the pontoons and having electric motor generators therein, said generators having electrical conductors connected to the lamp for furnishing electrical current thereto, a rotating actuator located in the runway and journaled in bearings of the housing, means associated with the motor generators and in turn actuated by the rotating actuator.

4. In a bell buoy, a pair of pontoons having means for holding them rigidly spaced apart for causing a runway to be formed therebetween, a frame rising from the pontoons and carrying a visible warning electric signal lamp, a pair of housings supported on the pontoons and having electric motor generators therein, said generators having electrical conductors connected to the lamp for furnishing electrical current thereto, a rotating actuator located in the runway and journaled in bearings of the housing, means associated with the motor generators and in turn actuated by the rotating actuator, and a trash guard carried by the forward ends of the pontoons and located across the forward end of the runway, to guard against refuse entering the runway and entangling with the rotating actuator.

5. In a bell buoy, a pair of pontoons having means for holding them rigidly spaced apart for causing a runway to be formed therebetween, a frame rising from the pontoons and carrying a visible warning electric signal lamp, a pair of housings supported on the pontoons and having electric motor generators therein, said generators having electrical conductors connected to the lamp for furnishing electrical current thereto, a rotating actuator located in the runway and journaled in bearings of the housing, means associated with the motor generators and in turn actuated by the rotating actuator, an audible warning signal carried by the frame comprising a depending bell, a clapper for said bell, said clapper consisting of a shaft and a rockable sleeve thereon, the latter carrying the clapper and having a depending arm operative in the path of elements of the actuator for in turn rocking the sleeve and operating the clapper, limiting means for the sleeve, tensioning means for the sleeve to return the sleeve in cooperation with the limiting means, a housing for the shaft and sleeve, said depending arm having means to idly pass by the elements on the actuator when the latter moves in the reverse direction.

6. In a bell buoy, a pair of pontoons having means for holding them rigidly spaced apart for causing a runway to be formed therebetween, a frame rising from the pontoons and carrying a visible warning electric signal lamp, a pair of housings supported on the pontoons and having electric motor generators therein, said generators having electrical conductors connected to the lamp for furnishing electrical current thereto, a rotating actuator located in the runway and journaled in bearings of the housing, means associated with the motor generators and in turn actuated by the rotating actuator, an audible warning signal carried by the frame comprising a depending bell, a clapper for said bell, said clapper consisting of a shaft and a rockable sleeve thereon, the latter carrying the clapper and having a depending arm operative in the path of elements of the actuator for in turn rocking the sleeve and operating the clapper, limiting means for the sleeve, tensioning means for the sleeve to return the sleeve in cooperation with the limiting means, a housing for the shaft and sleeve, said depending arm having means to idly pass by the elements on the actuator when the latter moves in the reverse direction, and a trash guard carried by the forward ends of the pontoons and located across the forward end of the runway, to guard against refuse entering the runway and entangling with the rotating actuator.

In testimony whereof I affix my signature.

GOTTLIEB HOFFMEIER.