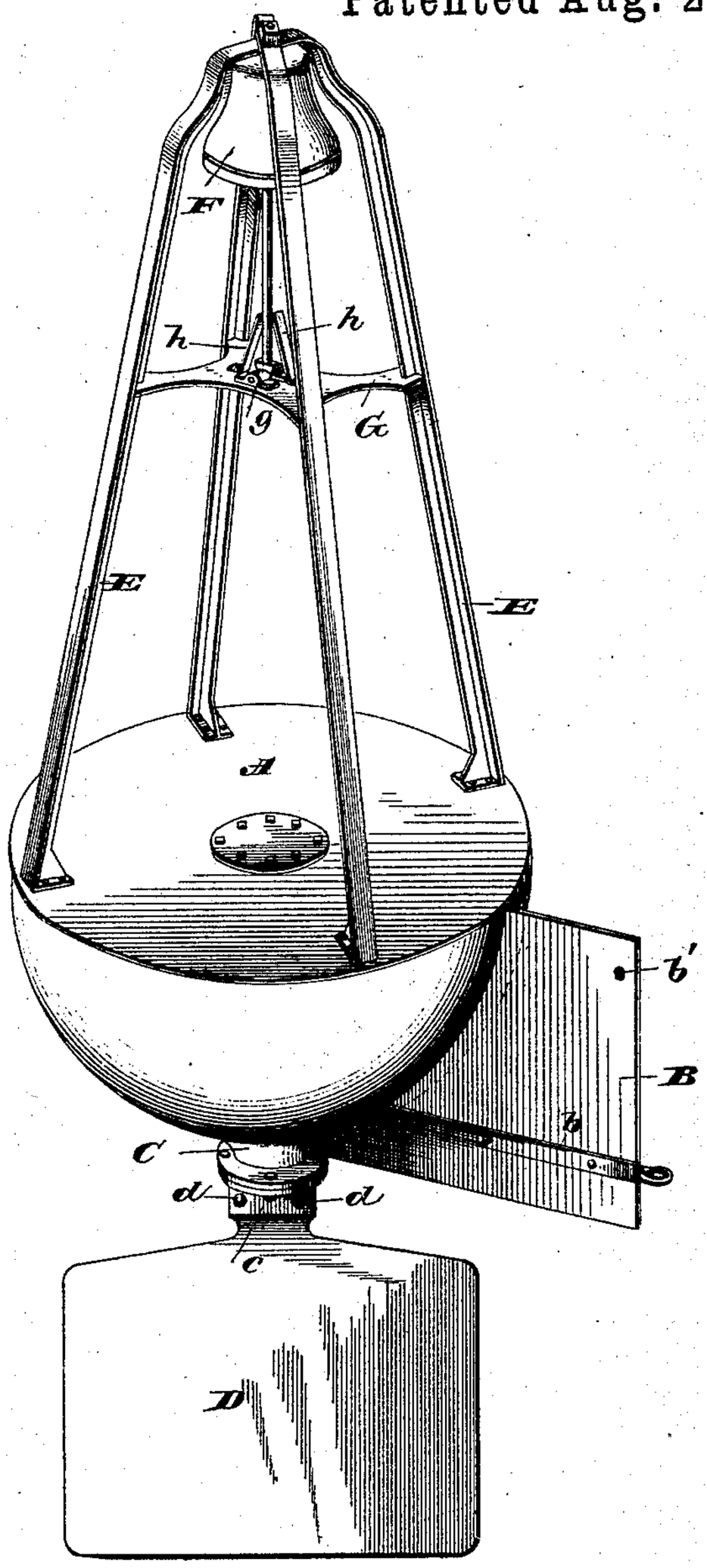
(No Model.) 2 Sheets—Sheet 1.

A. L. WOODWORTH.

SOUNDING ALARM BUOY.

No. 388,384. Patented Aug. 21, 1888.

Fig. 1.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

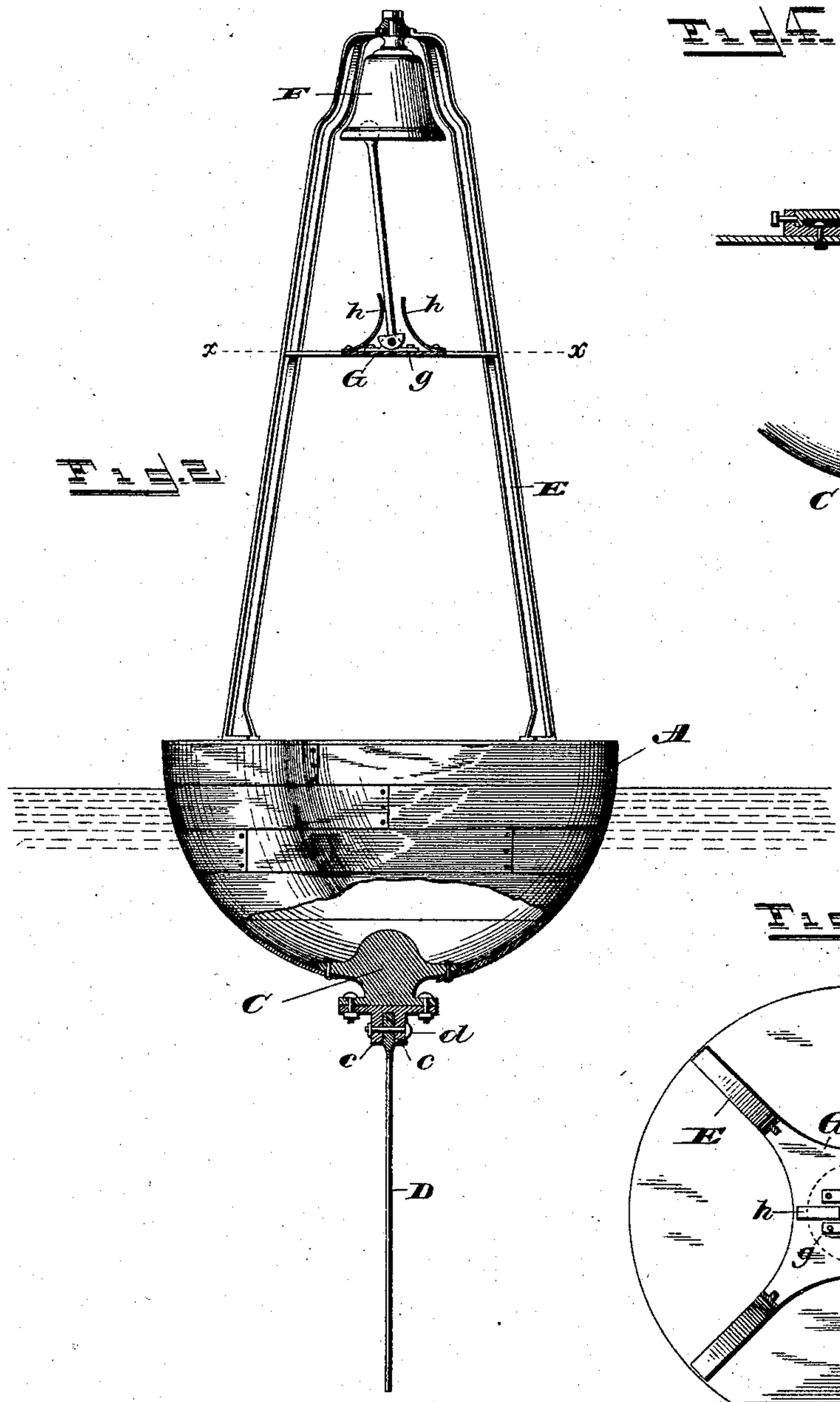


Fig. 4.

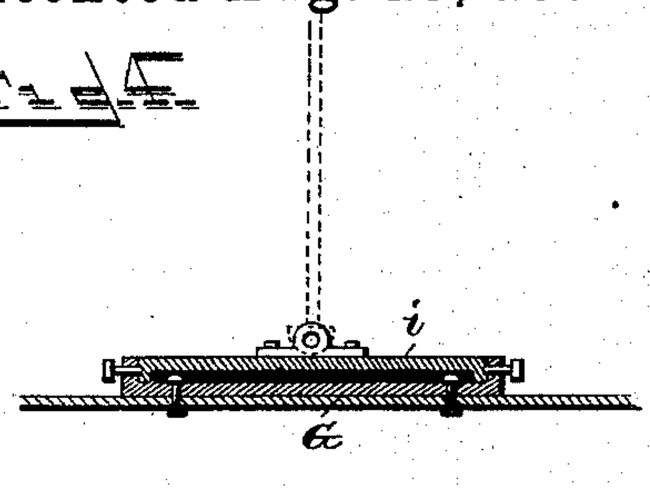


Fig. 5.

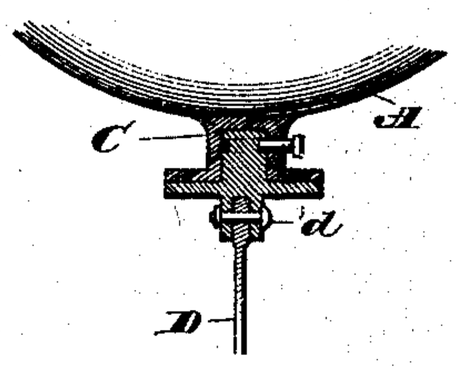
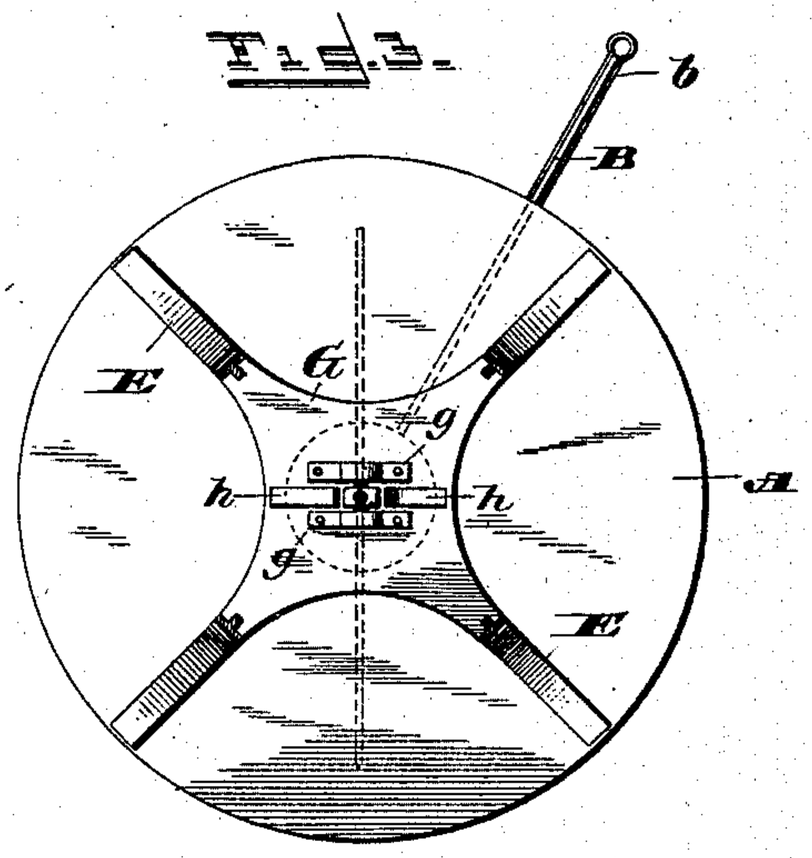


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT L. WOODWORTH, OF NORFOLK, VIRGINIA.

SOUNDING ALARM-BUOY.

SPECIFICATION forming part of Letters Patent No. 388,384, dated August 21, 1888.

Application filed April 26, 1888. Serial No. 271,886. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. WOODWORTH, a citizen of the United States of America, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Sounding Alarm-Buoys; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in buoys of that class which carry a bell for sounding an alarm, said bell being actuated either by the movement of the waves or tidal influences; and it consists, more particularly, in providing a bell-buoy with a mooring-fin, and at an angle therewith a depending fin, to cause the buoy to be operated by tidal influences or currents.

The invention further consists in providing the buoy with a bell, and clapper therefor pivoted beneath the same.

The invention further consists in the construction and combination of the parts, as will be hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a buoy constructed in accordance with my improvement. Fig. 2 is a side view, partly in section. Fig. 3 is a horizontal sectional view taken through the line *x x* of Fig. 2. Fig. 4 is a detail sectional view showing a mode of adjusting the clapper-support. Fig. 5 is a detail sectional view of a means for adjusting the lower depending fin of the buoy.

A refers to the float, which may be of ordinary shape and preferably constructed of sheet metal, the one in the drawings being hemispherical.

To one side of the float is suitably secured a fin, B, which is provided near its lower edge with a strap, B, the outer end of which is formed into an eye, to which is secured the mooring-cable. This fin may also be provided with an upper eye, *b'*, for the attachment thereto of a bridle or loop, which will also be secured to the lower eye, to which the mooring-cable may be fastened.

To the lower portion of the float A is attached a casting, C, which may be of such size and configuration as to counterbalance the upper structure of the buoy. This casting is secured to the shell forming the float by suitable bolts or rivets.

Any approved form of weight may be employed without departing from the spirit of my invention. The weight shown in the accompanying drawings is continued outside of the float and formed into a disk, which, near its circumference, is provided with perforations to secure thereto a disk or plate with downwardly-projecting lugs *c c*, between which the fin D is secured by bolts *d*. By this means the fin can be secured to the float at any desired angle with the fin B, which is rigidly secured to the float. The disk to which the fin is fastened has perforations therein, which register with the perforations in the disk formed integral with the casting C.

Instead of employing the means just described for connecting the fin D to the casting C, said casting may be provided with a cylindrical socket, as shown in Fig. 5, and the disk to which the depending fin is attached may have an upwardly-projecting pin to fit within said socket, with a circumferential groove, with which a set-screw may engage to permit of the adjustment of the fin.

To the upper surface of the float is rigidly secured a superstructure, E, which is preferably constructed of angle-iron, and at the meeting point of the upwardly-converging bars forming this superstructure a bell, F, is rigidly secured, and beneath this bell the frame has attached thereto a platform, G, to which bearing-plates *g* are secured to receive the trunnions on the lower end of the bell-clapper. At right angles with the trunnions springs *h* are secured to the platform for holding the clapper from the bell after the blow has been struck to prevent muffling the sound.

The clapper may be pivoted in bearings secured to an adjustable plate, *i*, (see Fig. 4,) which is secured to a flanged plate rigidly secured to the platform, so that the line of the bearings with respect to the position of the fins B and D can be movable, as may be desired.

The flat surface of the float may be provided centrally with a man-hole, as shown in Fig. 1.

The buoy hereinbefore described will operate effectively where there is no wave motion, as the proportion of the parts is such that the slightest movement of the buoy will throw the clapper in contact with the bell. In calm weather, and in localities where there are practically no waves, there is not sufficient movement with ordinary buoys to sound the bell, and as fogs usually accompany such weather the ordinary bell-buoys are ineffectual, as no means, to my knowledge, has ever been provided for operating the bell of a buoy by tidal influences, nor has a buoy been provided which is operative in a current without the influence of waves.

When my improved buoy is moored in a current, the fin B will be held normally in the direction of the current, and the flow of water striking against the fin D will cause the float to swerve not only to one side, but off the center of gravity, to incline the float and superstructure carrying the bell. Owing to the influence of the current the buoy will swerve to a line with the direction of the current and swing to one side of said line, throwing the superstructure to the opposite side. This movement, experiments have demonstrated, is kept up continuously, and, when placed in a current, a buoy constructed as hereinbefore described is never at rest, and the influence of the tide or current, combined with the stationary mooring, semicircular float, and fins when arranged at proper angles with the float, all combine to keep up a constant movement and a constant ringing of the bell.

The throw required to throw the clapper off its center is very small, owing to the length of the arm to which the clapper is attached.

The height of the superstructure, length of the clapper, and size and angle of the fins may be varied to suit the strength of different currents, and I do not wish to limit myself to any particular forms of construction hereinbefore described and shown; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a bell-buoy, of a float having a mooring-fin and a fin at an angle therewith, for the purpose set forth.

2. The combination, in a bell-buoy, of a float and superstructure mounted thereon, from which a bell is rigidly suspended, and a clapper for said bell pivoted beneath the same, said clapper being operated solely by the movement of the buoy, substantially as shown, and for the purpose set forth.

3. The combination, in a bell-buoy, of a float provided with a mooring fin which extends from the top to the base thereof, and a depending fin secured to the base of the buoy at an angle with the mooring-fin, substantially as shown.

4. The combination, in a buoy, of a hemispherical float having a fin rigidly secured thereto, said fin being provided with means for attaching a mooring-cable thereto, a depending fin, D, secured to the base of the buoy, so as to be adjustable thereon, and a superstructure carrying a bell and clapper, said clapper being pivoted below the bell, substantially as shown, and for the purpose set forth.

5. The combination, in a bell-buoy constructed substantially as shown, of a casting, C, serving as a weight for the buoy, and means for attaching thereto a depending fin, means for mooring the buoy to maintain said fin normally at an angle with the current, and a superstructure carrying a bell and pivoted clapper, substantially as set forth.

6. The combination, in a buoy, of a superstructure having a bell rigidly secured to the upper portion thereof, a platform beneath said bell having bearings to which a clapper is pivoted, and springs for holding the clapper out of contact with the bell after the blow has been struck, substantially as shown, and for the purpose set forth.

7. In combination with a buoy, a superstructure having a bell rigidly secured thereto and a clapper pivotally attached to bearings mounted on the platform beneath the bell, so that the clapper will oscillate when the center of gravity of the buoy is changed, substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT L. WOODWORTH.

Witnesses:
THEODORE S. GARNETT,
WM. H. WHITE.