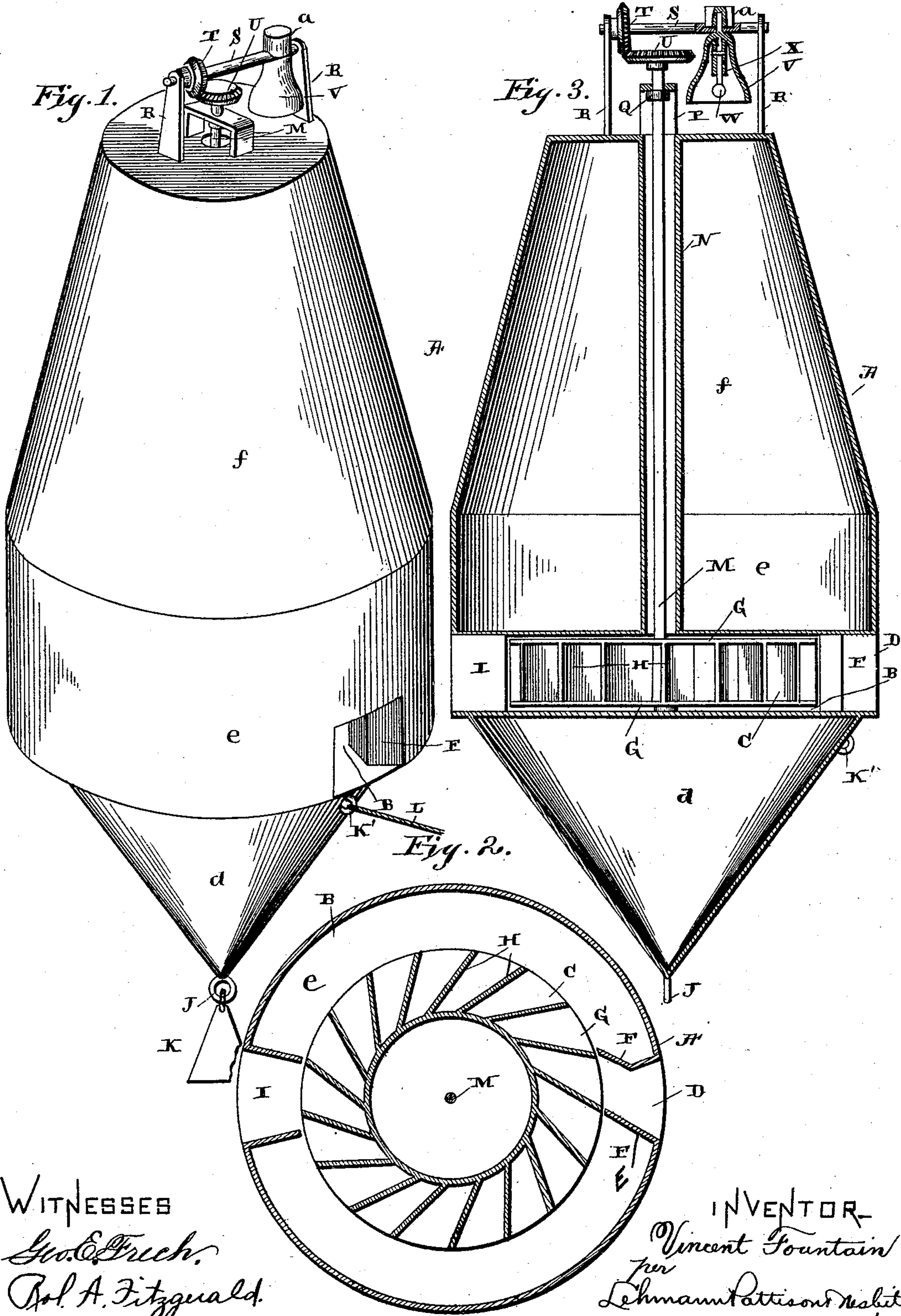


(No Model.)

V. FOUNTAIN.
BELL BUOY.

No. 488,552.

Patented Dec. 27, 1892.



WITNESSES

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VINCENT FOUNTAIN, OF WEST NEW BRIGHTON, NEW YORK, ASSIGNOR OF ONE-SIXTEENTH TO THOMAS F. RYDER, OF SAME PLACE:

BELL-BUOY.

SPECIFICATION forming part of Letters Patent No. 488,552, dated December 27, 1892.

Application filed March 8, 1892. Serial No. 424,156. (No model.)

To all whom it may concern:

Be it known that I, VINCENT FOUNTAIN, of West New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Bell-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 pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in bell buoys; and it consists in the construction an combination of parts which will be fully described hereinafter and particularly referred to in the claims.

The object of my invention is to provide a buoy with a bell, and a wheel that is operated by the tide or sea, and thus kept constantly ringing, and to construct the buoy in the manner hereinafter shown and described for the purpose specified.

In the accompanying drawings:—Figure 1 is a perspective view of a buoy which embodies my invention. Fig. 2 is a horizontal section taken through the buoy and the water wheel. Fig. 3 is a vertical section of the same.

A indicates a hollow buoy which is preferably made of iron as usual, and which is provided near its lower end with a horizontal circular chamber B, in which is vertically journaled a horizontal driving wheel C. Made in the side of the buoy and opening into the said circular chamber, is an inlet opening D. This opening D is made largest at its outer end, so that its inner end is contracted, for a purpose to be described hereinafter. The side E of this inlet opening extends at an incline entirely into the outer circular side of the said horizontal chamber, while the opposite side F extends inward at an incline toward the opposite inclined side about half its length, the other and inner half of its length extending at an incline parallel with the incline of the opposite side E. My object in thus forming the walls of the inlet opening is to cause the water which runs therein to be thrown into the circular chamber in a circular or rotating direction, to catch in the

blades of the driving wheel and thus cause it to revolve. As shown the wheel has a top and a bottom G which together with the blades H form buckets or pockets as will be seen. These blades are set at an angle as shown, that is to say tangentially to the wheel, so that they incline in a direction substantially parallel with the inclined walls of the inlet, and thus cause the inflowing water to take a better hold upon the wheel, and to enable the outflowing water to more easily free itself from the said blades or pockets through the outlet opening I. This outlet opening I is preferably of a size considerably larger than the inlet opening, so that the delivery of the water is perfectly free, without having any tendency to retard the rotary movement of the wheel. Also by having the blades set tangentially to the wheel, they do not drag the water at the return side of the wheel, as they would be likely to do if placed radially to the wheel, as will be understood. The chamber in which the driving wheel is placed, is of course air and water tight, so that neither water nor air can enter the buoy through the chamber.

It is desirable to have the buoy sunk to a certain predetermined depth so that the best results of the flowing tide of water through the inlet opening will be obtained, and this I accomplish by providing the lower end of the buoy with an eye or fastening J, to which a weight K is attached of sufficient heft to sink the buoy to the desired depth.

In order to hold the buoy always with the inlet opening toward or head to the tide, I provide the buoy with an eye or other suitable fastening K' to which an anchorage chain L is attached. This eye or fastening is directly in line with the center of the inlet opening as shown. By means of this construction it will be seen and readily understood that the buoy will swing around head to the tide whenever it shifts from flood to ebb, and vice versa, always keeping the inlet opening toward the flowing body of water, thus causing a current through the inlet opening into the horizontal chamber to the periphery of the driving wheel. The object of providing the inlet opening with a contracted inner end, 100

and thus making it substantially bell-shaped, is to cause the water to be forced into the chamber with greater or increased rapidity.

A shaft M forms the journal of the driving wheel, and has its lower end suitably journaled in the bottom of the horizontal chamber, and its upper end passing through a hollow shaft or tube N which extends vertically and centrally from the top of the said chamber to the upper end of the buoy, and above the outer surface thereof to ring a bell as will presently appear. The upper end of this shaft M is journaled in a step or bridge P that extends across the upper end of the tube N and projects from the upper end of the buoy as shown. A collar Q is secured to the shaft under the bridge, which holds the said shaft against any vertical movement as the buoy is being tossed around by the waves.

Projecting upward from the top of the buoy are two arms R in which the ends of a horizontal shaft S are suitably journaled. One end of this shaft is provided with a beveled gear wheel T which engages a horizontal beveled gear wheel U that is secured to the upper end of the vertical shaft M. In this manner the horizontal shaft S is given a rotary movement as the driving wheel is revolved, as will be understood. Secured to the shaft S near its opposite end from the gear wheel is a bell V which carries a clapper W. This clapper W is guided in its movements by means of guiding plates X that extend parallel from the inner side of the bell as shown, and the clapper is pivoted between them. By means of this construction, the clapper is prevented from being violently tossed around in the bell when the buoy is struck by a heavy sea, which would likely break the clapper rod, or the bell. The guiding plates hold the clapper and guide it in its movements, so that it cannot be tossed around, and broken, as will be understood.

In order to prevent the shaft S from revolving harder when the bell is being raised, and faster when it is lowering, I provide a counter weight *a*, which can either be formed as a part of the bell, or secured to the opposite side of the shaft S from the bell as may be preferred. By means of this counter weight the shaft is given a uniform and steady revolution by means of the driving wheel as will be understood. Another object of this counter weight is to prevent the bell from being broken from the shaft when the buoy is struck by heavy seas as it is liable to be without a counter weight.

Instead of having a horizontal driving wheel as shown in Figs. 1 and 2, an ordinary propeller can be placed in a transverse opening in the buoy and connected with the bell shaft by means of gearing.

I do not here show a cover for the bell and its operating mechanism, but it will be understood that one may be provided if thought desirable.

By means of a buoy of the above construction, it will be seen that a bell will be kept constantly ringing by the water passing through it and operating the driving wheel. 7c

I use a buoy preferably of the construction herein shown, that is with a conical lower end *d*, a straight vertical portion *e*, and a tapered portion *f*, with a flat upper end to support the bell mechanism as shown. While this shape is preferable, I do not limit myself to it, for it will be readily understood, that it may be varied without departing from the spirit of my invention. The space between the outer wall of the buoy and the circular vertical wall of the horizontal chamber, can be utilized for braces to strengthen the buoy if desired. 75 80

Having thus described my invention, what I claim and desire to secure by Letters Patent is:— 85

1. A bell buoy comprising a floating buoy having a chamber provided with an inlet, and an outlet opening, one being substantially opposite the other, a water wheel placed therein, a revolving shaft journaled upon the buoy carrying a bell, and intermediate gearing between the water wheel shaft and the bell shaft, whereby water passing through the chamber operates the wheel revolves the said shaft and rings the bell by revolving its shaft, substantially as specified. 90 95

2. A bell buoy comprising a buoy having a horizontal chamber provided with an inlet having inclined side walls for the purpose specified, a horizontal wheel journaled therein having inclined pockets, an outlet substantially opposite the inlet and larger than the inlet, a vertical shaft for the said wheel which extends vertical through the buoy and out of its upper end, a bell shaft journaled upon the upper end of the buoy, and an intermediate gearing between the bell shaft and the wheel shaft, and a bell secured upon the said bell shaft; substantially as specified. 100 105

3. A bell buoy comprising a buoy having a horizontal chamber having an inlet and an outlet opening a driving wheel journaled therein, a vertical shaft driven by the wheel and carrying a gear upon its upper end, a horizontal bell shaft journaled upon the buoy carrying a gear wheel meshing with the vertical shaft gear wheel, and a bell secured at its closed end to the said shaft and at right angles thereto, substantially as described. 110 115

4. A bell buoy, having a driving wheel operating by the flowing water, a revolving bell shaft driven by the said wheel, a bell secured at its closed end to the shaft, and a counter weight secured to the shaft for the bell substantially as and for the purpose set forth. 120 125

5. The combination of the buoy, a driving wheel, a revolving bell shaft driven thereby, a bell secured to the shaft, having parallel clapper guiding plates secured inside thereof, and a clapper pivoted and swinging between the said guiding plates, as and for the purpose set forth. 130

6. A bell buoy casing consisting of a conical lower end, a vertical portion having a horizontal chamber and inlet and outlet openings through the vertical portion to the said chamber, a vertical tube extending from the top of the chamber to the top of the buoy, and a slightly tapering upper portion having a flat top, combined with the water wheel, the vertical shaft, a bell shaft carrying a bell,

and intermeshing gearing, substantially as described.

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

VINCENT FOUNTAIN.

Witnesses:

ROBERT P. BROWN,
FRED B. BROWN.