

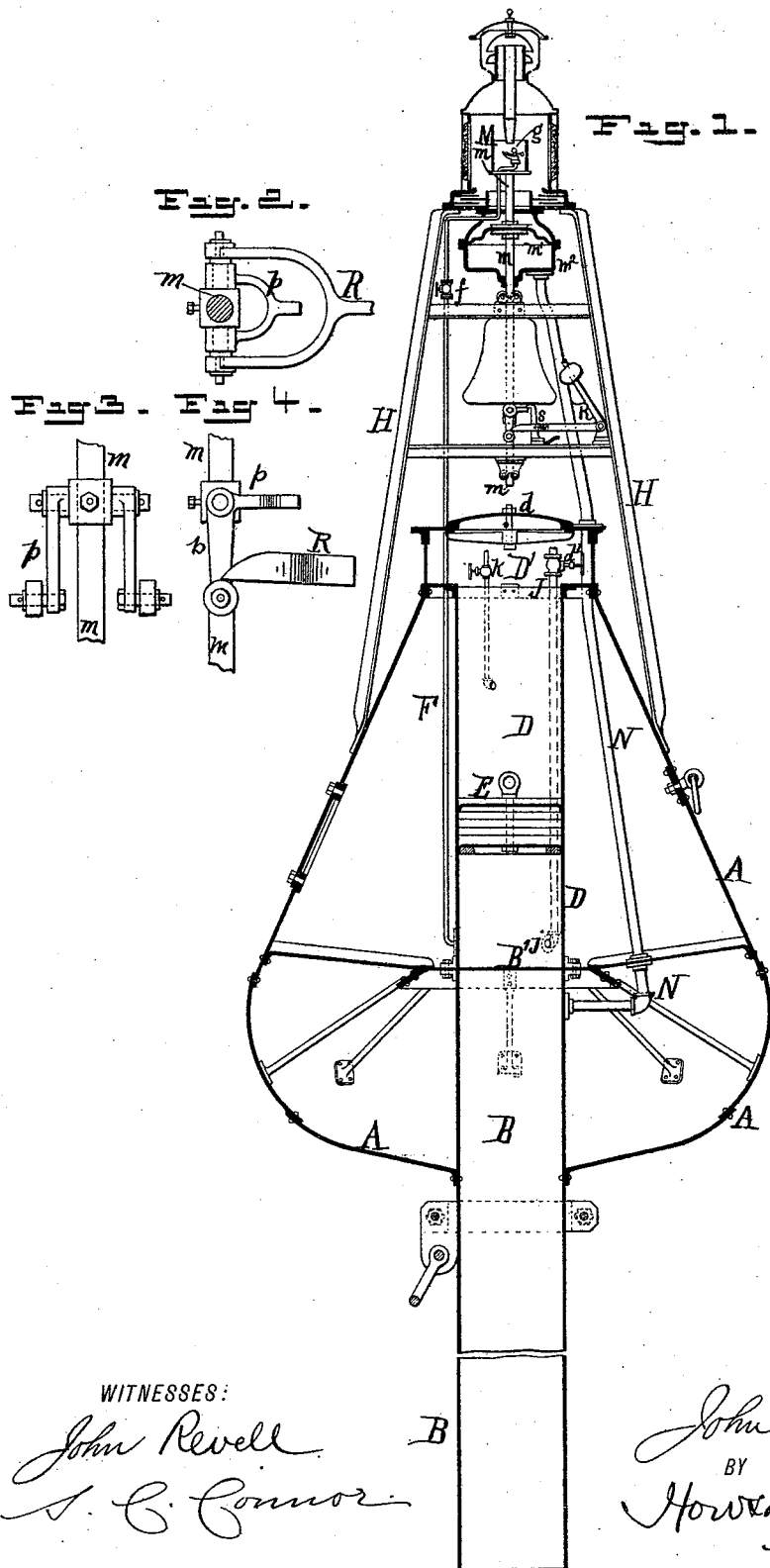
(No Model.)

2 Sheets—Sheet 1.

J. M. FOSTER.
BEACON OR BUOY.

No. 498,256.

Patented May 30, 1893.



WITNESSES:

John Revell
S. C. Connor

INVENTOR

John M. Foster
BY
Howen and Howen
his ATTORNEYS.

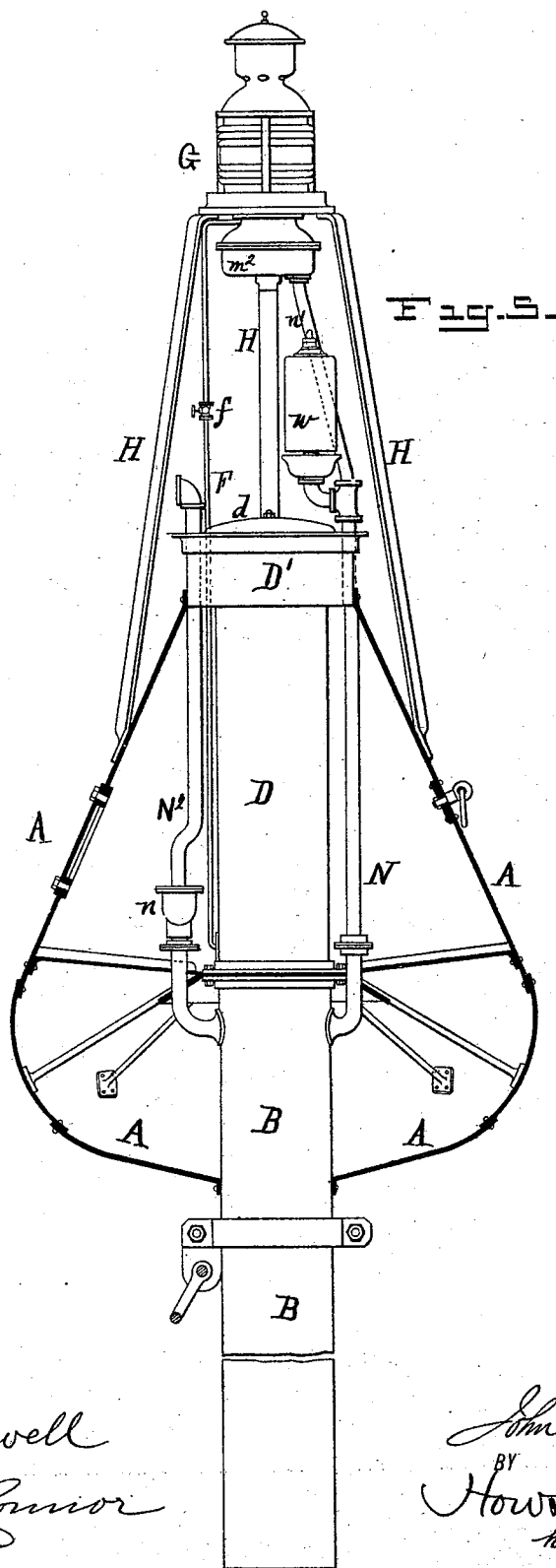
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UNITED STATES PATENT OFFICE.

JOHN M. FOSTER, OF CRANFORD, NEW JERSEY.

BEACON OR BUOY.

SPECIFICATION forming part of Letters Patent No. 498,256, dated May 30, 1893.

Application filed August 25, 1891. Serial No. 403,673. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. FOSTER, a citizen of the United States, and a resident of Cranford, Union county, New Jersey, have
5 invented an Improved Beacon or Buoy, of which the following is a specification.

My invention relates to the construction of that class of beacons or buoys which are lighted by means of oil, and while the main
10 features of my invention having reference to the oil supply are applicable to other floating buoys or stationary beacons for reef or shore lights, I have in the accompanying drawings shown my improvements as applied to float-
15 ing buoys for which they are more particularly intended.

In connection with the application of my improvements to floating buoys, one of the objects of my invention has been to so construct such a buoy as to provide an automatic
20 visible signal, and in connection therewith, where desired, an audible signal, as hereinafter set forth.

In the accompanying drawings, Figure 1 is
25 a vertical section of an oil-lighted floating buoy provided with my improvements; and Figs. 2, 3 and 4 are views of details of the bell-striking mechanism, drawn to an enlarged scale. Fig. 5 is a vertical section of a
30 modified construction of floating buoy made in accordance with my invention.

Referring to Figs. 1, 2, 3 and 4, A represents the body of the buoy which in the present instance is shown as in the usual stand-
35 ard form having upper and lower water-tight compartments, but it should be understood that the body of the buoy may be modified as circumstances may suggest as its construction forms no part of my present invention.

40 Secured to the body of the buoy is a central downwardly extending tube or leg B, which is open at the bottom but is closed within the body of the buoy by a diaphragm B'. Above this cylindrical leg is centrally
45 mounted a cylindrical oil reservoir D, which in the present instance is shown as closed at the bottom by the same diaphragm which closes the upper end of the leg B. This oil reservoir opens at the top into a chamber D', which can be closed by a suitable man-hole
50 cover d. Within the cylindrical oil reservoir is a weighted piston E, which fits closely and

can slide freely within the reservoir, pressing at all times upon whatever body of oil may be in the reservoir below the piston and forcing the oil under a steady pressure up
55 through the pipe F to the burner g in the lamp or lantern G, which is supported by a suitable framework H above the body of the buoy. The burner and the lamp or lantern
60 may be of any suitable construction, similar for instance to that illustrated in Letters Patent granted to me December 28, 1886, No. 355,157. A suitable regulator f may be provided at a convenient point in the pipe F to
65 render the supply of oil to the burner regular and of the proper quantity.

The piston E is made solid, or imperforate, and the oil is supplied to the reservoir by means of a valved pipe J, which opens at j
70 into the lower end of the oil reservoir below the piston. A small air vent pipe k, also valved, opens into the upper part of the oil reservoir but at a suitable distance from the top, as circumstances require.

75 When it is desired to fill or refill the oil reservoir, the piston E is raised by any convenient means from the lower end of the reservoir to the upper end and is there held securely by suitable devices, the man-hole d
80 having of course first been opened. The piston E is held at such a height in the cylinder that the valved pipe k will be open to the space below the piston, and the valve in that pipe being open and the valve d' of the oil
85 feeding pipe J being also open, oil is fed into the cylinder through the pipe J. The air in the cylinder passes out through the pipe k as the oil rises in the cylinder. When the proper supply of oil has been fed, the cocks in the
90 pipes K and k are closed, the piston E is released and the man-hole d closed. I use the term "oil" in this specification, in a sufficiently comprehensive sense to include any other suitable liquid fuel, such as gasoline.

95 In applying my described improvements to a floating buoy, I prefer to combine therewith an automatic device for giving a visible signal by the action of the rise and fall of the waves. The visible signal may be obtained
100 by combining with the burner a movable inclosing globe M, which may be either an opaque cylinder or one of colored glass, and which can be raised to surround the flame of

the burner within the lantern or be depressed below the level of the flame, thus giving a flash light. This movement of the globe I obtain automatically from the movement of the waves. For this purpose I mount the cylinder M on a vertical rod *m* suitably guided in the frame and carried by a flexible diaphragm *m'* within the casing *m*². The inclosed space below the diaphragm *m'* and within the casing *m*² is in communication, through a pipe N, with the upper closed end of the leg B of the buoy, which contains more or less air above the water therein. With the passing of the successive waves, the volume of water in the tube B, which is open at the bottom, will correspondingly rise and fall and the diaphragm *m'* will correspondingly rise and fall, thus moving the inclosing globe about the burner to give a flash light. I prefer to combine with this automatic flash light mechanism, an audible signal simultaneously operated, so that persons at sea may be able to some extent to judge of the distance they may be from the buoy by the apparent lapse of time between the flash and the sound given by the audible signal. This audible signal may be in the form of a bell, as shown at P in Fig. 1, and carried by the framework over the buoy, the hammer of the bell being operated by means of an extension of the rod *m* which, in this case, is shown as passing down centrally through the bell. This rod carries at its lower end a pivoted and forked trip *p*, the forked arms of this trip normally supporting the forked end of a bell crank lever R pivoted on the framework H and carrying the hammer *r*. As the rod *m* rises, the trip *p* raises the hammer of the bell with it until the upper finger of the trip comes into contact with a fixed stop *s* upon the framework H which tilts the trip so as to release the lower arm of the hammer and the latter by gravity or under the action of a spring strikes the bell. When the rod *m* descends again the lower forked arms of the trip *p* slide over the beveled outer ends of the hammer lever R to engage again with the under side thereof so as to lift the hammer on the next upward movement.

Instead of using a bell as the audible signal, the well-known whistling devices employed on the standard whistling buoy may be used on my buoy, with or without the visible flash signal before described. Thus in Fig. 5 I have shown a whistle W on the tube N' which opens into the closed upper end of the leg B as in the case of the tube N before described. There should also be provided a

pipe N² provided with a check valve *n* to draw in additional air each time the column of water falls in the tube B so as to have the proper supply of air forced up into the whistle. A branch *n'* from the same tube N' may lead into a chamber *m*² containing the movable diaphragm to operate the flash signal, as before described with reference to Fig. 1.

I claim as my invention—

1. An oil-lighted beacon or buoy having a burner, a lamp and an oil reservoir containing a weighted piston, a pipe leading from the lower end of the reservoir to the burner, a valved supply pipe opening into the lower end of the reservoir below the piston and a valved outlet from the upper part of the reservoir, substantially as described.

2. An oil-lighted beacon or buoy having within the body an oil reservoir opening at its upper end into an enlarged chamber with a man-hole cover, a weighted piston in the reservoir, a lamp, a burner and a pipe leading from the lower part of the reservoir to the burner and an oil supply pipe leading from within the enlarged chamber at the top of the oil reservoir and opening into the lower part of the oil reservoir below the piston.

3. A floating buoy having a lamp and devices for producing a flash-light signal therewith, in combination with an open-bottom water leg and a pipe connecting the air space in the water leg with the said flash-light devices, whereby the flash-light signal is operated automatically from the said water leg by the rise and fall of the waves.

4. A floating buoy, having a lamp and devices for producing a flash-light signal, in combination with an audible signal, an open bottom water leg and a pipe connecting the air space in the water leg with the visible and audible signal devices to operate them by the movement of the waves.

5. A floating buoy having an oil reservoir, a burner, an open-bottom water leg with an inclosing globe about the burner within the lamp, a chamber containing a flexible diaphragm controlling the globe and a pipe leading from the chamber below the diaphragm to the upper end of the water leg, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN M. FOSTER.

Witnesses.

S. C. CONNOR,
JOHN REVELL.