

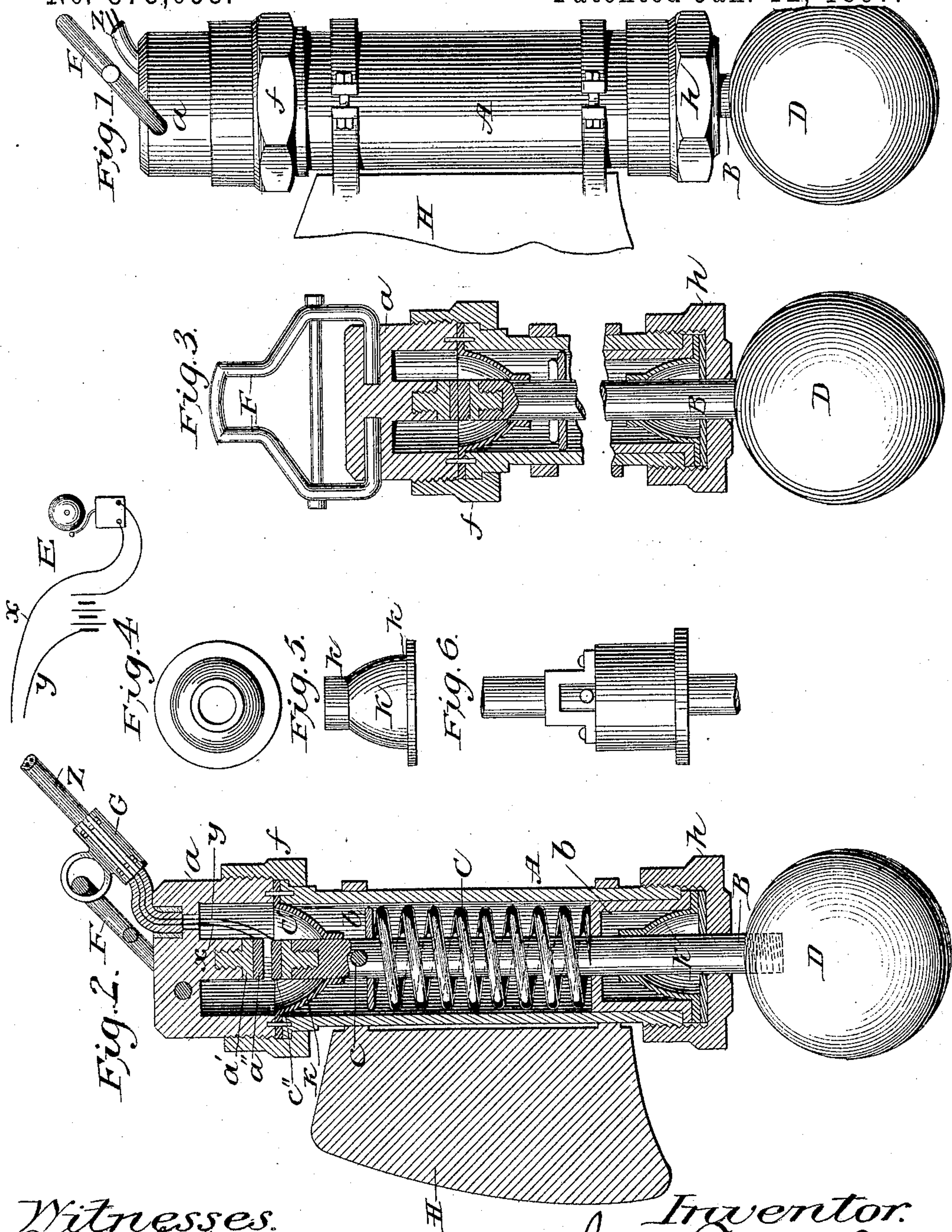
(No Model.)

J. F. BABCOCK.

AUTOMATIC ELECTRIC MARINE SOUNDING APPARATUS.

No. 575,093.

Patented Jan. 12, 1897.



Witnesses.
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AUTOMATIC ELECTRIC MARINE SOUNDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 575,093, dated January 12, 1897.

Application filed March 11, 1896. Serial No. 582,737. (No model.)

To all whom it may concern:

Be it known that I, JAMES FREDERICK BABCOCK, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Automatic Electric Marine Sounding Apparatus; 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.

My invention consists of an improved automatic electric marine sounding apparatus, and is fully illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with circuit open. Fig. 2 is a longitudinal sectional view with spring, movable rod, and balance-weight in elevation and with circuit open. Fig. 3 is a longitudinal sectional view of the same with spring omitted and with circuit closed. Fig. 4 is a plan of elastic packing. Fig. 5 is an elevation of same. Fig. 6 is a side elevation of device for preventing rotation or twisting of movable rod.

Similar letters refer to corresponding parts throughout the figures.

The object of my device is indicated by its title, and it is especially designed for use as a substitute for the hand-lead upon vessels approaching a dangerous coast or shoal in darkness or fog when the precise position of the vessel is doubtful or unknown.

I provide a hollow metallic cylinder A, closed at the lower end by the screw-cap *h* and at the upper end by the cap *a*, secured by a union-joint *f*, but any convenient or suitable means for closing the ends of the cylinder may be adopted. A movable rod B is introduced into said cylinder through the lower screw-cap *h* and is directed in the cylinder by the guides *b b'*, which also serve as points of support for the ends of the spiral spring C, which is coiled about said movable rod and compressed between said supports, the guide *b* being an annular collar surrounding and fitting the movable rod and secured against motion on the movable rod with the expansion of the spring by the pin *c*, passing diametrically through the movable rod, and the guide *b'* being an inverted circular cup

bored through the center of its bottom to fit and admit said movable rod, shaped to fit within said cylinder and having a flanged rim fitting under the lower end of said cylinder.

The movable rod B carries at its lower end, outside the cylinder, a weight D, slightly overbalancing the resistance of the spring C and lowering the movable rod in the cylinder against the spring a distance arranged to be about one-eighth of an inch. The top of the movable rod proper is covered by a cap *c'* of insulating material, and this in turn by a metallic conductor-cap *c''*.

The cap *a* is similarly fitted at its center with an insulator *a'*, and this is covered by a metallic conductor-cap *a''* in line with the cap *c''*.

The poles of an electric battery E are connected with the caps *c''* and *a''* by wires *x y*, insulated within a cable Z, which sustains the weight of the whole device, while the strain at the point of connection with the cable is borne by the bail F, connecting the top of the cylinder with a clamp G upon the cable Z.

A fin H controls the position which shall be assumed by the cylinder and prevents its rotation when dragged through water.

In operation, the device being suspended from the vessel by the cable Z and the balance-weight D being unsupported, the spring C is compressed by the weight D and the movable rod B, with its cap *c''*, is lowered against the spring, as before stated, about one-eighth of an inch and the contact between the caps *c''* and *a''* broken, but when the weight D touches bottom and is thereby supported its action upon the spring ceases and the spring C expands and forces the cylinder A down upon the movable rod and brings the cap *c''* in contact with the cap *a''*, and so completes an electric circuit whereby a bell or other alarm in any convenient part of the vessel is sounded.

It is obvious as the circuit is broken by the weight lowering the movable rod against the spring that the moment the spring is released from the action of the weight the spring will act, force the cylinder down on the movable rod, and the electric circuit be thus completed, and that this result will occur whether the

weight be supported from the bottom or when the whole device is lying upon its side, as in either case the spring is relieved of the weight.

It is absolutely essential that the parts be
 5 so fitted as that the cylinder or the upper chamber thereof shall be perfectly water-tight, as otherwise the cylinder would fill with water, the circuit be thus completed, and a continuous alarm sounded before the
 10 device touched bottom. To make the cylinder water-tight, I have provided an annular dome-shaped elastic packing K, formed of rubber, having a neck *k* and a flanged base *k'*, as shown in Figs. 4 and 5. The neck of
 15 the packing fits tightly and is tightly secured about the movable rod, making that point water-tight, while its flanged base, of equal diameter with the exterior diameter of the cylinder, fits over the end of the cylinder and
 20 between the end of the cylinder and the screw-cap, which is so tightly screwed on as greatly to compress the rubber flange and absolutely to prevent the ingress of water at that point. The rubber of which the packing is constructed
 25 is made sufficiently elastic to permit a vertical extension equal to the movement of the movable rod in the cylinder, which, as stated, need be only about one-eighth of an inch, while the curvature of the dome-shaped portion of the packing further facilitates the extension when the weight acts by changing
 30 from the curve to nearly a right line.

Any suitable form of water-tight packing may be used; but I believe the form shown
 35 to be best adapted to the purpose.

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

1. An automatic electric marine sounding
 40 apparatus consisting of the combination of a cylinder having a water-tight chamber; a movable rod partially within said cylinder, working longitudinally therein, and having an insulated metallic cap upon its head and
 45 within said chamber; a stationary insulated

metallic cap within said chamber and in line with said cap on said movable rod; a spring within said cylinder acting against the downward movement of said movable rod; a weight
 50 attached to the lower end of said movable rod sufficiently heavy to overbalance said spring; an electric battery, and two wires properly insulated connecting the poles of said battery with said insulated metallic caps.

2. In an automatic electric marine sounding apparatus the combination of a water-tight metallic cylinder having its lower end closed by a screw-cap and its upper end by a cap secured by a union-joint; a movable rod
 60 partially within said cylinder and working longitudinally through said screw-cap; a spiral spring within said cylinder surrounding said movable rod and stopped or secured near the upper end of said movable rod and at its
 65 lower end upon a support resting upon said screw-cap; a weight attached to the lower end of said movable rod sufficiently heavy slightly to overbalance said spring; an insulated metallic cap upon the head of said movable rod
 70 and another in line with the first upon the under side of the upper cap of said cylinder; an electric battery; and two wires properly insulated connecting the poles of said battery with said insulated metallic caps.

3. The combination of a cylinder having
 75 one end closed by a screw-cap; a rod partially within said cylinder and longitudinally movable therein and through said screw-cap; and an elastic packing or expansion-joint consisting of a hollow dome made of rubber or other
 80 elastic material and having a flanged base fitted and secured between the base of said cylinder and said screw-cap, and also having a neck or collar fitting and embracing and rigidly secured to said movable rod.

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Witnesses:

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