(No Model.)

B. H. SCHONHOFF.

SHOAL INDICATOR FOR SHIPS.

No. 275,864. Patented Apr. 17, 1883.

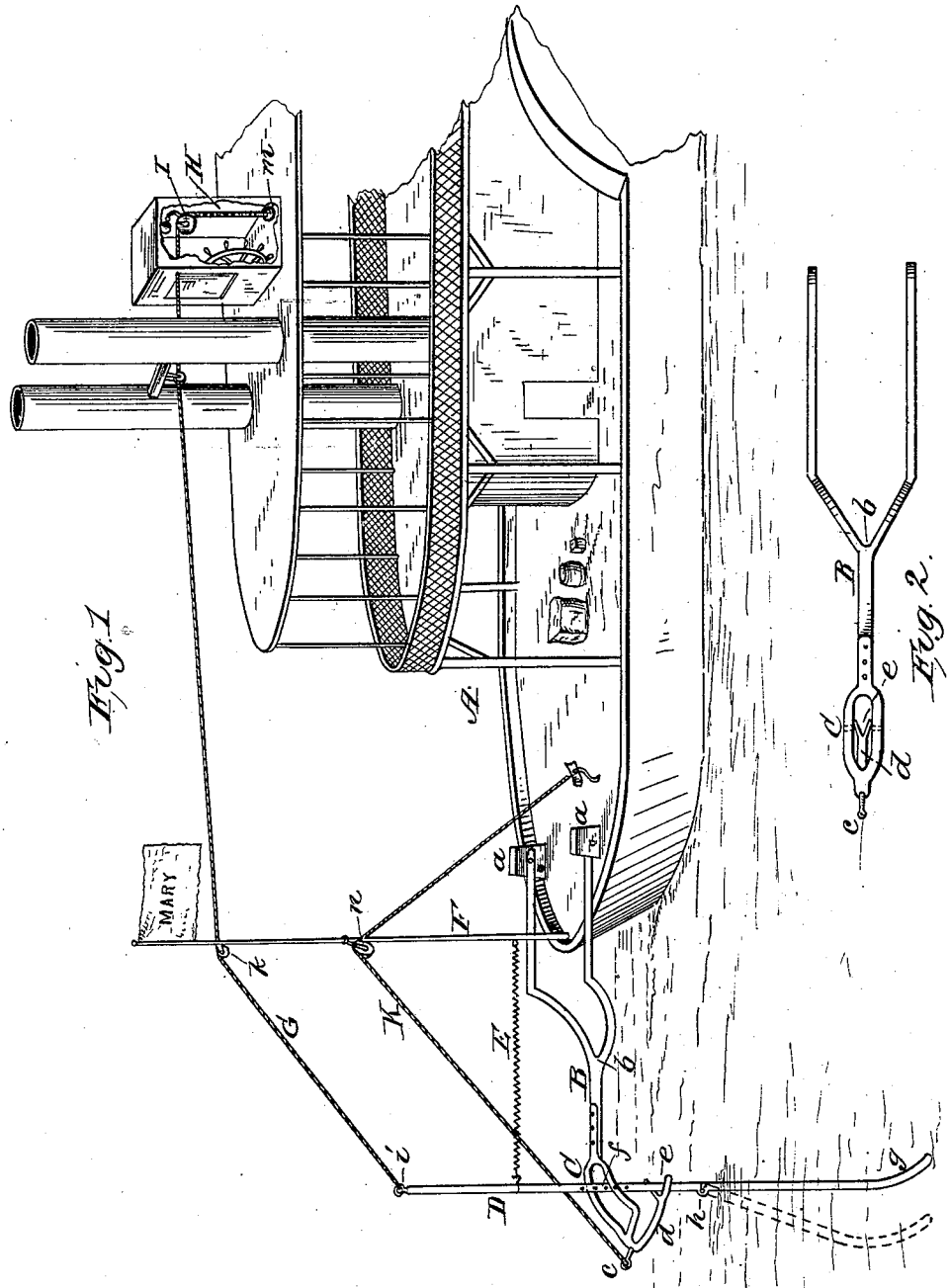

Fig. 1.

Fig. 2.

WITNESSES

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SHOAL-INDICATOR FOR SHIPS.

SPECIFICATION forming part of Letters Patent No. 275,864, dated April 17, 1883.

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To all whom it may concern:

Be it known that I, BERNARD H. SCHONHOFF, a citizen of the United States, residing at Cape Girardeau, in the county of Cape Girardeau and State of Missouri, have invented certain new and useful Improvements in Sounding Mechanism for Steam and other Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a perspective view of my invention attached to a steamboat; and Fig. 2, a detail view of the sounding-staff, loop, and arm.

This invention relates to certain new and useful improvements in devices for attachment to steam or other vessels to automatically indicate any decrease of the water's depth less than a given amount on account of shoals, sand-bars, or other obstructions, and also for exploring harbors and river-beds for the purpose of locating sunken rocks, torpedoes, lost anchors, dead bodies, &c., the invention consisting in the construction and arrangement of the several operating parts, as illustrated in the accompanying drawings and hereinafter described.

In the drawings, A represents a steam-vessel having located in its bow blocks *a*, to which are pivotally connected the bifurcations of an arm, B, said bifurcations extending outward from the bow and curving downward about one-third of the way out, and joining together at *b* in such a manner as to give a flat surface or seat at the end of the curve, to which is suitably connected a loop, C, having at its outer end an eye, *c*, and extension *d*, said extension being bent under to nearly or quite the center of the loop, and terminating in a fork, *e*, for the purpose of steadying the sounding-staff D, which is pivotally hung in said loop and rendered adjustable by perforations *f*.

Although I have described the loop C as being detachably connected to the bifurcated arm B, it may be formed solid therewith, thereby making the arm and loop in one piece, it being only a matter of convenience to have the parts separable.

The sounding-staff D extends any desired distance below the keel or bottom of the vessel, and terminates in a foot, *g*, which slopes in a direction toward the vessel to render its contact with an obstruction somewhat gradual, this staff being preferably constructed with a hinged joint, *h*, which opens when the lower part of said staff is moved outwardly, thereby preventing its breaking off when the vessel is backing from an obstruction. To this sounding-staff D is attached a spring, E, which connects with the flag-staff F of the vessel, and is of sufficient strength to keep said sounding-staff in a vertical position against the forked extension *d* of the loop C, except when resisted by an obstruction greater than the water.

To an eye, *i*, at the top of the sounding-staff D is secured one end of a rope, G, passing through a block, *k*, upon the flag-staff F, and thence through other blocks suitably located, to the interior of the pilot-house or steersman's station, said rope being connected to a belt, H, divided into suitable spaces, said belt passing over a pulley, I, having a suitable indicator at its center, a weight, *m*, being attached to the lower or free end of the belt sufficiently heavy to draw it and the rope G taut when released from the strain of the sounding-staff. The pulley I is of sufficient diameter, so that each revolution will indicate a certain amount of decreased depth in the water as the sounding-staff comes in contact with a shoal or other obstruction, and operates the rope and belt G H, said pulley being connected to a tapper, which strikes a gong at each revolution thereof to signal the decrease or increase of the water's depth as the vessel comes on or off the obstruction.

To the eye *c* of the loop C is attached a rope, K, passing through a block, *n*, on the flag-staff, and thence down to the vessel's deck, where it is made fast to a suitable cleat, the purpose of this rope being to raise the sounding mechanism up against the flag-staff when not in use.

When the sounding mechanism is in position for use, the staff being extended a suitable distance below the keel or bottom of the vessel, its foot, when coming in contact with a shoal, sand-bar, or other obstruction, will cause the upper portion to incline outwardly accordingly as the depth of water decreases, thereby operating the rope extending therefrom to the pilot's station to draw the belt over the pulley,

so that the space on said belt over the center of this pulley will indicate the decrease in the depth of the water ahead of the vessel, and this decrease, being subtracted from the length of the sounding-staff below the keel or bottom of the vessel, will give the actual depth of the water said vessel has to move in, thus preventing it from being run aground or its passage impeded by rocks or other sunken obstructions. Especially is this an advantage in rivers having shoaly or changing beds, as the pilot is duly warned either in daylight or darkness before the vessel can come sufficiently on the shoal or bar to damage or impede its progress. As the vessel is backed off from the obstruction the hinged joint will open and allow the lower portion of the staff to swing up as it comes in contact with said obstruction, thereby preventing it from being broken by the resistance, and at the same time the slack of the rope and belt is taken up by the weight attached to the free end of said belt, thus keeping them always taut as the sounding-staff moves in either direction.

The sounding-staff, being of any length desired, is not only advantageous in sounding for shallow places and under-water obstacles, but is equally useful for locating the position of dead bodies, torpedoes, lost anchors, or heavy freight dropped overboard.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A sounding mechanism for steam or other vessels, consisting of an arm extending outwardly from the bow of the vessel, and provided with a suitable loop having pivotally hung therein a staff extending downwardly below the vessel's keel or bottom and held in a vertical position by a suitable spring when not resisted by an obstruction greater than the water, the upper end of said staff having connected thereto a rope extending to the pilot's or steersman's station, with its free end attached to a belt divided into suitable spaces passing over an indicator-pulley, substantially as and for the purpose set forth.

2. A sounding mechanism for steam or other vessels, consisting of an arm having bifurcations pivotally connected to the blocks upon the vessel's deck, said bifurcations extending outwardly from the bow and joining together to form a seat for a loop provided with an eye, and an extension bent under to nearly or quite its center, terminating in a fork, said loop having pivotally hung therein an adjustable sounding-staff, constructed preferably with a hinged joint opening when said staff is moved in an outward direction, this staff communicating with a weighted spaced belt passing over an indicator-pulley at the pilot's station by means of a rope connecting said staff and belt, the former, when not resisted by a force greater than the water, being held in a vertical position by a suitable spring, the entire mechanism operating substantially as and for the purpose specified.

3. In a sounding mechanism for steam or other vessels, the pivotal adjustable sounding-staff, constructed preferably with its foot sloping in a direction toward the vessel and a hinged joint open outwardly, in combination with a suitable arm connected to the vessel's bow, and provided at its outer end with a loop to receive the staff, said loop having an eye and an extension bent under and terminating in a fork, the rope extending from the upper portion of said staff, connecting with a weighted spaced belt passing over an indicator-pulley, and a spring-connection, substantially as described.

4. In a sounding mechanism for steam or other vessels, the combination, with an arm extending outwardly from the bow of such vessel, and provided with a loop having pivotally hung therein an adjustable staff resting against its bent-under forked extension, of a rope secured to an eye of the loop, communicating with a belt divided into suitable spaces passing over an indicator-pulley operating the striking mechanism of a gong, and a suitable spring-connection, substantially as and for the purpose set forth.

5. The arm B, pivotally attached to block *a* upon the vessel's deck, and provided with a loop, C, constructed substantially as described, in combination with the sounding-staff D, extending below the keel or bottom of the vessel, and communicating with the weighted spaced belt H, working on an indicator-pulley, I, by means of the rope G, the spring E, and hoisting-rope K, substantially as and for the purpose set forth.

6. The combination, with a steam or other vessel, of a bifurcated arm, B, extending outwardly from its bows, and provided with a loop, C, preferably detachable, and constructed with an eye, *e*, and bent-under forked extension *d*, with a sounding-staff, D, pivotally connected to said loop, and formed with a hinged joint, *h*, and sloping foot *g*, the weighted belt H, having suitable spaces passing over an indicator-pulley, I, and communicating with the sounding-staff by means of a rope, G, and the spring E, controlling the position of said staff, substantially as and for the purpose described.

7. The arm B, pivotally connected to block *a* upon the deck of a vessel, A, loop C, constructed as described, sounding-staff D, spring E, rope G, weighted belt H, indicator-pulley I, and rope K, all arranged and operating in the manner described, and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

BERNARD H. SCHONHOFF.

Witnesses:

LOUIS F. KLOSTERMANN,

CHARLES CANZ.