F. WAGNER & S. RUMPUS.

Shoal-Indicator for Vessels.

No. 165,897. Patented July 20, 1875.

Fig. 1.

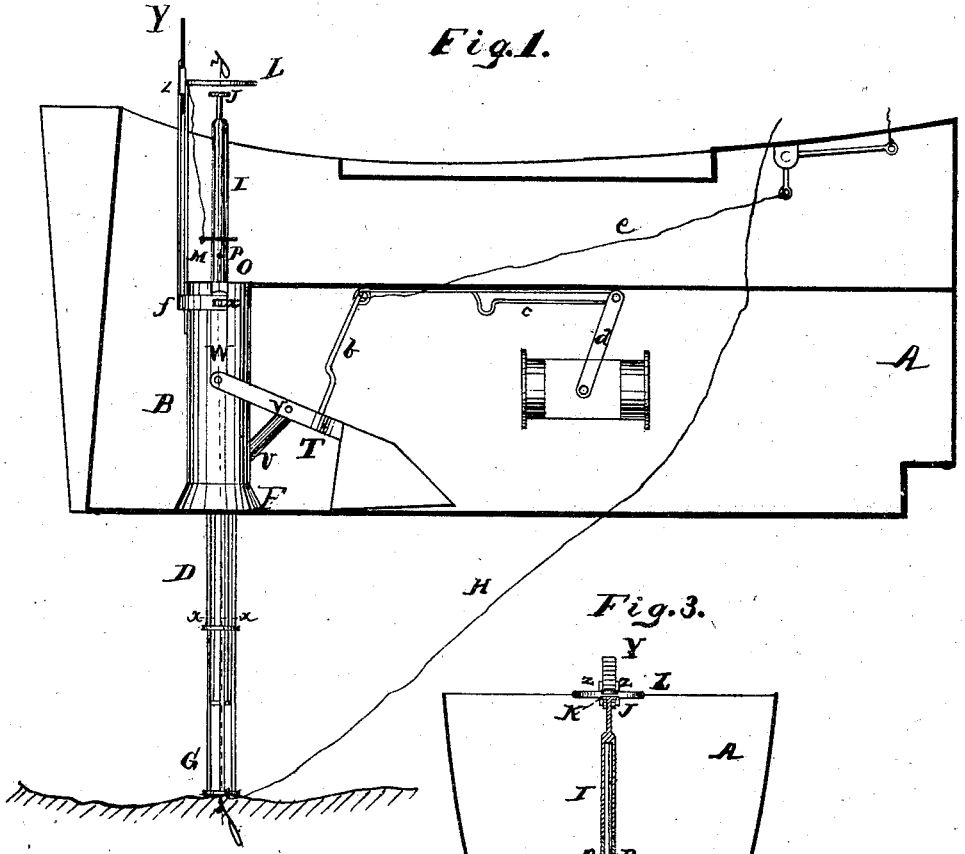


Fig. 2.

Fig. 3.

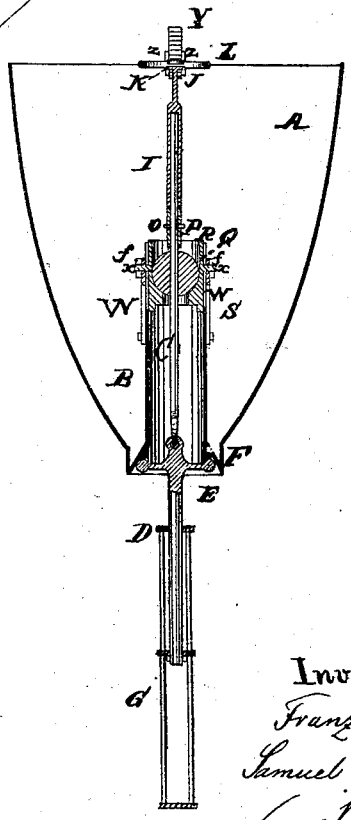
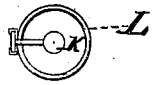


Fig. 4.



Witnesses.

Chas Wahlers

Otto Hufeland

Inventors.

Franz Wagner

Samuel Rumpus

per

Van Santvoord & Hauff

Attys

UNITED STATES PATENT OFFICE.

FRANZ WAGNER AND SAMUEL RUMPUS, OF NEW YORK, N. Y.

IMPROVEMENT IN SHOAL-INDICATORS FOR VESSELS.

Specification forming part of Letters Patent No. **165,897**, dated July 20, 1875; application filed June 23, 1875.

To all whom it may concern:

Be it known that we, FRANZ WAGNER and SAMUEL RUMPUS, of the city, county, and State of New York, have invented a new and Improved Safety Attachment to Vessels, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation of our improvement, showing the vessel in section to which it is applied. Fig. 2 is a cross-section in the line *y y* of Fig. 1. Fig. 3 is a vertical section in the line *x x* of Fig. 1, looking toward the scale. Fig. 4 is a top view of the ring-indicator 2.

Similar letters indicate corresponding parts.

The object of this invention is to provide a safety apparatus for vessels, which will automatically indicate to the mariner when the depth of the water falls below a certain amount, and also in what direction the water shoals, so that the direction of the vessel's movement can be changed and her speed checked.

The apparatus is so arranged, moreover, that, by a connection between it and the engine, where it is applied to a steamer, the engine is reversed when the vessel reaches shoal water.

Our improvement consists of a pendent rod, which hangs down from the bottom of the forward part of the vessel, being suspended by a universal joint from a vertical shaft, which is arranged in a "well" in the vessel. The vertical shaft extends up to the deck, and comes beneath a disk, which is held by a bracket in the center of a ring-indicator. When the shaft is directly under the disk it is out of view to the mariner looking downward, and that position betokens that the pendent rod is in deep water; but when the end of the shaft is moved from under the disk, so as to come into view, its position indicates that the vessel is in water so shallow that the pendent rod touches the bottom, the shaft being caused to indicate in what direction the water is shoaling by its appearance on that side of the disk. The pendent rod is provided with a shell, which slides freely up and down on it, so that the rod is lengthened by the extent to which the shell can move down on it. The end of the rod or shell is connected by a chain to the deck of the vessel, at the stern, so that it can be drawn up against the vessel's bottom, out of the way, when the vessel is in port.

The letter A designates a vessel, in which is provided a vertical well, B, which extends from its hull up to the lower deck, and in which is placed a vertical shaft, C, whose lower end is connected by a universal joint to a pendent rod, D, on which is placed, a little below the joint, a circular disk, E, that fits within the flaring mouth F of the well, and prevents the rod from ascending the well. Upon the rod D, below its disk E, is fitted a shell or open frame, G, which is free to turn on the rod, and to move longitudinally thereon a little distance, but is prevented by a pin from becoming disconnected therefrom. To the lower end of the sliding frame G is attached a chain, H, which is passed through the hull, and thence up to the deck, near the stern, and is intended for turning the rod and frame up against the hull when in port. The shaft C is surmounted by a sleeve, I, on the upper end of which is a button, J, which, in the normal position of the apparatus, the ship being in deep water, will come under a stationary disk, K, supported in the center of a stationary ring, L, which is attached at a point in its circumference to a stationary rod, M. A bracket, N, extending from said rod holds the disk in its place. The bottom of the sleeve I rests on the edge of a stationary collar, O, which surrounds the shaft, and is fixed to it by a pin, P, and below the collar is a sphere, Q, through which the shaft passes, as is shown in Fig. 3. The sphere Q is within the well B, where it rests in a curved seat in a movable tube, R, whose sides are increased in thickness at its lower end, to prevent the sphere from passing through it, and to form a seat for the sphere. The tube R is free to move in the well; but the extent of its movement downward is limited by a ledge, S, in the well, while its movement in an upward direction is controlled by a weighted lever, T, supported by brackets U, to which the lever is pivoted at V. The lever T is forked, so as to embrace the well, and its forked ends are connected to the tube R by means of the links W W, which are pivoted at their lower ends to the forked ends of the weighted lever, and at their upper ends are

hung upon pins *x x*, which project from the sides of tube R.

The sides of the well are slotted down in line with the pins *x*, as indicated in Fig. 3, to permit the tube to have its vertical movement. A scale, Y, which is graduated to indicate the depth of the shoal water, is arranged to slide in guides *z z*, arranged on the back of the rod M, the lower end of the scale-rod being connected with the pins *x* of the tube R by means of a curved arm, *f*, whose ends are forked, as seen in Figs. 1 and 3, so that they can slip horizontally onto the pins *x*.

The weighted lever is connected, through the medium of a rigid rod, *b*, and a connecting-rod, *c*, to the reversing-lever *d* of the engine, so that, when the weighted lever is raised by means of the vertical movement of the shaft in the well, as it will be when the pendent lever is pushed sidewise by contact with a rock or shoal, the vessel will be backed off toward deep water.

It will be seen from the construction shown in the drawing that the vertical shaft C is always kept in the center or axis of the well by means of the sphere Q when the pendent rod is vertical, as when it is in deep water, and the sphere Q is free to turn on its seat when the shaft C is being brought back from an inclined position to the position represented in the drawing.

When the bottom of the pendent rod D or its sliding frame G strikes a shoal or a rock, it is caused to take an inclined position, and the plate or wheel E is consequently tilted in the flaring mouth of the well, one edge of the wheel becoming a fulcrum on which it tilts. The result of that motion is that the top of the rod D is drawn downward and outward, carrying with it the shaft C and its connections, the shaft being oscillated in the sphere Q, as a center, so as to throw its top from its normal place under the disk K and expose it to view, as before explained. The shaft C, besides taking this inclined position, in obedience to the movement of the pendent rod, is also moved downward thereby, and along with it the tube R and the scale Y, and the same movement actuates the weighted lever T through the links W, raising the weight and vibrating its rod *b*, so as to reverse the engine and operate a bell alarm or signal through a chain, *e*.

When the vessel moves off into deep water, the rod D resumes its vertical position, the disk E is restored to its horizontal position, and the shaft C and the parts connected with it resume the positions in which they are represented in the drawing, the dropping of the weighted lever causing the scale Y to rise again to its higher position. The scale is so graduated that its measures increase from the top downward, and so that it indicates in its various positions the depth of water below the vessel within a limit equal to the length of the pendent rod and its extension-frame.

We do not confine ourselves to the mode here shown of connecting the rod D and shaft C, and of securing the action of the rod (when it is pushed out of a vertical position) upon the shaft, as the connection can be modified without departing from the principle of this part of our invention, which embraces the descent as well as the vibration of the shaft when the rod D is moved out of a vertical position by a rock or shoal.

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

1. The pendent rod D, with or without its extension G, in combination with the shaft C, so supported that it can be vibrated and be drawn down when the rod D is inclined by a rock or shoal, substantially as described.

2. The combination, with a vessel provided with a well, B, of the pendent rod D, the shaft C, and the disk E, arranged on the rod D, at its junction with the shaft C, substantially as and for the purpose described.

3. The combination of the pendent rod D and shaft C and weighted lever T, to which they are connected, with the reversing-lever of the engine of the vessel A, substantially as described.

In testimony that we claim the foregoing, we have hereunto set our hands and seals this 3d day of June, 1875.

FRANZ WAGNER. [L. S.]
SAMUEL RUMPUS. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.