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R. M. KNAPP.

Shoal Water Indicator.

No. 45,328. Patented Dec. 6, 1864.

FIG. 1

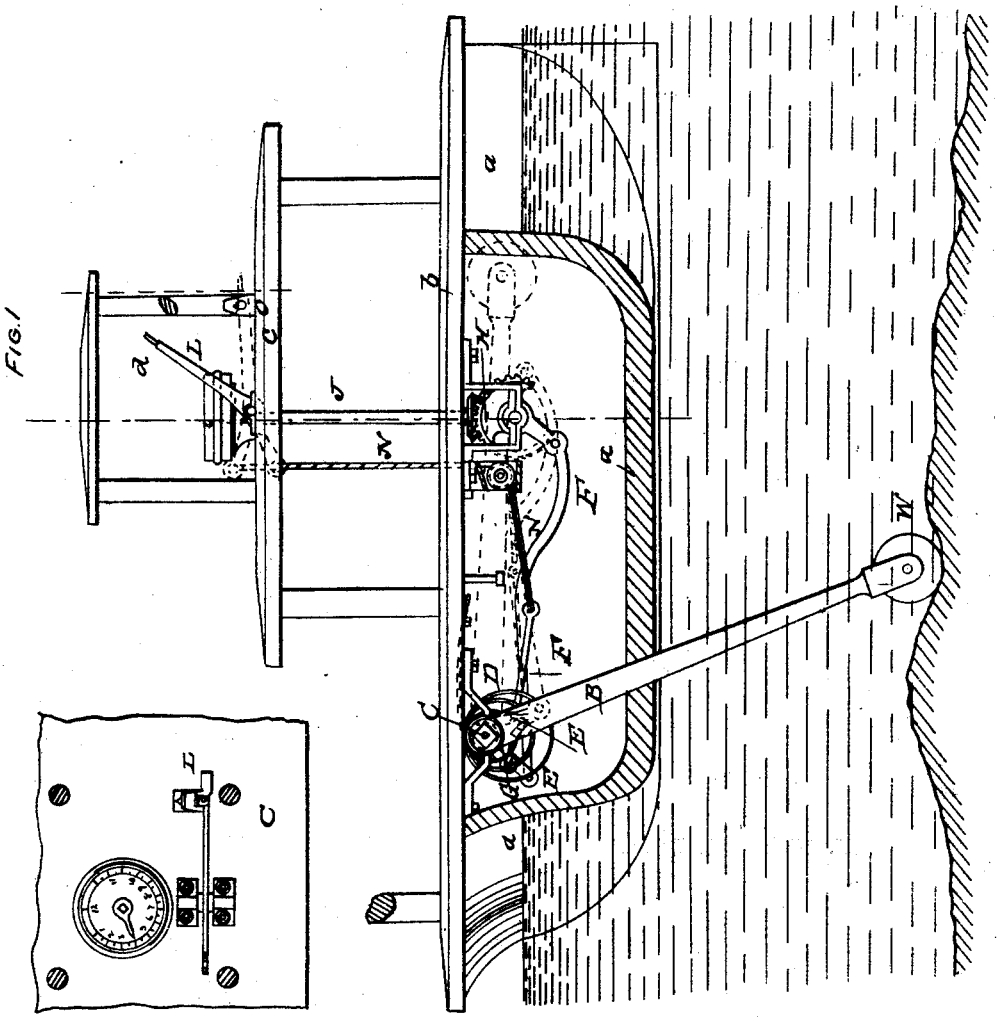

FIG. 3

WITNESSES
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2 Sheets--Sheet 2.

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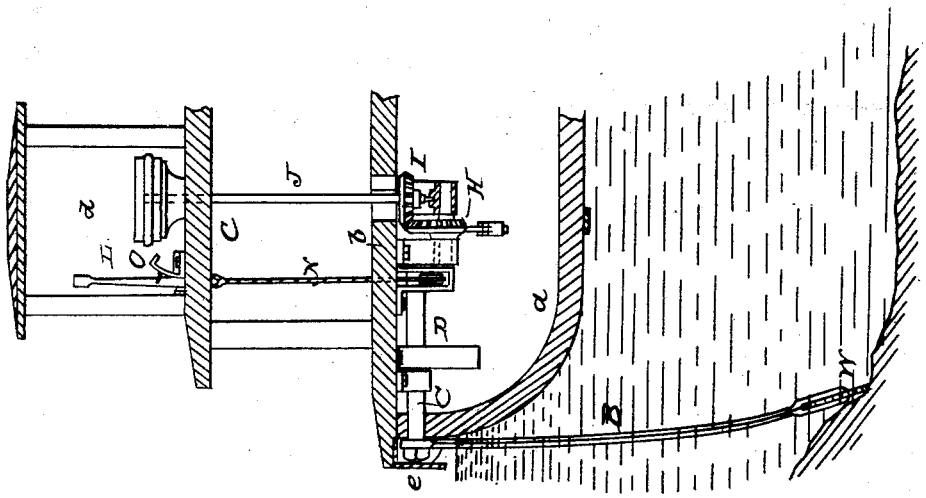

WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

ROBERT M. KNAPP, OF JERSEYVILLE, ILLINOIS.

IMPROVED SHOAL-WATER INDICATOR.

Specification forming part of Letters Patent No. **45,328**, dated December 6, 1864; antedated December 1, 1864.

To all whom it may concern:

Be it known that I, ROBERT M. KNAPP, of Jerseyville, in the county of Jersey and State of Illinois, have invented a new and useful Sounding Apparatus; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 shows a side elevation of the boat with my apparatus, part of the hull being removed to expose the machinery *in situ*. Fig. 2 is a transverse section of the boat with my apparatus attached, the section being made a little abaft of the machinery, so as to expose it in a rear elevation. Fig. 3 is a top view or plan of the parts exposed above the floor of the pilot-house.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to provide an automatic and self-indicating sounding apparatus by which, when in operation and within a certain depth of water, the sounding or depth may be constantly indicated to the eye of the pilot.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

In the accompanying drawings, *a* is the hull of a boat, of which *b* and *c* are respectively the boiler and upper decks, *d* being designed to represent the pilot-house. Pivoted to the under side of the boiler-deck *b*, and inside of the downward-projecting guard *e*, which is usually present in Western river-boats, is a bar B which, when free from obstruction, is suspended vertically in the water. This bar B is attached to a shaft, C, which rotates in bearings attached to the under side of the boiler-deck. To the inner end of this shaft is an arm, E, which, by means of a connecting-rod, F, actuates a segment-wheel, H, and pinion, I, which rotate the vertical shaft J, to whose upper extremity a finger or indicator is attached, and whose motion or position is observable on a vernier or index plate. Thus, the raising or the lowering of the bar B, as the vessel, proceeding on its onward course, drags the end of the bar on the river-bottom, will indicate the soundings on the dial or index.

It is designed to obviate various practical objections that might arise by providing means for stowing compactly away and conveniently bringing into service; the said bar also, to provide for casualties which might arise from lateral motion, currents, or drift.

I will proceed to describe the contrivance which I have adopted to stow away and bring into action, with speed and safety, the sounding-bar B by directing attention to the lever L, which projects conveniently above the floor of the pilot-house, and which, by means of a chain or cord, N, and arm G on the crank *e*, is made by depression to forcibly raise the bar B to a horizontal position close under the boiler-deck, and secure from lateral strain by the depending guard *e*. The lever in its depressed position is held by a catch, O, or any ordinary equivalent means.

In practice it will often be found necessary to have the apparatus in action, even under circumstances where the bar is subject to a lateral strain.

It is a fact familiar to experts in river matters that, whatever may be the direction of the vessels course as to her journey, she must head upstream to effect a landing, and this involves a lateral motion as she swings, perhaps bow on, or broadside, up to the landing or shore. This may have to be accomplished, and often is, in the immediate neighborhood of sand bars and detritus, natural or artificial. I provide against this contingency, at the same time give my bar B the true form for passing easily through the water, by making its transverse section of a prolonged or flattened elliptical shape, so that it will bend readily to lateral pressure, as seen in Fig. 2.

I do not limit myself to the form, dimensions, or terminal appendage of the bar, as I have represented it in my drawings, as I may place a shoe at the end of the bar B in cases of constantly soft bottom, while in a sandy or sufficiently hard bottom the roller or wheel W may be the more satisfactory appendage.

It can hardly be necessary to specify the correct adjustment of the dial-plate and finger so that zero may be coincident with the level of the axis of the shaft *e*.

In case of high speed or strong head currents, or the possible substitution of wood for metal in the construction of the bar B, I

have provided a spring, D, attached to the shaft C, by which the weight of the bar B is practically increased in any desired proportion to maintain its foot or wheel in contact with the bottom.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of the bar B, shaft C, arm E, connecting-rod F, gearing H I, and index-shaft J, arranged and operating substantially as shown and described.

2. The combination of the lever L, with its catch O, cord or chain N, and arm G, with the bar B and shaft C, whereby the said bar may be stowed compactly away when not in use.

The above specification of my improved sounding apparatus signed this 9th day of May, 1864.

ROBERT M. KNAPP.

Witnesses:

CHAS. DU BOIS,

C. D. SMITH.