

(No Model.)

J. HALL.

SOUNDING DEVICE FOR THE HOLDS OF VESSELS.

No. 411,808.

Patented Oct. 1, 1889.

Fig. 1,

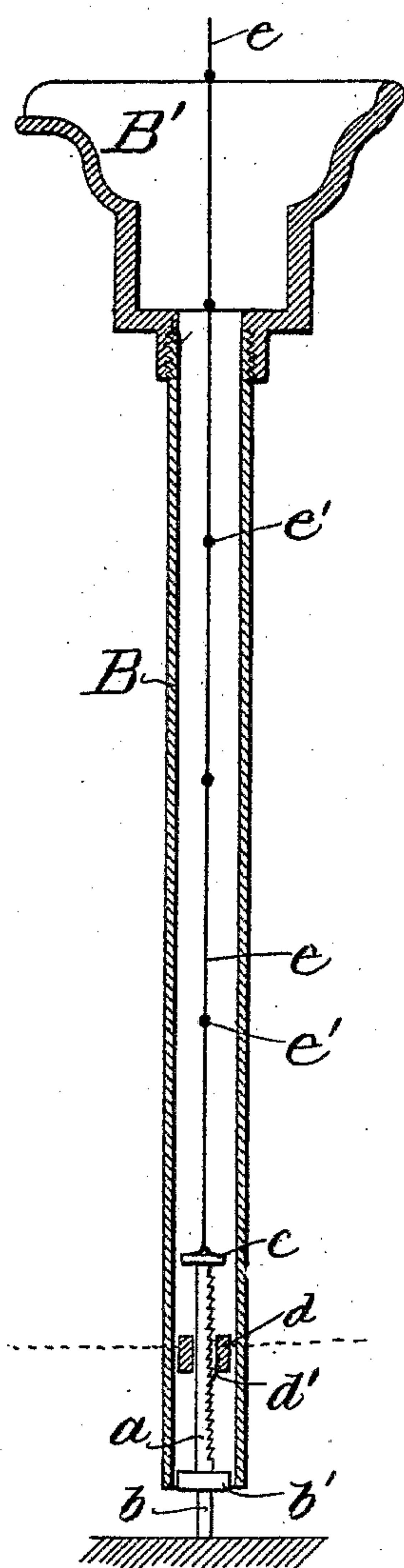
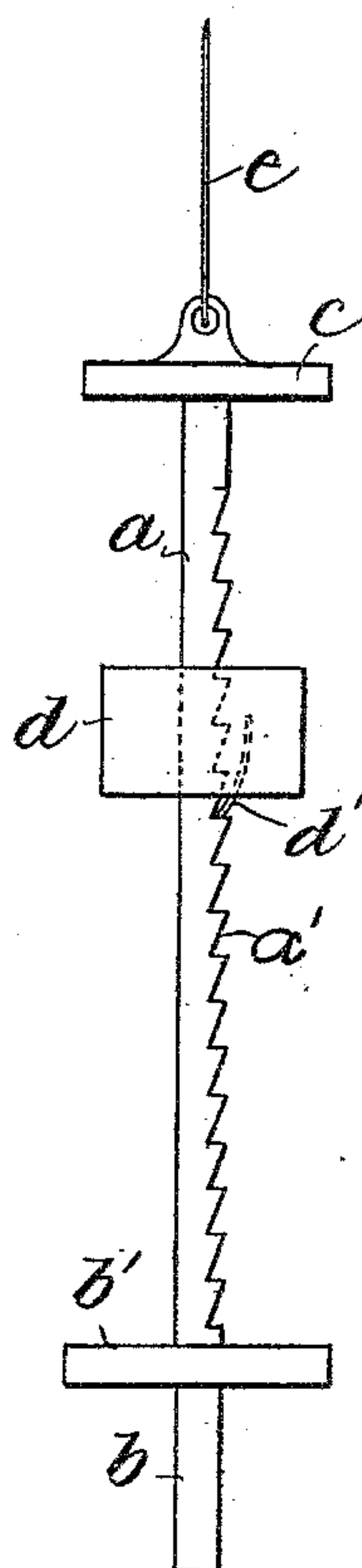


Fig. 2.



Witnesses.
Jas. J. Maloney.
M. E. Hill.

Inventor,
John Hall,
by Jos. P. Livemore
Atty.

UNITED STATES PATENT OFFICE.

JOHN HALL, OF BOSTON, MASSACHUSETTS.

SOUNDING DEVICE FOR THE HOLDS OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 411,808, dated October 1, 1889.

Application filed July 5, 1887. Serial No. 243,402. (No model.)

To all whom it may concern:

Be it known that I, JOHN HALL, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Sounding Devices for the Holds of Vessels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to an instrument for measuring the depth of water in the holds of vessels.

The way most commonly adopted for determining the depth of water which may have collected in the hold of a vessel is to thrust a rod down the pump-tube and observe the height to which the rod is wet. This method is, however, unsatisfactory on account of the great movement of the water arising from the motion of the vessel, and also from the fact that froth frequently collects in the pump-tube and will wet the sounding-rod to a height considerably above the level of the water in the hold. A sounding device has also been made consisting of a tubular case adapted to be lowered into the pump tube or well and having within it a float provided with an engaging device, which holds it at whatever height it may be raised in the tube by the water in the hold of the vessel, said tube being provided with a longitudinal slot, through which the position of the float may be observed when the sounding device is withdrawn from the well.

The object of the present invention is to produce a sounding device similar in its mode of operation to the one just referred to, but of simpler and more inexpensive construction.

The said sounding device consists, essentially, of a rod or bar, preferably about two feet long, having a weight at its lower end, with a flange that nearly fills the pump-tube, and thus prevents the rapid rise and fall of water in said tube, and is provided at its upper end with a flange or collar that also nearly fits the pump-tube, and in connection with the flange at the lower end retains the said rod centrally located in the pump-tube or parallel thereto. A float is provided that is movable along the said bar between the flanges at its upper and lower ends, and is provided

with a bar-engaging device that permits the said float to move upward along the bar, but prevents downward movement thereon, except when disengaged by the operator.

Figure 1 is a longitudinal section of a ship's pump and suction pipe or tube with a sounding device therein embodying this invention, and Fig. 2 is a side elevation of the sounding device on a larger scale.

The said sounding device consists of a rod or bar *a*, provided at its lower end with a weight *b*, having a flange or collar *b'* of somewhat smaller diameter than the bore of the suction-pipe *B* of the ship's pump *B'*, which may be of any suitable or usual construction, being shown with the buckets and valves removed to permit the introduction of the sounding-instrument.

The sounding-rod *a* is provided at its upper end with a flange or collar *c*, which also fits loosely in the bore of the tube *B*, and with the flange *b'* at the lower end of the said rod retains the latter parallel with the said pump-tube and preferably centrally located therein.

The sounding-rod *a* operates as a guide for a float *d*, shown as having a central guide-passage, through which the said rod *a* passes, so that the said float is confined upon the said rod, but is movable along the same between the flanges *b'* and *c*. The said float is provided with a rod-engaging device *d'*, shown as a spring-pawl that engages teeth or shoulders *a'* on the rod *a*, and thus permits the free upward movement of the said float along the rod, but prevents the downward movement of the said float, except when the device *d'* is held off from the shoulders *a'* by the operator.

The entire instrument is supported on a cord *e*, preferably provided with knots or marks *e'* at distances equal to the length of the rod *a*, which is preferably about two feet in length.

When the depth of water in the ship's hold is to be tested, the float *d* is placed by the operator at the lower end of the rod *a*, resting on the flange *b'*, and the entire instrument is lowered to the bottom of the pump-tube, as shown in Fig. 1. The flange *b'* has a sufficiently loose fit in the pump to permit the water to pass up by it freely to the level of

the water outside, but prevents rapid upward and downward movement of the water, which would tend to cause it to dash about in the pump-tube or rise above the actual level of the water outside. The suction-tube B of the pump usually terminates about three inches above the bottom of the vessel, as shown in Fig. 1, and the portion *b* below the flange *b'* constitutes a supporting-foot, which is sufficiently long to reach the bottom of the vessel, while the flange *b'* is still within the pump-tube, as shown, so that the said flange cannot catch under the end of the pump-tube. If there is any water in the hold of the vessel, it will rise to the same level in the pump-tube, and will carry the float *d* up along the rod *a* to the said level. Then when the sounding device is drawn up from the pump-tube the float will remain engaged with the rod *a* by the device *d'* at the level to which it was raised by the water, and will thus indicate the depth of water in the hold of the vessel.

A device of this kind will not be affected by froth or foam collecting in the pump-tube, as the said froth will not buoy up the float *d*.

If the float is found at the top of the rod next to the collar or flange *c*, the said float may again be lowered to the bottom of the rod and the sounding device again lowered into the pump-tube, but stopped by its suspending-cord *e* at any desired distance above the ship's bottom, which distance may be measured by the cord *e*, and is preferably equal to the length of the rod *a* above the bottom of the pump-tube, when, if the water is deeper than the length of the rod, the float will again be raised to an intermediate point on the rod, and

when the sounding device is drawn up it will be known that the depth of the water is equal to the amount indicated by the float on the rod plus the entire length of the rod, or whatever distance the sounding device was supported above the lower end of the pump-tube.

The flanges *b'* and *c* prevent the rod from tipping in the pump-tube, and thus causing the float to be stopped by the walls of the pump-tube, as might take place if the said flanges were omitted.

I claim—

1. A sounding device comprising a bar having flanges or centering devices at or near its upper and lower ends, combined with a float guided upon and movable along the said bar between its ends, and an engaging device which permits upward movement, but prevents downward movement, of the float along the bar, substantially as and for the purpose set forth.

2. A sounding device comprising a bar having a flange near its lower end and a foot projecting below said flange, and a flange at its upper end, combined with a float movable along the said bar and an engaging device, whereby said float is retained at the height to which it is raised on the said bar, substantially as and for the purpose set forth.

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

JOHN HALL.

Witnesses:

JOS. P. LIVERMORE,
JAS. J. MALONEY.