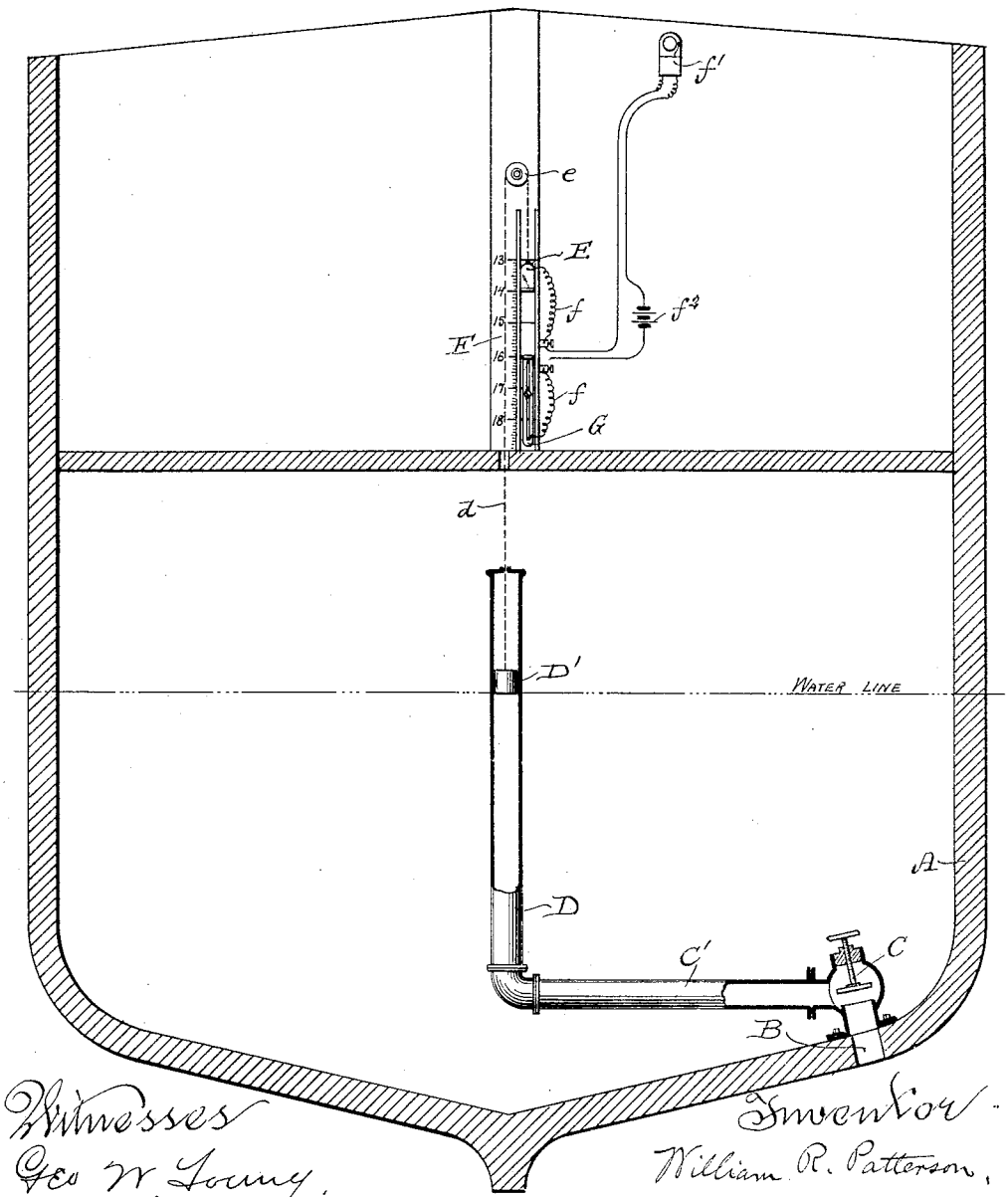
(No Model.) 2 Sheets—Sheet 1.

W. R. PATTERSON.

DRAFT INDICATOR FOR VESSELS.

No. 484,642. Patented Oct. 18, 1892.

Fig. 1.



Witnesses
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John E. Wiles.

Inventor.
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(No Model.) 2 Sheets—Sheet 2.

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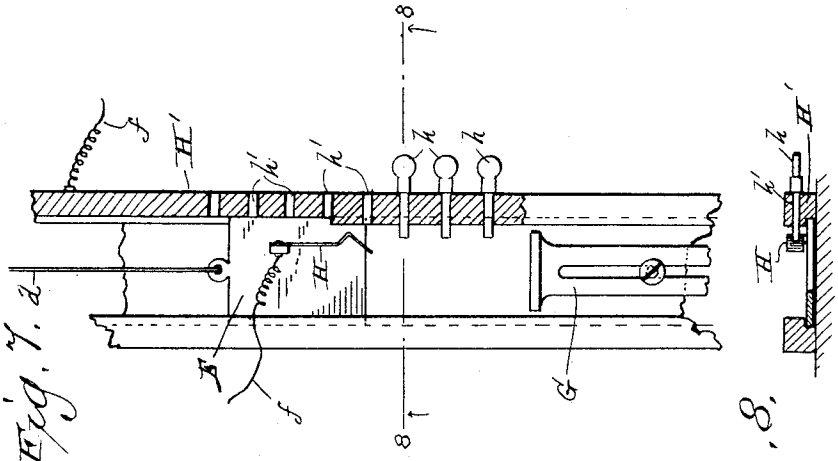

Fig. 7.

Fig. 8.

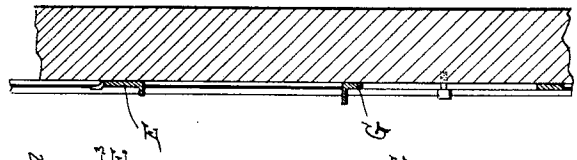

Fig. 4.

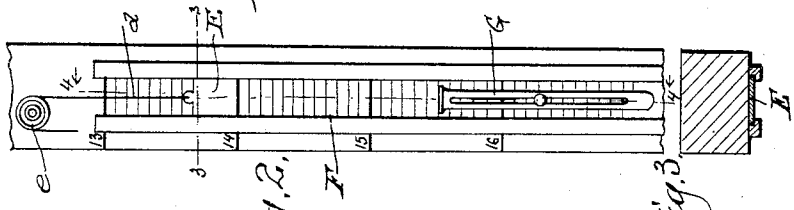

Fig. 2.

Fig. 3.

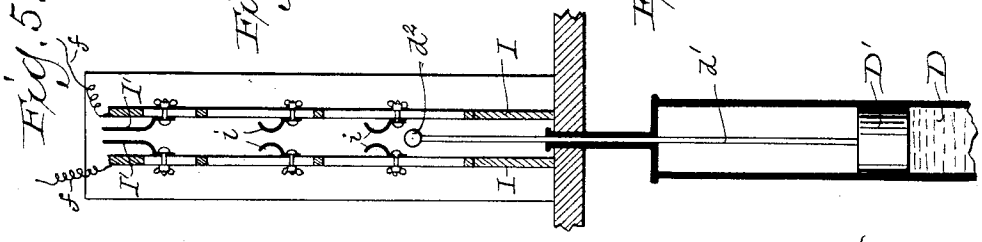

Fig. 5.

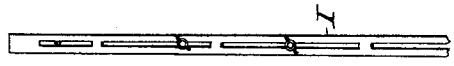

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM R. PATTERSON, OF MANISTEE, MICHIGAN.

DRAFT-INDICATOR FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 484,642, dated October 18, 1892.

Application filed July 18, 1892. Serial No. 440,390. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. PATTERSON, a citizen of the United States, and a resident of Manistee, in the county of Manistee, and in the State of Michigan, have invented certain new and useful Improvements in Draft-Indicators for Vessels; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in devices for indicating the draft of vessels under varying conditions; and it consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a cross-sectional view of the hull of a vessel to which my improved indicator is applied. Fig. 2 is an enlarged detail elevation of a portion of the apparatus. Fig. 3 is a horizontal cross-sectional view of the same, taken on line 3 3 of Fig. 2. Fig. 4 is a vertical sectional view of the same, taken on line 4 4 of Fig. 2. Fig. 5 is a vertical sectional view illustrating another form of my improved apparatus. Fig. 6 is a side elevation of one of the parts. Fig. 7 is a view, partly in section and partly in elevation, of still another form of my apparatus. Fig. 8 is a horizontal cross-sectional view of the same, taken on line 8 8 of Fig. 7.

In said drawings, A represents the hull of the vessel, through which a port B communicates with the water outside of the vessel. This port is conveniently made in or near the bottom of the vessel, so as to be always submerged, whether the vessel is loaded or not, and is controlled by means of a sea-cock or valve C. A pipe C′ communicates with the valve C at one end and at the other end communicates with the lower end of a stand-pipe D, which is arranged vertically within the hull of the vessel. Within the stand-pipe D is arranged a vertically-movable float D′, which is operatively engaged with a suitable movable slide E in any desired manner.

In Figs. 1 to 4 of the drawings the float D′ is shown as connected with the slide E by means of a cord *d*, which passes upward from the float and over a suitable pulley *e*, so as to suspend the slide below said pulley in such a manner as to be vertically movable. A scale of measurements F is arranged adjacent to the path of the movable slide, as shown, so as to indicate the amount of movement of the same, a rise of the float causing a corresponding downward movement of the slide E and a fall of said float producing a corresponding rise of said slide. In the path of the slide E is arranged a vertically-adjustable stop G, which may be adjusted so as to limit the downward movement of the slide E in an obvious manner.

The slide E and the adjustable stop G are preferably connected with the wires *f f* of an electric circuit, which includes a bell or other audible signal *f′* and an electric battery f^2, as in Fig. 1. In this particular form of my device the circuit from the battery f^2 to the bell *f′* remains broken until the downward movement of the slide E brings it into contact with the stop G, when the bell or other signal will be operated in an obvious manner. The water will obviously rise in the stand-pipe D when the sea-cock C is opened until it reaches the level of the water outside of the vessel, and as the vessel is loaded the consequent settling of the vessel in the water will of course cause a corresponding rise of water in the stand-pipe D and consequent rise of the float D′. The degree of movement of the float and of the slide may be observed upon the scale F, adjacent to the path of said slide, and the divisions of said scale are proportionate to the scale of markings of feet and inches usually applied to the outside of the hull to indicate the draft of the vessel, so that the position of the slide with respect to the scale will accurately indicate the draft of the vessel to a person upon the deck. When the slide E reaches the stop G, the audible signal will be caused to sound, as before described, and this stop is conveniently adjusted to the point upon the scale that corresponds with the limit of draft that is desirable for the vessel to be loaded to. The deck officer will thus be notified when the vessel has received the desired amount of load.

It may be in some instances desirable to provide means for sounding the signal one or more times before the slide reaches the stop to warn the deck officer that the load is approaching the desired limit, so that he may govern the operation of loading accordingly, and for this purpose I provide one or more

adjustable contacts above the stop, with which the slide comes into contact as it approaches said stop, these contacts being so arranged as to close the circuit to the bell when the slide comes against them.

In Figs. 7 and 8, the slide is shown as provided with a spring H, arranged to engage with plugs or pins h, which may be inserted in apertures h', arranged at intervals upon a vertical metallic post H'. Any desired number of these pins may be arranged in position to come successively into engagement with the spring upon the slide, and the post H' is electrically connected with one pole of the circuit and the spring H with the other pole of said circuit, so that each time that the spring engages with one of the pins the bell will ring.

In Figs. 5 and 6, I have illustrated a somewhat different construction, in which the two terminals of the battery-circuit are connected with parallel vertical posts I I and the float D' is provided with a longitudinally-movable vertical rod d', having a head or enlargement d^2 at its upper end. Contact-springs $i\,i$ are adjustably secured at intervals upon these posts in such a manner as to engage with opposite sides of the head d^2 as the float D' rises. These contact-springs may be adjusted so as to cause the signal to sound any desired number of times when the load is approaching the limit. I also find it convenient in this form of construction to provide a pair of adjustable contact-springs I' I', which are preferably secured to the posts near the top, so as to engage with the head d^2 at the time the desired load is reached, said springs being so constructed as to remain in contact with said head and cause the bell to ring continuously until the deck officer shuts it off.

It will thus be seen that by my improvement the apparatus, besides affording a visual gage which shows the draft of the vessel, also affords any desired number of audible warnings as the load is approaching the limit and a continuous ringing of the bell when this limit is reached.

The amount of water that the vessel is drawing may be very accurately ascertained by this device, while by the usual scale of marks upon the outside of the hull it is often very difficult and sometimes impossible to ascertain the draft on account of the washing of the waves against the side of the vessel.

Any means other than the electric circuit may of course be employed to sound the audible signal at the desired point or points; but in practice I find that the means herein described is very satisfactory and efficient.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located within said stand-pipe, a signal, and suitable means for operating said signal when said float shall have reached a predetermined position in the stand-pipe, substantially as described.

2. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located in said stand-pipe, a visual indicator operatively connected with said float, an audible signal, and suitable means for operating said audible signal when said float shall have reached a predetermined position in the stand-pipe, substantially as described.

3. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside the hull, a float located in said stand-pipe, a slide operatively engaged with said float, a stop adjustably supported in the path of said slide, an audible signal, and suitable means for operating said signal when the slide reaches said stop, substantially as described.

4. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located within said stand-pipe, a slide operatively connected with said float, an adjustable stop located in the path of the slide, suitable means for operating said signal when the slide comes against the stop, and suitable means for intermittently operating said signal as the slide approaches said stop, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

WILLIAM R. PATTERSON.

Witnesses:
JOHN E. WILES,
N. E. OLIPHANT.