



# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR INDICATING THE SPEED OF VESSELS AND DEPTH OF WATER.

Specification of Letters Patent No. 17,349, dated May 19, 1857.

*To all whom it may concern:*

Be it known that we, D. HINMAN and F. B. FOURNIER, of Berea, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Apparatus for Ascertaining the Speed of Vessels and Their Soundings; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a vessel, with our apparatus attached—and Fig. 2, a section of the side opposite that shown in Fig. 1.

Like letters refer to like parts in the different views.

A, A, represents the hull of a vessel. B, a chamber, of wood, iron, or other suitable material, open at top and bottom, and extending from the deck to the bottom of the hull. C, an index plate, secured to the side of the chamber, or, to the deck of the vessel. D, a wing secured at one end, by an articulating joint, *d*, to the lower edge of the chamber B, or to the bottom of the vessel. E, a connecting rod, one end of which is attached to the free end of the wing D, by a joint as seen at *e*, and the other end hooked into a rack F, which rack is in gear with a pinion G, whose shaft passes through the center of the index plate C, this shaft has its journal in the piece H, which is secured at each end, to the back of the index plate C. The rack is kept in gear with the pinion G, by one of the attachments of the piece H, the rack F passing between the shaft of the pinion, and that attachment. Upon the front end of the shaft of the pinion, is secured an index hand or pointer J.

The attachment of the wing D, to the chamber B, is at the forward end of the chamber, and when the vessel is lying to, or when it is run back, the wing depends, as seen in Fig. 2, but when the vessel is in motion, in the direction of the arrow in Fig. 2, the resistance of the water, pushes the wing backward and upward. The more rapid the movement of the vessel, the more forcible will be the pressure upon the wing, and consequently, the farther upward toward the

bottom of the vessel will it be pressed. As the wing moves upward, the connecting rod E, is thrown upward, and as the rod E is connected to the rack F, it carries up the rack; the rack, as it passes upward, turns the pinion, and consequently turns the index hand, which is secured to the shaft of the pinion.

When the vessel is at rest, there being no resistance to the wing, it depends as low, as its connection with the rod E, will allow it. The index hand J, then stands at O, in the graduated scale K, but when the vessel moves forward, the wing rises, and the hand J moves forward along the scale K, and thus, indicates the speed at which the vessel is sailing.

Should the vessel be in shallow water, if the wing strikes the ground, the rack will be thrown up, suddenly, and the index hand will be thrown forward suddenly, with a jerking movement, very different from that occasioned by rapid sailing. If the vessel be known to be in shallow water, the connecting rod E, may be unhooked from the connection at *a*, and hooked into one of the lower holes as indicated by the red line L, so that the wing may depend perpendicularly, as indicated by the red line P, thus it would indicate ground at a greater depth than when in the position it would have if hooked into the hole *a*.

There are guides R, R, Fig. 2, attached to the interior surface of the chamber, to give the proper direction to the connecting rod; instead of the guides R, R, rollers may be used as seen at S, S, Fig. 1.

The chamber to which this apparatus is attached, may be placed in the center of the vessel, or at any other convenient point, it need only be large enough, for the free play of the apparatus.

When the vessel is backed in shallow water, the wing D, may be drawn entirely up, so as to close the chamber at the bottom, and thus prevent the ingress of mud, or other obstructions; it then assumes the position shown by the red line T, in Fig. 1.

The parts herein described, are not considered to be new, taken separately; what distinguishes our improvement, is, the com-

combination of the devices specified, so arranged that, by, the same apparatus, the speed and soundings of the vessels may be ascertained.

What we claim as our improvement and  
5 desire to secure by Letters Patent, is,

The arrangement of the movable wing, D, with its joint, *d*, the rod E, and rack F, combined with the dial or indicator, sub-

stantially as described, for the purpose set forth.

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Witnesses:

SAML. L. CLARK,  
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