J. M. Brooke.

Bathometer.

No. 29,454. Patented Aug. 7, 1860.

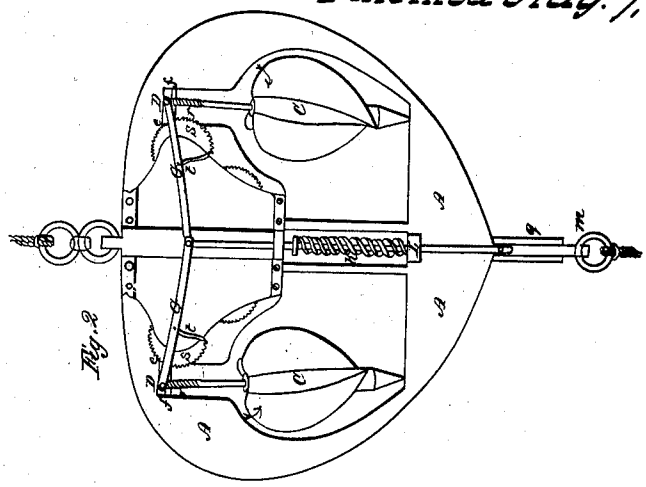


Fig. 2.

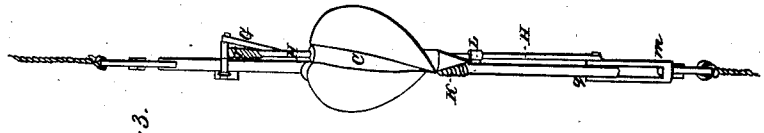


Fig 3.

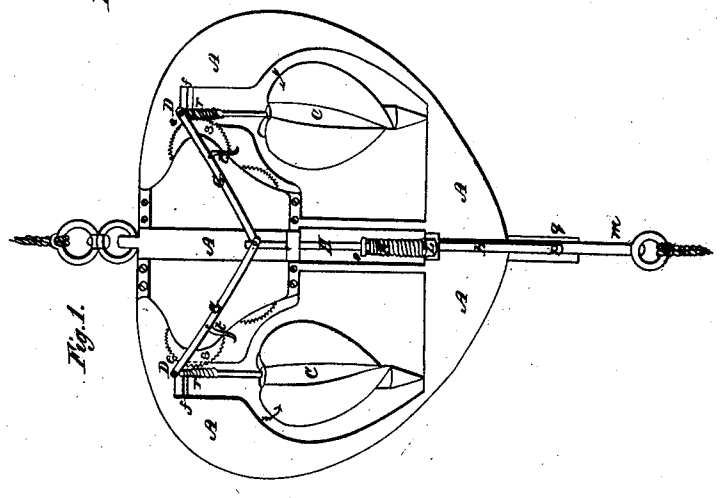


Fig. 1.

UNITED STATES PATENT OFFICE.

JOHN M. BROOKE, OF THE UNITED STATES NAVY.

DEEP-SEA-SOUNDING METER.

Specification of Letters Patent No. 29,454, dated August 7, 1860.

To all whom it may concern:

Be it known that I, JOHN M. BROOKE, a lieutenant in the Navy of the United States, have invented a new and useful Improvement in Machines for Measuring the Depths of the Sea, Depending on the Revolutions in their Passage Through the Water of Propeller-Shaped Wheels or their Equivalents; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view, showing the relative positions of parts of the instrument as it descends; Fig. 2 also a front view showing the relative positions of parts as it is being drawn up from the depths; Fig. 3 a transverse section of the frame.

A, is a metal plate or frame; C, propeller shaped wheels rotating in opposite directions; D, axle boxes of propeller-shaped wheels moving in guides between *e* and *f*; *e*, *e*, abutments or checks limiting the movements of the axles boxes D, D, toward the toothed wheels S, S; *f*, *f*, similar abutments or checks limiting the movements of the axle-boxes from the toothed wheels S, S; G, G, arms connecting the axle-boxes D, D, with head of movable rod H; H, movable rod resting by the button or shoulder *o*, on the spiral spring K; K, spiral spring attached to the plate A, at L and of sufficient power to lift the sounding rod when the weight is detached from it, as with the apparatus known as "Brooke's deep-sea-sounding apparatus;" M, swivel and link attached to the rod H and moving in the slot *q*; *t*, *t*, bent arms attached to the arms G, G, they clamp the registering train when the propellers are disengaged.

In using this machine the sounding line is attached to the ring at the top of the plate A. The weight used to sink the line is attached to the ring below the link *m*. The sounding line being retarded in its descent by the friction of the water or from other cause, the rod H, is drawn down, in opposition to the spring K, until the upper part of the link M, rests upon the bottom of the slot *q*, when the strain comes upon the plate A. The arms G, G, have drawn the axle boxes D, D, to their respective abutments *e*, *e*. The endless screws *r*, *r*, now act upon the toothed wheels S, S, which put in motion independent registering trains indicating the number of revolutions of the propeller-shaped wheels. When, on reaching bottom, the weight is detached the spring K raises the rod H, pushing the axle boxes D, D, to the abutments *f*, *f*, the endless screws are disengaged from the toothed wheels S, S, and so remain while the apparatus is being drawn up to the surface of the sea. The propeller-shaped wheels then turn freely without affecting the registering train, and offer no perceptible resistance to its upward passage through the water.

In order that the substantial difference between this improved, sounding and depth registering, machine and others, depending on the rotation of propeller-shaped wheels or their equivalents, may be clearly perceived, it is proper to state that in sounding to considerable depths the sounding lead or other apparatus acquires a rotatory motion about its axis, and such rotation prevents the registering of the number of revolutions of the propeller shaped wheel, particularly at great depths, where the lead sinking slowly the revolutions of the whole apparatus are more frequent in comparison with the distance traversed. But by the combination in one frame of two propeller shaped wheels or their equivalents, rotating in opposition to each other a compensation is effected for if the rotation of one be accelerated by the rotation of the whole apparatus, that of the other is retarded, and the mean of the numbers of revolutions, recorded by the independent registering trains, will indicate the number of revolutions that would have been made by a single propeller shaped wheel if the apparatus to which it was attached went down without rotating, preserving the same vertical plane. And furthermore the propeller shaped wheels being disengaged from their registering trains instead of being clamped immovably, when the descent of the apparatus is arrested on the bottom, offer very little resistance in hauling up so that they may be recovered from great depths with the small line suited to such purposes, even in the vicinity of the Gulf stream, where strong currents prevail, and

without liability to those errors which have heretofore rendered it impossible to determine the absolute depth with certainty.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in one frame, of two propeller-shaped wheels, or their equivalents, rotating in opposite directions; thus compensating the errors, arising from the rotation of the whole apparatus about its axis while descending through the water, and the mode of connecting the endless screws of the propeller shaped wheels or their equivalents with the registering trains, by the aid of the weight used to sink the line in opposition to any retarding influence on the line above, and of disengaging the same by the aid of a spring, rod and arms as set forth in the preceding description, when the weight used to sink the line is detached from it.

2. Also the mode of clamping the driving wheels of the registering train, when the propellers are disengaged, by curved or hooked arms attached to the arms G, as shown in the accompanying drawings.

JOHN M. BROOKE.

Attest:

JOHN S. HOLLINGSHEAD,
WM. MARTIN.