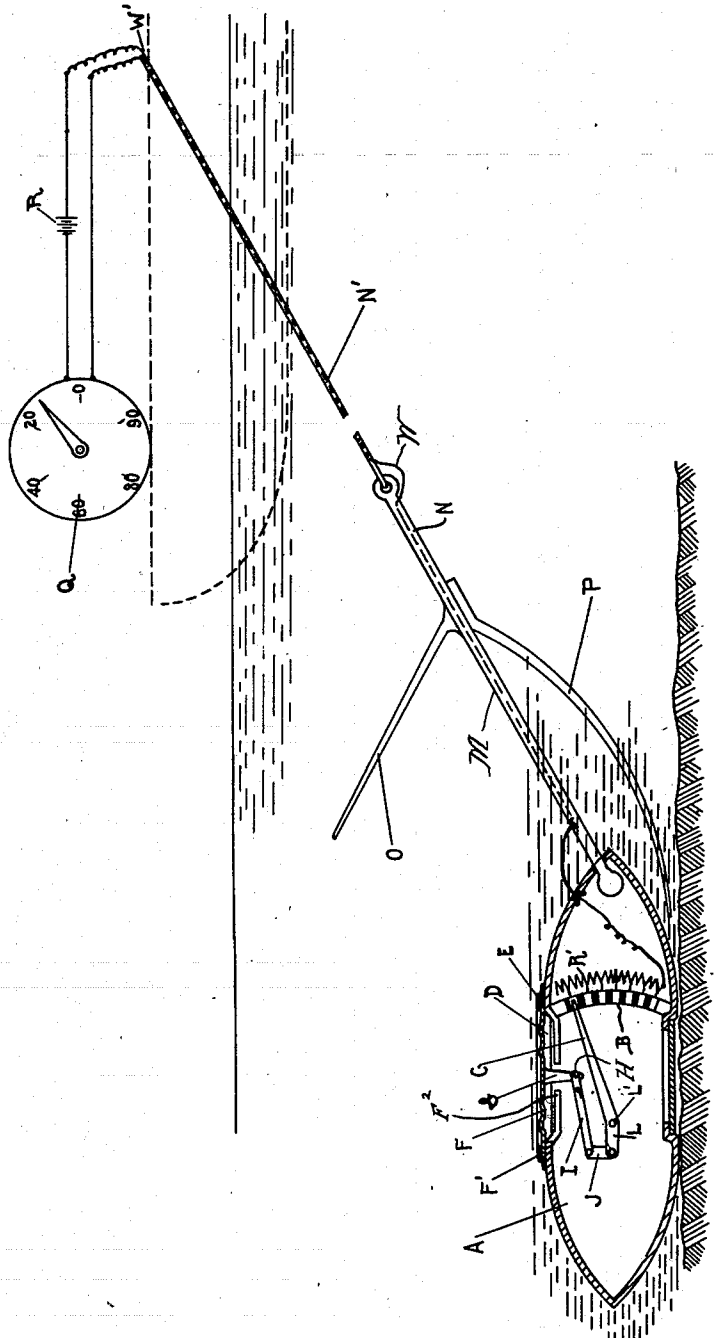
A. O. MASON.

AUTOMATIC SOUNDING DEVICE.

APPLICATION FILED JULY 29, 1916.

1,255,034. Patented Jan. 29, 1918.



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UNITED STATES PATENT OFFICE.

ARCHIBALD O. MASON, OF DETROIT, MICHIGAN.

AUTOMATIC SOUNDING DEVICE.

1,255,034. Specification of Letters Patent. **Patented Jan. 29, 1918.**

Application filed July 29, 1916. Serial No. 112,083.

To all whom it may concern:

Be it known that I, ARCHIBALD O. MASON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Automatic Sounding Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to automatic sounding devices and refers more particularly to a sounding apparatus for determining the variations in the depth of the water through which the vessel is passing.

Among the objects of the invention are to provide a sounding apparatus which can be thrown over the side of the vessel and of which readings can be automatically obtained as to the depths of the water through which the ship is passing; to provide a construction in which the depths are automatically and continuously shown, during the period when the casing is submerged by an ammeter placed at any convenient position on the boat; to provide a sounding device that will automatically be forced to the bottom and forced to run along on the bottom when thrown over the side of the ship or other vessel and in which the sounding device will be protected from weeds or other obstructions in the bottom of the channel; to provide a construction of a sounding device that can be readily attached to boats now in use and which will automatically give accurate readings as to the depth of the water through which the ship is passing; and in general to provide a new and improved sounding apparatus of the character above referred to. The invention further resides in such details of construction, arrangements and combinations of parts as will more fully hereinafter appear.

In the drawings,

The figure is a side elevational view of a sounding apparatus embodying my invention.

Describing in detail the sounding apparatus shown in the drawings, A designates the shell or casing of the sounding apparatus and B a rheostat contained within the casing, the traveling or adjustable brush C of this rheostat being operated as follows.

At its upper side, the casing A is provided with a circular opening D surrounding which is an annular ground surface E. Secured to this annular surface E by a water tight connection, is a diaphragm F which is preferably corrugated and which is held in place by a locking ring F'. Carried by the under surface of this diaphragm and vertically adjustable therewith, is a lug or pin G, the lower end of which is pivotally secured at H to the short end of a multiplying lever I. The free end of the latter is connected by a link J to a crank arm L, this arm being fulcrumed upon a rod L'. The free end of this arm carries the movable or adjustable brush member C of the rheostat B.

At its forward end, the casing A has a fork M, to the strut N of which is secured a steel cable N' which cable connects the end of the strut or fork with the usual out-rigger on the boat side. Connected to the fork is a plate or depressing plane O, which is arranged to automatically depress the casing when the sounding apparatus is in service. Means are also provided for protecting the casing from becoming entangled in weeds or other obstructions through which the boat is passing, this particular means comprising a plurality of prongs P secured to the fork M and extending beneath the lower part of the front end of the casing.

The construction as above described is such that whenever the casing is forced down beneath the surface of the water the flexible diaphragm will be forced toward the center of the casing, a distance directly proportionate to the excess pressure produced by the weight of the water. This downward adjustment of the diaphragm and pin G will through the multiplying lever arrangement, above described, rock the arm L through a relatively wide arc and thus adjust the traveling brush C across the stationary contact of the rheostat.

For registering or indicating the depth of the water through which the casing is drawn, I preferably employ an ammeter Q, which is connected into the same circuit as the rheostat, there being also the usual battery R or other suitable source of constant voltage and the usual resistance coils R'. One lead wire is grounded at W' on the connection to the casing A, and through the casing to the brush member C of the rheostat, while the other extends through an insulated wire W to the rheostat, the arrange-

ment of the electric circuit being such that whenever the diaphragm is depressed so as to move the brush member C downward, the current to the ammeter will be increased a corresponding amount. The insulated wire W preferably extends through the fork and cable as shown in dotted lines in the drawings, although the invention is not limited to this particular arrangement. Since the amount of increase registers on the ammeter, it is possible to so mark the dial of the ammeter that it will indicate in whatever unit is desired the depth of the casing. For preventing the diaphragm being forced inward beyond its limit of elasticity, an inwardly projecting flange F^2 is preferably employed. The invention however is not limited to any details of construction shown, except as specified in the appended claims.

What I claim as my invention is:

1. In a sounding device, the combination of a casing adapted to be submerged, said casing having a flexible diaphragm, a multiplying lever mounted in said casing, a rock arm also mounted in said casing, a connection between said diaphragm and multiplying lever and between the latter and said rock arm for transmitting the movement of said diaphragm to said rock arm, and an indicating device controlled by movement of said rock arm.

2. In a sounding device, the combination with a casing adapted to be submerged, of a rheostat within said casing, a flexible diaphragm carried by the upper surface of said casing and a connection between said diaphragm and rheostat for actuating the latter according to the depth at which the casing is submerged, and a flexible member for drawing the casing forward, forming one of the electrical connections to the rheostat.

3. In a sounding device, the combination with a casing adapted to be submerged, of a continuous automatic indicator, control mechanism for said indicator within said casing, a cable connected to said casing by means of which it is connected to a moving vessel, and a submerging plane connected to the forward end of said casing for forcing the same down into the water below the position at which it would normally come to a state of equilibrium without such plane.

4. In a sounding device, the combination with a casing adapted to be submerged, of a member connected to said casing at its forward end, means connected to said member and extending beneath the lower part of the front end of said casing for protecting the same from any obstructions and means connected to said member for automatically depressing said casing to the bottom when in use.

5. In a sounding device, the combination with a casing adapted to be submerged, of a continuous automatic indicator, electrical control mechanism for said indicator and within said casing, and a cable connected to said casing by means of which the latter is connected to a moving vessel, said cable forming one of the electrical connections for said control mechanism.

In testimony whereof I affix my signature in the presence of two witnesses.

ARCHIBALD O. MASON.

Witnesses:
MARY STEWART,
OLIVER E. DAY.