

E. D. GIRD.  
 Safety-Devices for Preventing Vessels from  
 Running on Shore.

No. 158,586.

Patented Jan. 12, 1875.

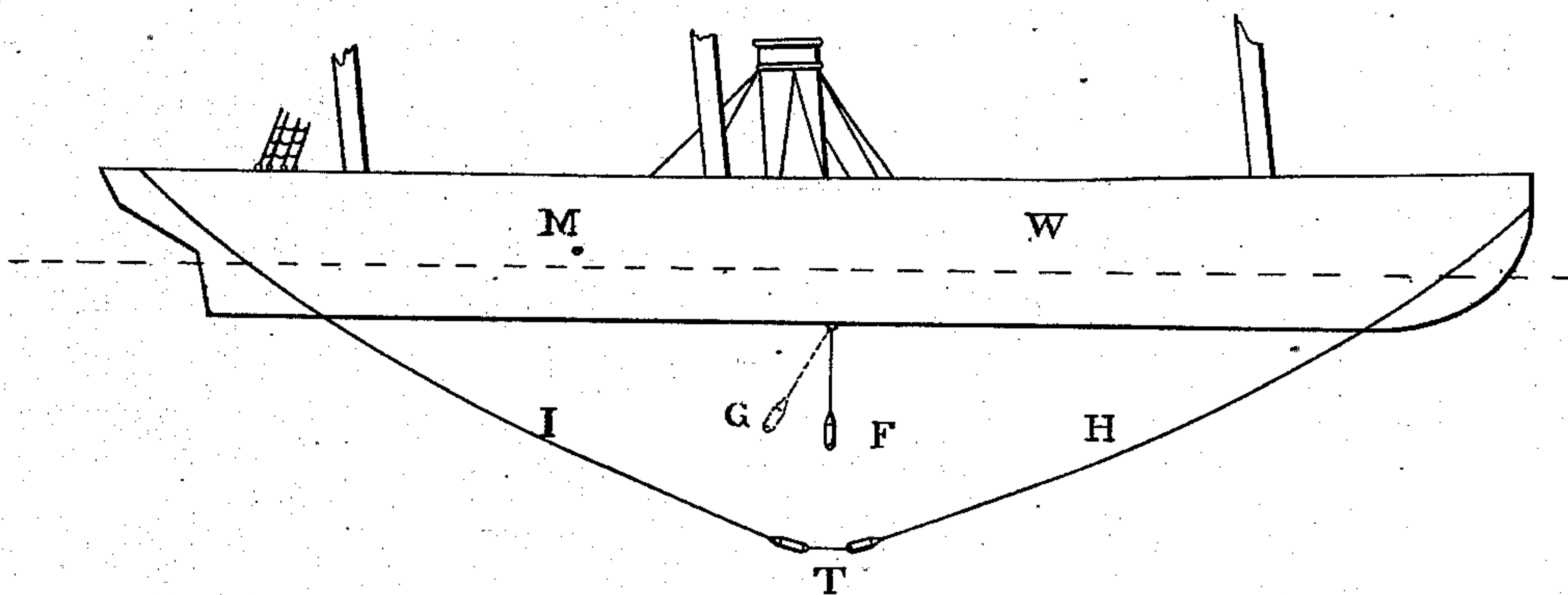


Fig 3.

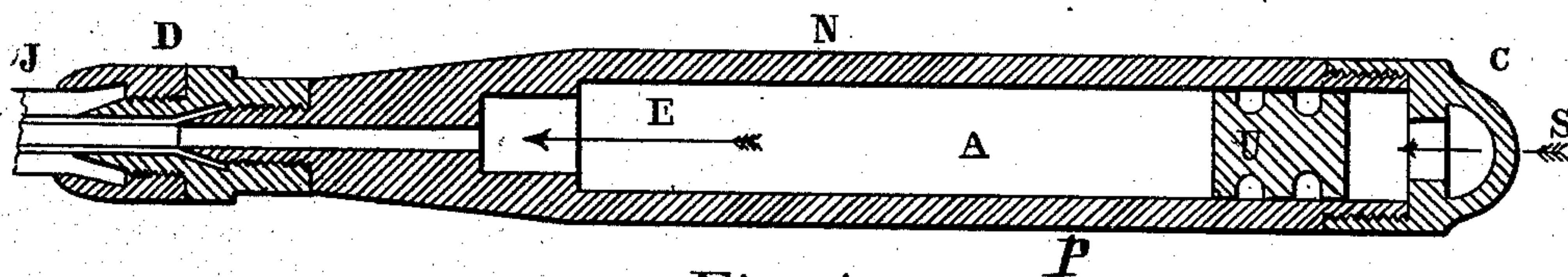


Fig 1.

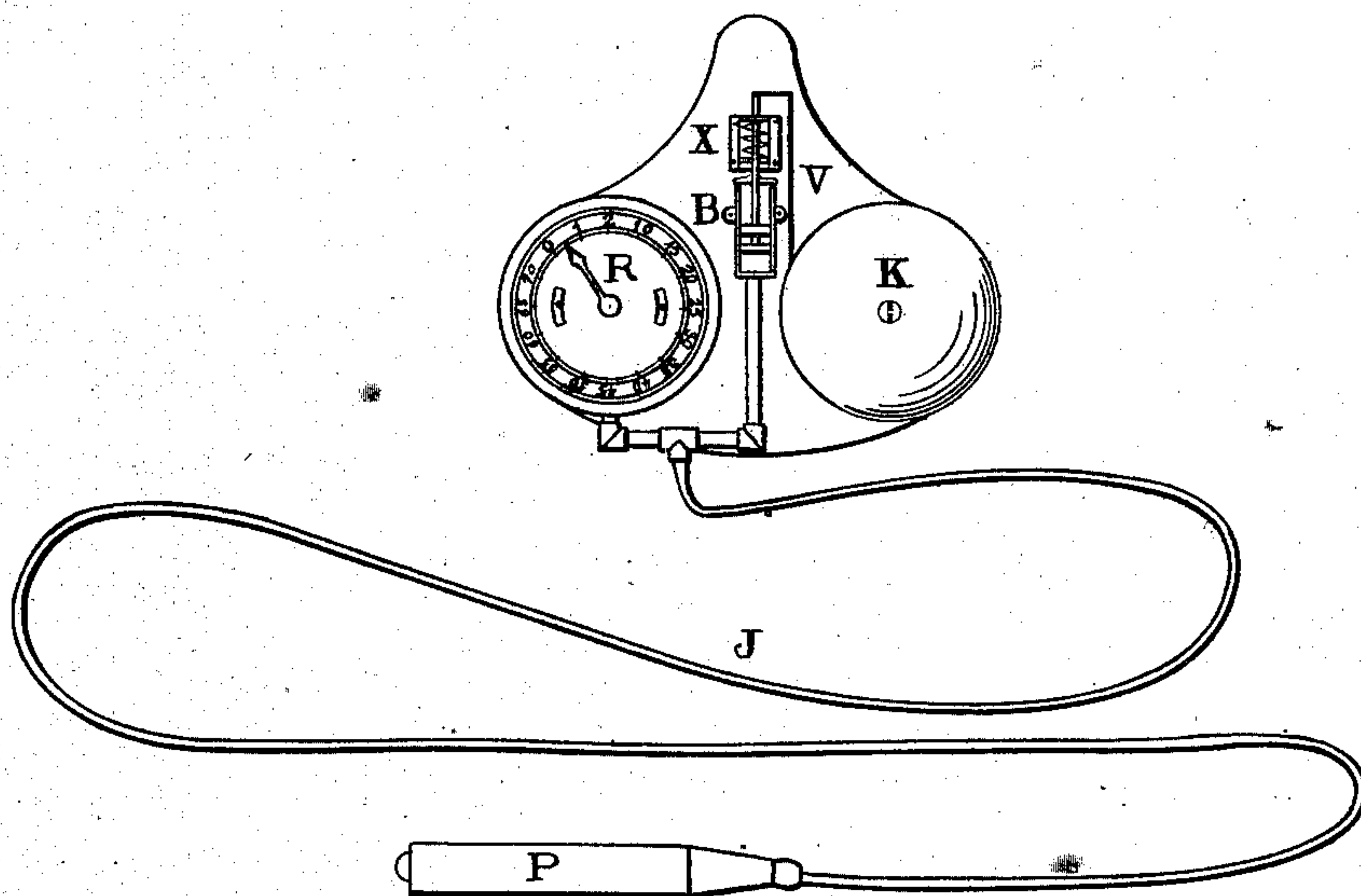


Fig 2.

Witnesses.

*Frank J. Girdardent.*  
*J. L. Sisker*

Inventor.

*Edward D. Gird*



# UNITED STATES PATENT OFFICE.

EDWARD D. GIRD, OF SYRACUSE, NEW YORK.

## IMPROVEMENT IN SAFETY DEVICES FOR PREVENTING VESSELS FROM RUNNING ON SHORE.

Specification forming part of Letters Patent No. **158,586**, dated January 12, 1875; application filed May 14, 1874.

*To all whom it may concern:*

Be it known that I, EDWARD D. GIRD, of the city of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Safety Device for Preventing Vessels from Running on Shore, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making a part of this specification.

The object of my invention is to prevent vessels from running on shore, or upon reefs or rocks, by keeping a constant sounding, which is indicated upon a dial-face situated in different parts of the ship, and which, in case of approach to shallow water, will indicate the same, giving the exact depth thereof, and by which, should dangerously shallow water be reached, a general alarm is given, thereby adding to the safety of life and property at sea.

My invention consists in combining, with a sounding apparatus, composed of an air-cylinder having a flexible tube for the purpose of attaching it to a vessel, also for conducting the air from the cylinder through the pressure gages or indicators with which it is provided, a bell, arranged with suitable mechanism, so that when the water becomes very shallow the decreasing pressure will cause the bell to ring, and thereby give an alarm, as more particularly hereinafter set forth and claimed.

The instrument is suspended beneath the ship by two lines, one from the bow and one from the stern, for the purpose of bringing the cylinder or cylinders into such position as they will not be influenced by the motion of the vessel, the angle of the line being about thirty degrees, bringing the cylinder beneath the center of the ship.

In the accompanying drawing, Figure 1 is a sectional view of the cylinder, showing the air-chamber piston and opening to hollow line; also, the aperture through which the water enters to press against the piston. Fig. 2 is a view of the pressure-gage and bell, and device for ringing the same. Fig. 3 represents the position of the cylinders beneath the ship.

In the drawing, P is the cylinder, which is

made of copper, and is from ten to fifteen inches in length, and from one to two inches in diameter. The end to which the line J is attached is made tapering, so as to afford as little resistance to the water as possible. A is the compressing-chamber, which is from three-fourths of an inch to one and one-half inch in diameter, and extends three-fourths of the entire length of the cylinder. The piston U is introduced into the end C, and the cap S screwed thereon. The water presses against the piston U through an aperture, shown by the arrow at S. The piston U, pressing against the air in the chamber A, forces it in the direction of the arrow, at E, into the line J. The line J is secured to the cylinder by means of clamp-nuts, as shown at D. The end cap S has a loop or staple for the purpose of attaching two together, as shown at T. R is the pressure-gage, which is attached to a frame, which also holds the bell K and the drum for operating it. The line J opens into the tube of the pressure-gage R, and also into the cylinder B. A piston in the cylinder B presses against a spring, X. Attached to this piston is a rod or wire, V, which operates the bell-ringing mechanism.

Having described the different parts of my invention, it will be seen that the pressure upon the piston U depends upon the depth from the surface of the water. This pressure is indicated upon the gage B, by means of which the position of the cylinder P is known.

The cylinder P is lowered beneath the ship a proper distance to give safe depth of water beneath the vessel, (say seventy feet,) and the bell-ringing device can be adjusted so as to ring should the cylinder P be raised, say, to forty feet.

Oil or other liquid may be used which is lighter than water, or both may be used in combination.

The instrument may also be used for submarine topographical mapping, the exact profile being given by drawing the instrument along the bottom, the varying depth being traced upon a moving strip of paper, upon which a pencil is made to press, the pencil being moved by the pressure of the air, which is governed by the depth of water, the paper being moved by suitable mechanism, either by

weights or springs, or by a wheel operated by the force of the water, as the vessel containing the instrument moves along.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination of the cylinder P, the line

J, the cylinder B, spring X, rod V, and bell K, constructed substantially as and for the purpose set forth.

EDWARD D. GIRD.

Witnesses:

C. F. SAUL,

FRANK J. GRODAVENT.