

J. VALLARO.
 AUTOMATIC SOUNDING ROD.
 APPLICATION FILED AUG. 6, 1917.

1,286,155.

Patented Nov. 26, 1918.

2 SHEETS—SHEET 1.

Fig. 2.

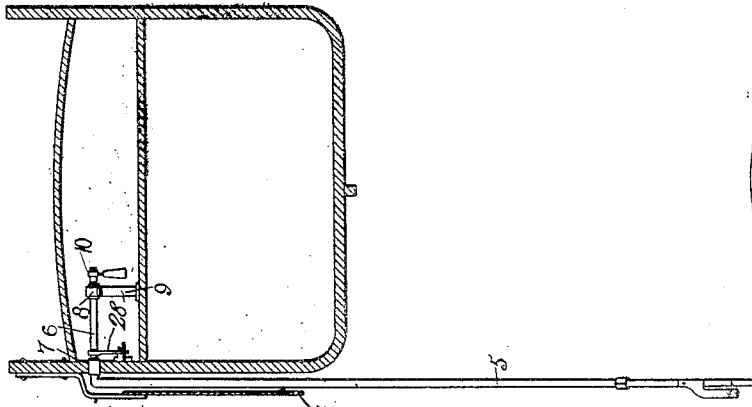


Fig. 1.

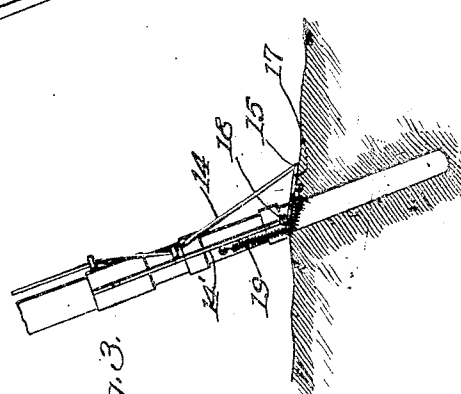
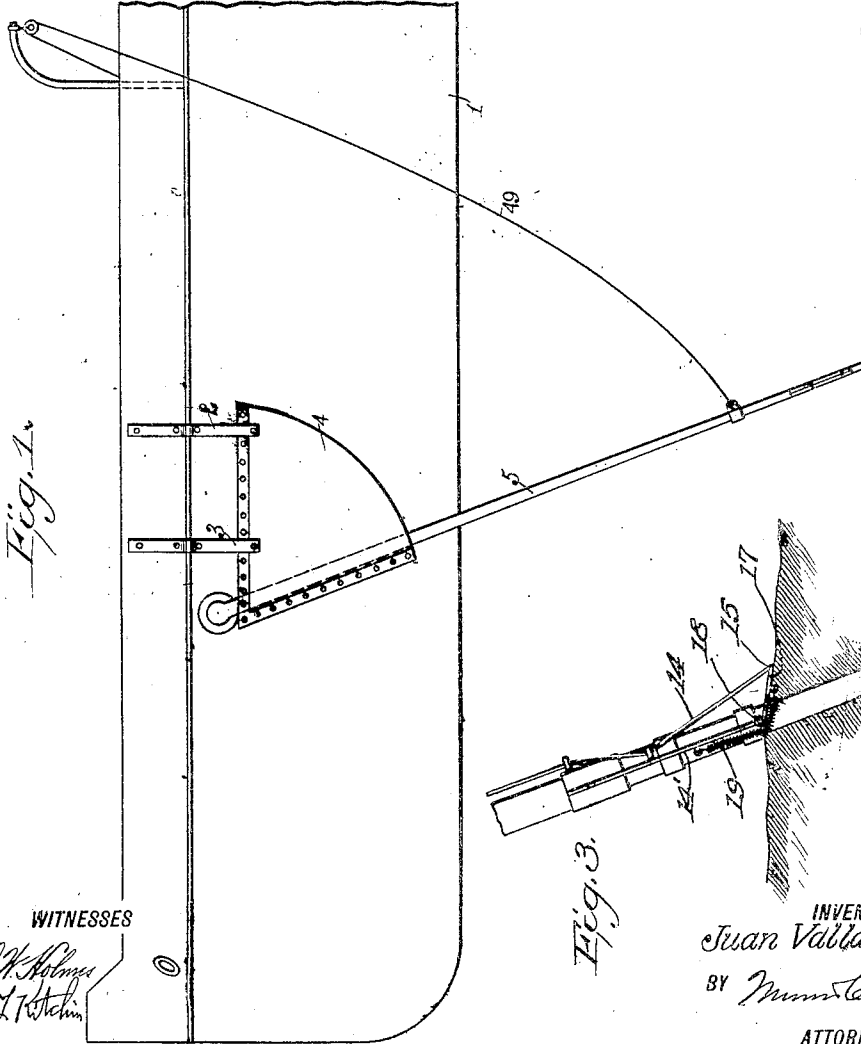


Fig. 3.

WITNESSES
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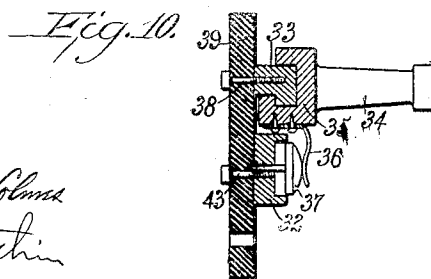
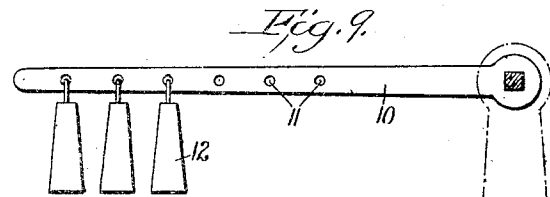
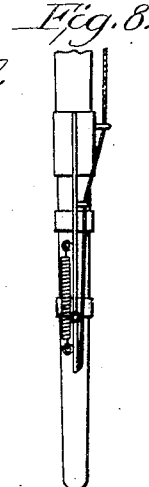
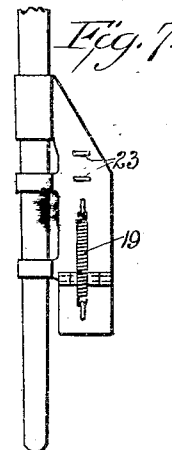
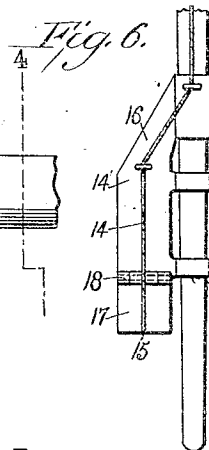
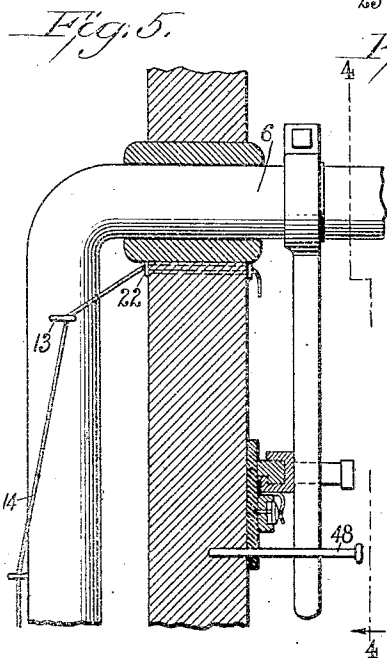
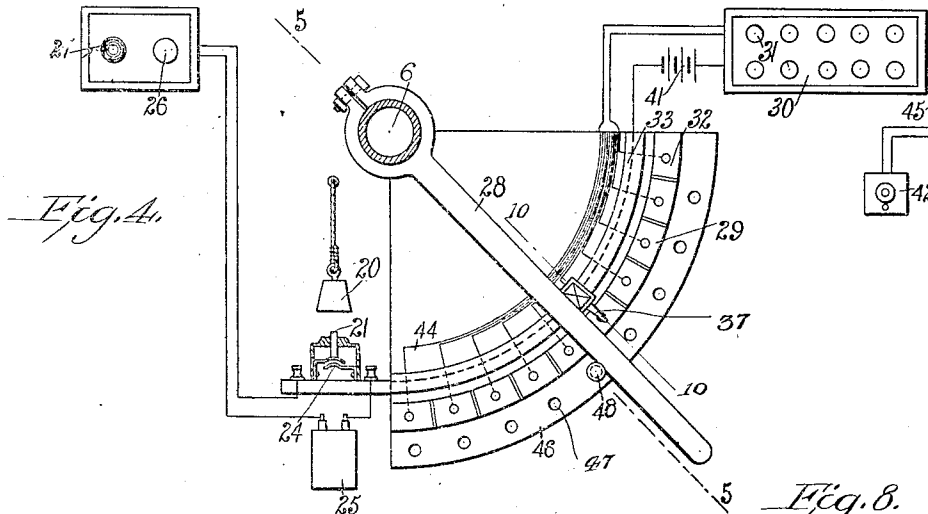
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC SOUNDING-ROD.

1,233,155.

Specification of Letters Patent.

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Application filed August 6, 1917, Serial No. 184,742.

To all whom it may concern:

Be it known that I, JUAN VALLARO, a citizen of the Republic of Uruguay, and a resident of Montevideo, Department of Montevideo, in the Republic of Uruguay, have invented a new and Improved Automatic Sounding-Rod, of which the following is a full, clear, and exact description.

This invention relates to a sounding device and particularly to an improved sounding rod and registering mechanism, and has for an object the provision of an improved construction which may be set for indicating a desired depth and for registering depths of less than this distance.

Another object in view is to provide a sounding device which will utilize a rod on the interior of a ship, and movable members on the interior of a ship for indicating the action of the rod and the engagement thereof with the bottom of the sea or river bed.

A further object of the invention is to provide a sounding device with audible signals for indicating a soft bottom, and a second set of audible signals for indicating the change of levels of a hard bottom.

In the accompanying drawings:

Figure 1 is a side view of a part of a ship with an embodiment of the invention shown applied thereto.

Fig. 2 is a transverse sectional view through Fig. 1 showing how the sounding rod extends into the interior of the ship.

Fig. 3 is a side view on an enlarged scale of the lower part of the sounding rod showing the mechanism for indicating a mud bottom.

Fig. 4 is a fragmentary sectional view through Fig. 5 on line 4-4.

Fig. 5 is a transverse sectional view through Fig. 4 on line 5-5.

Fig. 6 is a top plan view of the mud indicating means shown in Fig. 2.

Fig. 7 is a bottom plan view of the structure shown in Fig. 6.

Fig. 8 is an edge view of the structure shown in Fig. 6.

Fig. 9 is a side view of the balancing lever and weights connected with the sounding rod.

Fig. 10 is an enlarged detail fragmentary sectional view through Fig. 4 on line 10-10.

Referring to the accompanying drawings by numerals, 1 indicates a boat of any desired kind to be used on the surface of the water, though the improvement could be

used in connection with a submarine without departing from the spirit of the invention. Connected with the boat 1 are suspending members 2 and 3 which are connected to a shield 4 constructed as shown in Figs. 1 and 2 in order to protect the upper end of the rod 5. The rod 5 may be of any desired shape in cross section, as for instance round or elliptical and may be of any desired length. A shaft 6 is rigidly secured to the upper end of rod 5, or formed integral therewith, said shaft passing through a suitable opening at 7, the inner end journaled at 8 on standard 9. An arm 10 is connected with the inner end of the shaft 6 as shown particularly in Fig. 9, said shaft being squared for receiving a square shoulder in the end of the arm 10. A plurality of apertures 11 are arranged in arm 10 for receiving the various weights 12, said weights counter-balancing the buoyancy of rod 5 or the tendency to move upwardly when the ship 1 is moving through the water. At convenient points along the rod 5 are guiding eyelet members 13 guiding a cable 14, which cable extends to a mud detecting member 14' and is secured at 15 thereto. The mud detecting member 14' is on the end of a plate 16 clamped rigidly to and near the lower end of rod 5 as shown in Figs. 6 to 8 inclusive. By this construction and arrangement, when the bottom of the ocean or river-bed is hard the end of rod 5 will strike the same and member 14' and associate parts will not be operated. A pivotally mounted section 17 is hinged at 18 on the board 16 and normally held as a continuation thereof by a spring 19, so that when the end of section 17 strikes the soft bottom as shown in Fig. 3 it will move upwardly and release the tension on the cable 14. The releasing of the cable 14 will permit the weight 20 connected therewith, as shown in Fig. 4 to move downwardly and press the button 21. Cable 14 extends through the upper eyelet 13 to a suitable pipe or passageway 22 into the interior and is finally secured to weight 20. Spring 19, as shown in Fig. 7 is connected with the section 17 at one end and may be connected to any of the eyelets 23 at the opposite end so as to vary the amount of tension on the section 17 in order to overcome the pressure of water when the device is moving there-through. When the parts are moved to the position as shown in Fig. 3 weight 20 will

be lowered as above mentioned and button 21 pressed so as to close the contacts 24 and thereby close the circuit of the battery 25. A light 26 and a bell 27 are connected with the circuit of battery 25 so that when said circuit is closed said light will be supplied with current and lighted up and said bell will be sounded, which will indicate that the bottom is soft. In case the bottom is hard the lower end of rod 5 will be moved upwardly as the boat 1 moves along, said upward movement rotating for a limited extent the shaft 6 and said shaft in turn will raise the signal arm 28 as well as the counter-balancing arm 10. The arm 28 is rigidly clamped in any suitable manner to the shaft 6 and is preferably set parallel with the rod 5 so as to show the manner of operation as well as the extent of movement of the rod. The signal rod 28 moves over what may be termed a contact scale 29 which is in electrical engagement with the annunciator 30, which annunciator has a large number of lamps or other signal device 31 adapted to be operated whenever the moving parts of the scale 29 are actuated. The scale 29 is arc shaped, and is preferably a quarter of a circle as shown in Fig. 4, said scale being provided with what might be termed tracks 32 and 33. Track 32 is preferably of metal and carries a post 34 as shown in Fig. 10, having an encircling base 35 which grips to a certain extent the track 33 and prevents the accidental movement of the post, though allowing a sliding movement if some appreciable pressure is brought to bear thereon. The post carries a resilient member 36 adapted to engage the contact pins 37 of the track 32. A screw or other connecting member 38 extends through the board 39 and engages the track 33. A common return wire is connected with the screw 38, with a source of current 41 and with the various lamps 31 and bell 42. The pins 37 are in engagement with connecting screws 43, there being one screw 43 for each pin 37, said pins being spaced apart as shown in Fig. 4 for indicating the depths being measured by the sounding rod. An individual wire 44 is connected with each of the screws 43 and with a representative lamp 31, said individual wires also being connected with wire 45 so as to ring bell 42 each time one of the lights has been energized. The track 32, if desired, may be made into blocks or a continuous track. A third track 46 is provided which is formed with apertures 47 in radial alinement with pins 37, said apertures accommodating stop pin 48 as may be desired by the operator.

In operation the supporting cable 49, as shown in Fig. 1, is let out so as to allow the rod 5 to move pivotally downwardly. This is usually done in an ample depth of water so that the rod may swing down to

any desirable position. This however, is not done until after the pin 48 has been placed in the particular aperture 47 desired. For instance, if the pin 48 was placed in the aperture 47 opposite pin 37 (see Figs. 1 and 2) this would limit the downward movement of the arm 28 and the rod 5. If this position indicated, for instance, thirty feet in depth of water, below thirty feet would not affect the device, but in case the water was less than thirty feet the rod 5 would be moved or the mud indicator 14' would be operated. After the rod 5 has been lowered until the arm 28 rests against the pin 48 the vessel is started and as it gains headway the pressure of the water against the rod 5 will cause the same to move upwardly somewhat, and in order to overcome this weights 12 are added successively until there will be slightly more weight than necessary to hold the rod in its lowered position. The post 34 is then moved over to a position against the signal arm 28. As long as the boat proceeds and the parts remain in this position none of the parts will move, consequently the persons using the device will understand that the water is over the depth set or more than the depth set. In case a mud bottom should be engaged as shown in Fig. 3 section 17 would move upwardly and consequently allow the weight 20 to move downwardly causing a circuit of the lamp and bell 26 and 27, which will indicate the conditions stated and may be properly noted on charts or other papers. In case a hard bottom should be engaged and the bottom should be less than the depth desired rod 5 will be moved upwardly as the ship proceeds and consequently the arm 28 will swing upwardly and carry with it post 34. As the post 34 moves the resilient contact 36 will engage the respective pins 37 and consequently light different individual lamps 31 and then ring bell 42, thus indicating the depths. Each pin 37 indicates a certain depth according to the length of the rod 5, which of course, may be made as long or as short as desired. After the arm 28 has been moved upwardly as just described and then moved downwardly automatically by reason of the ship entering deeper water, post 34 must be moved manually back against the arm 28 where it remains until there is another movement of the arm. By forming the post 34 so as to remain in the position to which it has been moved ample time is given to note down the facts desired so that a proper chart of the bottom of the sea may be secured.

What I claim is:

1. A sounding device of the character described adapted for attachment to a ship, comprising a depending sounding rod, a shaft extending from the upper end thereof through the side of the ship, means for piv-

totally supporting said shaft, said shaft being rigidly connected with the sounding rod so as to be rocked thereby, a lever connected with said shaft, counter-weights arranged on said lever for overcoming the force of the water when the vessel is underway, an indicating arm connected to said shaft, and a scale over which said arm moves for indicating the various depths of the bottom as the end of said sounding rod is raised and lowered.

2. A sounding device of the character described, comprising a sounding rod, a shaft extending from the upper end thereof and through the side of a ship to which the device is secured, an arm connected with said shaft, a scale structure over which said arm is adapted to move, a stop for limiting the downward movement of said arm and also the downward movement of said sounding rod, a sliding contact operated by said arm, a plurality of spaced electrical contacts on said scale, a common return track for said sliding contact and a second track formed of individual sections, and signal members electrically connected with said common return track and with said individual sections, whereby when said arm moves upwardly by reason of the upwardly movement of the sounding rod, said signal members will be operated for indicating the changed position of the sounding rod.

3. A sounding device of the character described adapted for attachment to a ship, comprising a pivotally mounted sounding rod, a plate connected to the sounding rod near the lower end thereof, a hinged section

at the lower end of the plate, yielding means normally holding said section in alinement with the remaining part of the plate, a cable connected with said section, means connected with said rod for guiding said cable to the ship to which the device is secured, a weight connected to said cable in the interior of the ship, an electrically operated signal member, and means operated by said weight when released for closing the circuit of said electrically operated signal, said weight being released when said section engages the soft earth at the bottom of the sea or river and is moved upwardly.

4. A sounding device of the character described, comprising a pivotally mounted arm connected to a ship, a plate connected to said arm near the bottom thereof, said plate having a hinged section at the lower end thereof, a spring normally holding said hinged section in alinement with the remaining part of the plate, said plate being adapted to engage soft earth when in use and thereby flex said spring, a cable connected with said section and released by the movement of said section under the action of soft earth, a weight connected with said cable and means operated by the weight for sounding an alarm and thereby indicating the character of the bottom.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JUAN VALLARO.

Witnesses:

S. A. REESE,

GEORGE R. VITAL.