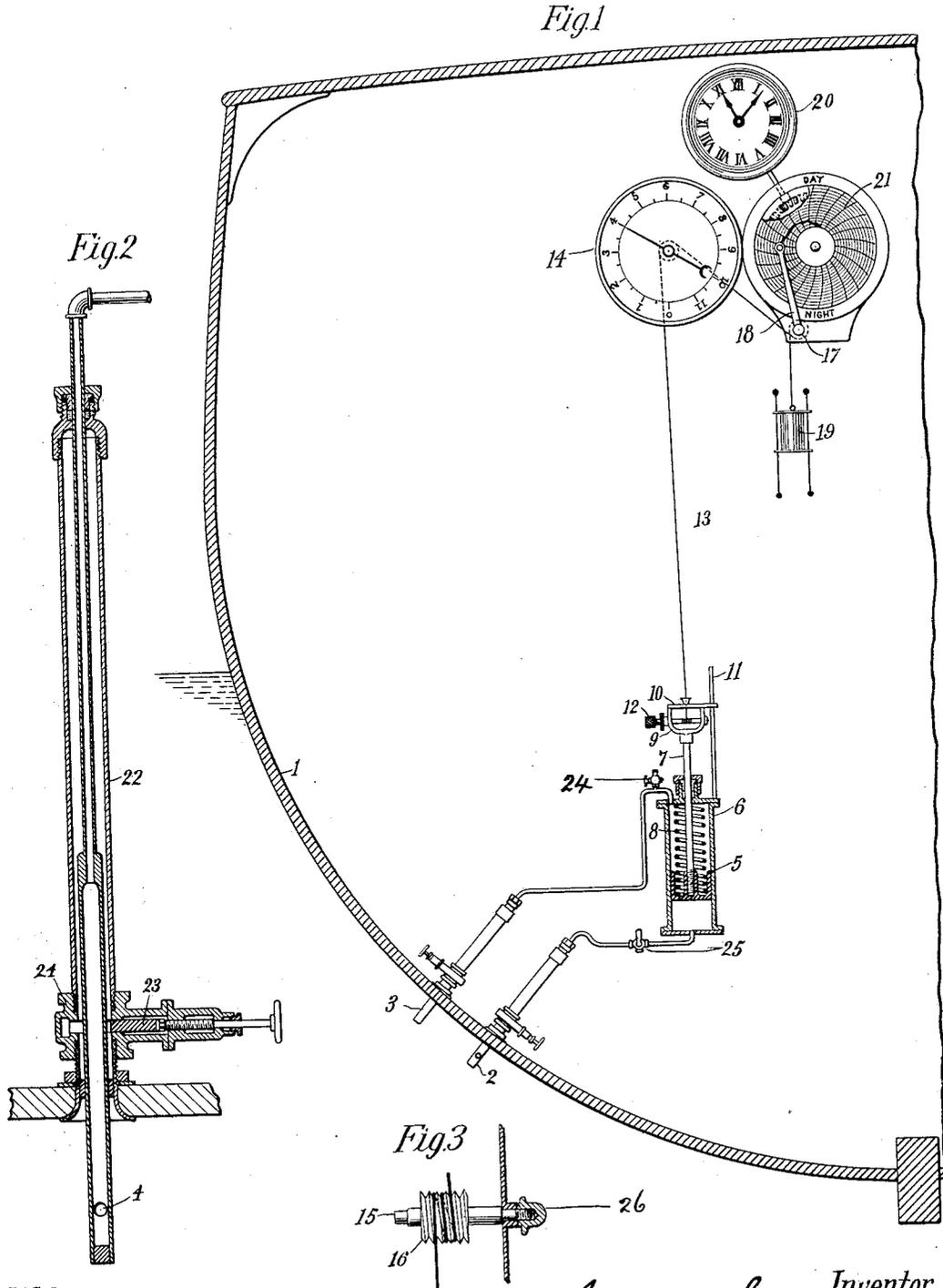


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J. S. BRIGGS.
DEVICE FOR RECORDING SPEED OF VESSELS.
APPLICATION FILED MAY 26, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

JEFFERSON S. BRIGGS, OF BROOKLYN, NEW YORK.

DEVICE FOR RECORDING SPEED OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 748,159, dated December 29, 1903.

Application filed May 26, 1902. Serial No. 108,957. (No model.)

To all whom it may concern:

Be it known that I, JEFFERSON S. BRIGGS, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented a new and useful Device for Recording Speed of Vessels, of which the following is a specification.

The present invention relates to devices for ascertaining and indicating the speed of a vessel by the water-pressure generated by the movement of the vessel.

Particularly the object of the invention is to provide in such a construction means whereby the speed developed by a vessel may be indicated and variations due to differences in the depth of immersion of the vessel automatically compensated for by the direct action of the water on a piston.

Additionally the invention contemplates a simplified indicating and recording means.

Besides the foregoing another feature of the invention is the provision of means whereby the pressure-inlet devices may be withdrawn and their apertures closed.

Referring to the drawings in detail, Figure 1 illustrates in front elevation and partial cross-section the arrangement of the devices. Fig. 2 represents in vertical cross-section and on an enlarged scale the detail of the scoop; and Fig. 3 illustrates, partially in elevation and partially in cross-section, the detail of the means whereby the indicating and recording hands are moved.

In the drawings like figures of reference refer to like parts.

Referring to the drawings in detail, 1 designates the skin of a vessel, through which project in any desired position, but preferably not too far removed from the keel, the pressure tube or scoop 2 and the static pressure-tube 3. The scoop 2 is of the usual form, consisting simply of a closed-end tube having an opening 4 in one side communicating with the interior, which leads to one face of a piston 5, located in a pressure-cylinder 6. This piston 5 may be of any desired form and is secured on the piston-rod 7, around which is preferably coiled a spring 8, whereby the piston 5 is normally held in the lowermost position. The tube 3 leads to the op-

posite or upper surface of the piston 5 and consists simply of an open-ended tube. It is located in proximity to the scoop 2, so as to have practically the same immersion throughout the movement of the vessel. The tubes 2 and 3 should in order to operate efficiently have their openings located some distance away from the side of the vessel in order to escape the local distortion of pressure due to skin friction.

Any desired means of transmitting the indicating and recording movements of the piston 5 may be availed of; but I prefer to use the construction illustrated in the drawings, in which there is shown a yoke 9, having a cross-bar 10, working on a guide-stem 11. Passing transversely through the yoke 9 is a revoluble shaft 12, to which is secured the connecting-line 13, the shaft 12 being made revoluble in order to take up any slack of the line 13 and to compensate for stretch, &c.

14 is an indicating-dial, the shaft 15 of which is provided with a grooved pulley 16, around which several turns of the line 13 are made, the line then passing to a similar grooved-pulley construction 17, the shaft of which carries a recording-arm 18, provided with a suitable marking-point. The line 13 after passing several times around the grooved pulley of the shaft 17 is attached to any suitable tension device, a sliding weight 19 being shown in the drawings for this purpose.

20 indicates the clock provided with suitable driving mechanism, whereby the recording-disk 21 is rotated in the manner well known to those skilled in the art.

The scoop-tube and the static tube are each located in a water-tight casing 22, which at its lower portion is provided with a gate-valve. The gate-valve is provided so that the tubes may be drawn up in the casing and the opening closed to permit of the complete withdrawal of the tubes for purposes of cleaning, inspection, and repair, &c.

The operation of the device is as follows: Assuming the scoop and the static tube to be in position and the openings in the respective tubes communicating with opposite sides of the piston 5 and admitting water directly thereto, the trapped air will be permitted to escape through the petcock 24. If the vessel

is at rest, the pressure on both sides of the piston will be equal and the piston resting on the bottom of the cylinder 6. It will be understood that the opening 4 in the scoop-tube is directed toward the bow of the vessel or in the line of travel, so that the water will be scooped or gathered in the tube 2 as the vessel moves forward, and the pressure exerted on the bottom of the piston 5 will of course be the sum of the static pressure of the water (which will depend upon the depth of the immersion of the vessel) plus the pressure exerted by the movement of the vessel through the water. This will cause a movement of the piston 5, and the tension device 19 will then draw the line 13, effecting movement of the indicator 14 and the recording-hand 17 simultaneously and coextensively. The provision of a line for this purpose instead of some other connection, such as intermeshing gears, renders the correction of the indicating and recording fingers easy, as it would only be necessary to operate the three-way cock 25, which will close the communication from the bottom of the piston 5 through the scoop 2 and open the lower end of the cylinder 6 to permit the piston 5 to go to zero position, resting on the bottom of the cylinder 6. Then if the indicating-finger or recording-arm (either or both) should not indicate the zero position the clamping-screws 26 will be relieved and the fingers moved to zero position and the clamping-screw reapplied. Another advantage of the line connection is that it may be passed over friction-pulleys in any direction and lead from the pressure-cylinder to indicating and recording devices wherever located.

Of course the static tube 3, having its opening simply directed outward, does not receive the impact or pressure of water due to the movement of the vessel, but does receive the hydrostatic pressure existing at the point of immersion and transmits this pressure to the side of the piston 5 opposite to that receiving pressure from the scoop 2, thus balancing or compensating for the pressure on the under face of the piston 5, due to the degree of immersion. By this means the variations in static pressure due to differences in the water-line or depth of immersion, whether taking place gradually or suddenly, as by the pitching of the vessel, are automatically compensated for, and the movement of the piston 5 indicates only the pressure due to the movement of the vessel. This effect is efficiently obtained without fluctuation of the indicator, because the water is admitted directly to both faces of the piston without any intermediate air-cushion, and in this connection it will be understood that the piston has only a water seal fit in the cylinder, so that the trapped air can be let off through the petcock 24 from both sides of the piston.

What is claimed as new is—

1. In a device for recording speed of vessels, a cylinder, a piston located in said cylinder, a scoop, a static pressure-tube and means for admitting water-pressure from the two scoop and tube respectively to opposite sides of the piston, substantially as specified.
2. In a device for recording speed of vessels, a cylinder, a spring-held piston located in said cylinder, a scoop admitting water-pressure to the under surface of said piston, and a static tube admitting water-pressure to the upper surface of said piston, substantially as specified.
3. In a device for recording speed of vessels, a cylinder, a piston located in said cylinder, a tension device, a connection between the tension device and the piston, means whereby said connection operates an indicator, a scoop having a connection admitting pressure to one surface of said piston and a static tube admitting pressure to the opposite side of said piston, substantially as specified.
4. In a device for recording speed of vessels, a cylinder provided with a movable piston, a tension device, a connection between the piston and the tension device, and means for regulating the length of said connection between the tension device and piston, substantially as specified.
5. In a device for recording speed of vessels, a cylinder, a piston located in said cylinder, a tension device, a line connecting said tension device with the piston, an indicating device consisting of a shaft provided with a pointer, and means whereby the connection between the tension device and piston effects movements of the pointer, substantially as specified.
6. In a device for recording speed of vessels, a casing, a water-pressure tube located in said casing, and a valve for closing said casing, substantially as specified.
7. In a device for recording speed of vessels, a cylinder, a piston located in said cylinder, a scoop admitting water-pressure to the under surface of said piston and a three-way valve between the scoop-opening and the under surface of said piston, substantially as specified.
8. In a device for recording speed of vessels, a cylinder, a piston in said cylinder, a scoop admitting water-pressure to the under surface of said piston, an air-escape valve for said cylinder, and a tube admitting water to the opposite side of said piston, substantially as specified.

In witness whereof I have hereunto set my hand this 5th day of May, 1902.

JEFFERSON S. BRIGGS.

Witnesses:

H. RICHARD WOBSE,
RALPH QUINLAN KELLY.