

No. 855,165.

PATENTED MAY 28, 1907.

W. O. CUTTER.

DEVICE FOR PROPELLING AND STEERING VESSELS.

APPLICATION FILED APR. 13, 1906.

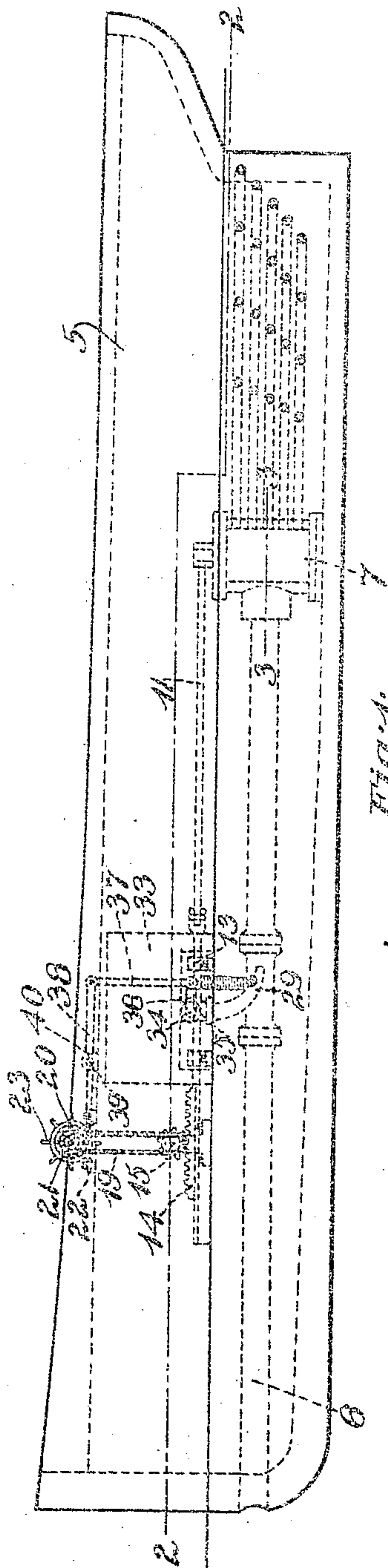


Fig. 1.

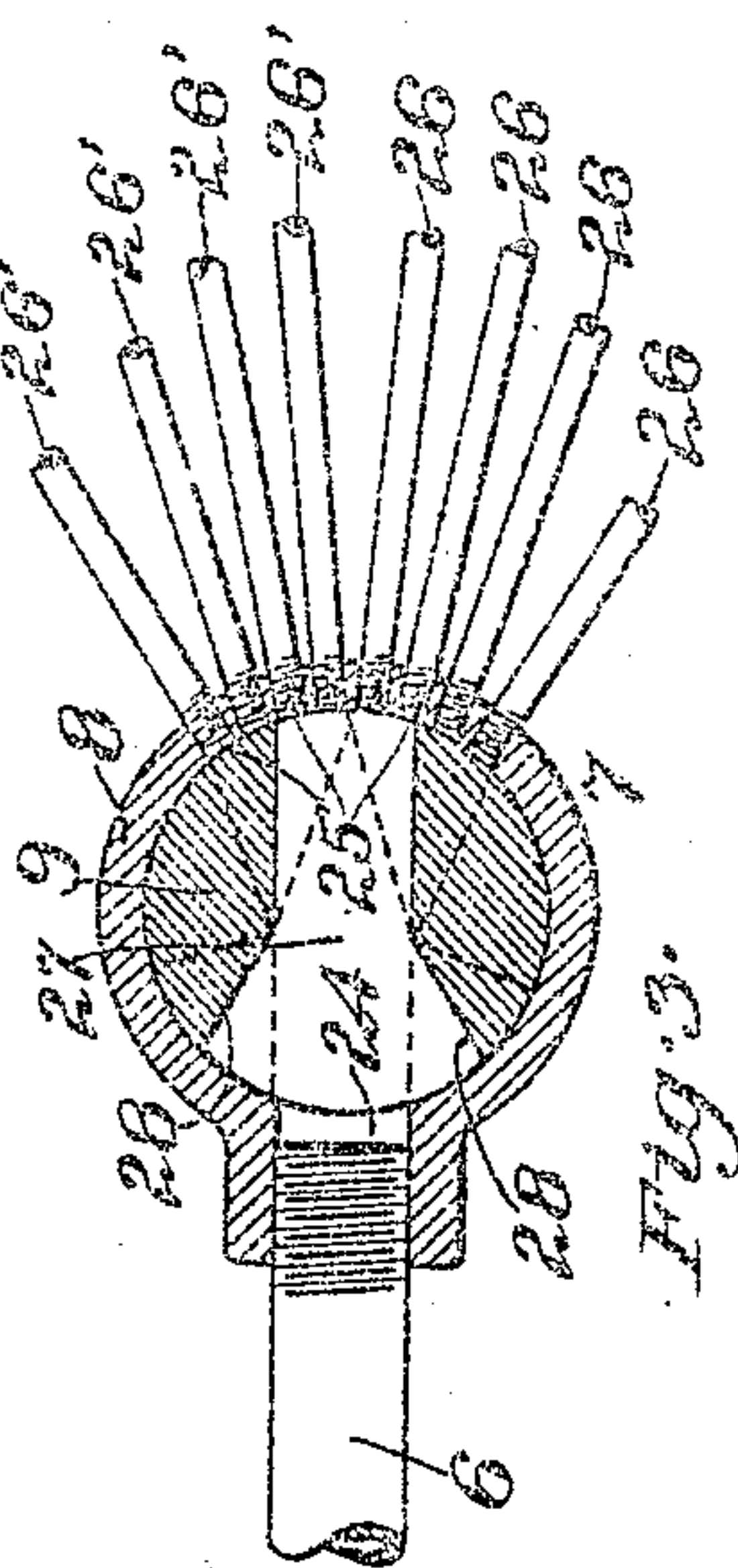


Fig. 3.

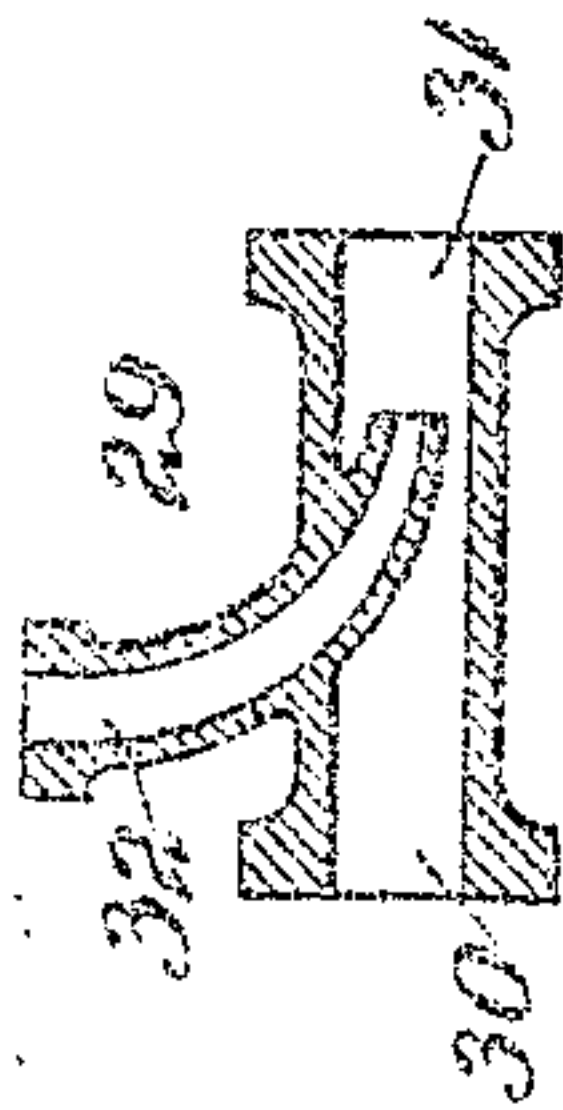


Fig. 4.

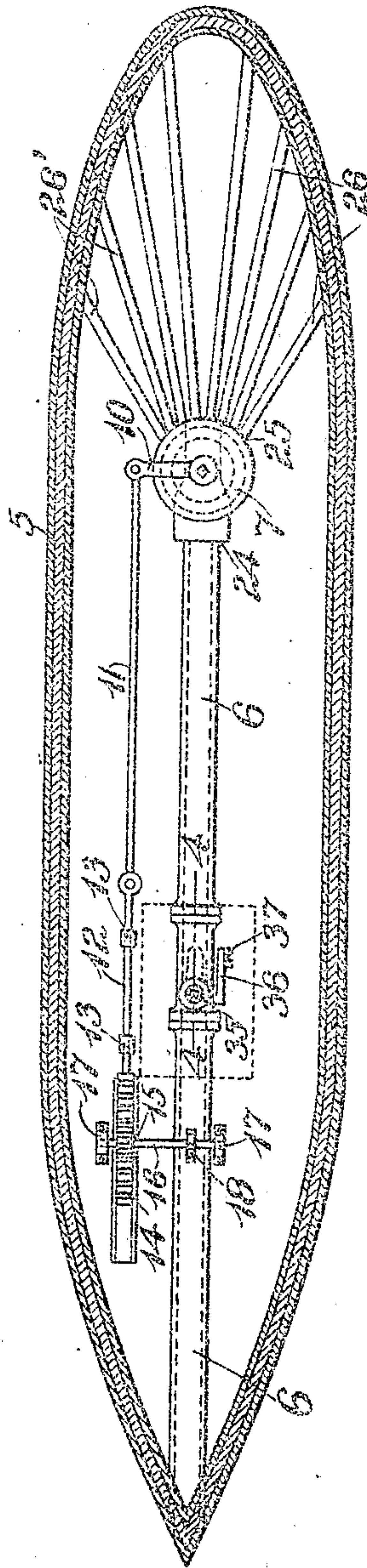


Fig. 2.

Witnesses:

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Inventor:

William O. Cutter,
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UNITED STATES PATENT OFFICE.

WILLIAM OTIS CUTTER, OF NATICK, MASSACHUSETTS.

DEVICE FOR PROPELLING AND STEERING VESSELS.

No. 855,165.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed April 13, 1906. Serial No. 311,502.

To all whom it may concern:

Be it known that I, WILLIAM OTIS CUTTER, a citizen of the United States, residing at Natick, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Devices for Propelling and Steering Vessels, of which the following is a specification.

The object of this invention is to provide a cheap, simple, and easily operated device for propelling and steering vessels.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings: Figure 1 is a side elevation of a vessel with my improved propelling and steering device incorporated therein. Fig. 2 is a section, partly in plan, taken on line 2—2 of Fig. 1. Fig. 3 is an enlarged section, partly in plan, taken on line 3—3 of Fig. 1. Fig. 4 is an enlarged vertical section, partly in elevation, taken on line 4—4 of Fig. 2.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 is the hull of a vessel of any desired form. 6 is a pipe extending longitudinally of the hull of said vessel beneath the water line and opening out of the bow of said vessel at one end, the other end being connected to a cock 7, which consists of a casing 8 and a rotatable plug 9 connected at its upper end to an arm 10. The plug 9 is rotated by means of a link 11 which is connected to the arm 10 at one end and at the other end thereof is connected to a slide 12, guided in suitable bearings 13, 13 and provided upon its upper face, at the left hand end thereof, with a rack 14 which meshes into a pinion 15 fast to a shaft 16. The shaft 16 is journaled in bearings 17 and has a sprocket gear 18 fast thereto which is connected by a sprocket chain 19 to a sprocket gear 20 fast to a shaft 21 supported upon a stand 22 upon the deck. The shaft 21 is rotated by means of a steering wheel 23.

The casing 8 is provided with an inlet orifice 24 to which the pipe 6 is connected at its right hand end. Said casing is also provided with a plurality of outlet orifices 25 to which outlet pipes 26, 26, 26', 26' are connected, said outlet pipes leading from the casing 8 toward the stern of the boat and opening out of said stern upon opposite sides thereof, as shown in Fig. 2.

The outlet pipes 26, 26' are arranged in series, one above the other, a plurality of said pipes being contained in each of said series.

A passage 27 extends through the plug 9 and is provided with diverging walls 28, 28 adjacent to the inlet orifice 24. By reference to Fig. 3 it will be seen that the right hand portion of the passage 27 is of sufficient width to include four of the outlet pipes, and in each series there are eight outlet pipes, so that when the plug is in the position illustrated in Fig. 3, two of these outlet pipes will be located upon each side of the passage 27 which do not communicate with said passage when the plug is in the position illustrated in said Fig. 3.

The plug 9 is illustrated in Fig. 3 in the position in which it stands when it is desired to drive the vessel straightforward. If it is desired to drive the vessel to starboard the plug 9 is turned toward the right so as to bring the passage 27 in alinement with the outlet pipes 26, 26, 26, 26. If it is desired to drive the vessel to port, then the plug is turned in the opposite direction, or toward the left, until the passage 27 alines with the outlet pipes 26', 26', 26', 26'. It is preferable that the cross sectional area of the inlet orifice 24 shall be equal to the sum of the cross sectional areas of the outlet pipes 26, 26' which at one time communicate with the passage 27.

An ejector 29 is inserted in the pipe 6, said ejector having an inlet orifice 30, an outlet orifice 31 and an intermediate orifice 32. The inlet orifice 30 of said ejector is connected to the left hand portion of the pipe 6 (Fig. 1) the outlet orifice 31 is connected to the right hand portion of said pipe, and the intermediate orifice 32 is connected to a receptacle 33, said receptacle adapted to contain fluid under pressure, whether said fluid be steam, compressed air, or gases under pressure. A valve 34 is provided in the connection which connects the receptacle 33 to the intermediate orifice 32 of the ejector in order to shut off the power when desired, and this valve is operated by an arm 36 connected by a link 37 to a treadle 38 pivoted at 39 to a bracket 40 fast to the deck, said treadle 38 extending over to a convenient point in order that the steersman may operate the same while standing at the steering wheel 23.

The general operation of the device hereinbefore specifically described is as follows: The steersman opens the valve 34 by pressing upon the treadle 38 and allows fluid under

pressure, such as steam or gas, to pass through said valve from the receptacle 33 and through the intermediate orifice 32 of the ejector 29 into the pipe 6. This fluid passing through the ejector causes a partial vacuum which draws the water inwardly from the outside of the vessel through the water inlet pipe 6 and forces the same through the plug passage 27 and out of the outlet pipes 26', 26', 26, 26, Fig. 3. If it is desired to steer the vessel to starboard or port, it may be done by rotating the plug 9 toward the right or toward the left, respectively, as hereinbefore described.

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

1. In combination, a vessel, a water pipe extending longitudinally of the hull of said vessel beneath the water line and opening at one end thereof out of the bow of said vessel, a cock consisting of a casing provided with an inlet orifice connected to the other end of said pipe and a rotatable plug provided with a passage extending therethrough having sides diverging adjacent to the inlet orifice of

said casing, a plurality of outlet pipes leading from said cock to the stern of said vessel, an ejector having its inlet and outlet orifices connected to said pipe between said cock and bow, and a receptacle for fluid under pressure connected to the intermediate orifice of said ejector.

2. In a jet propulsion and steering apparatus for a vessel, a cock consisting of a casing provided with an inlet orifice, a plurality of outlet orifices and a rotatable plug provided with a passage extending therethrough having sides diverging adjacent to the inlet orifice of said casing, said passage connecting said inlet to said outlet orifices, and a plurality of outlet pipes leading from said outlet orifices out of the stern of said vessel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM OTIS CUTTER.

Witnesses:

CHARLES S. GOODING,
ANNIE J. DAILEY.