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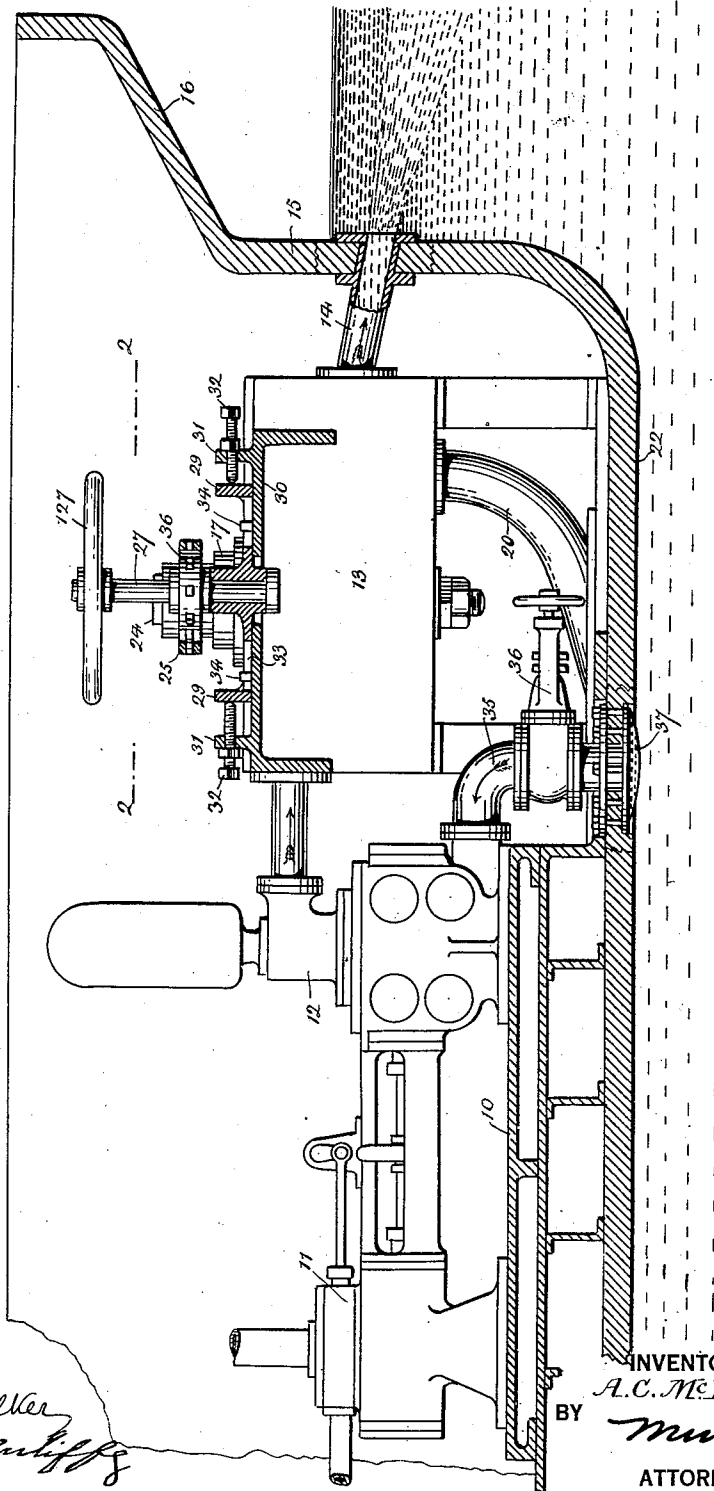
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SHIP PROPELLING MEANS

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2 Sheets-Sheet 1

Fig. 1.



WITNESSES
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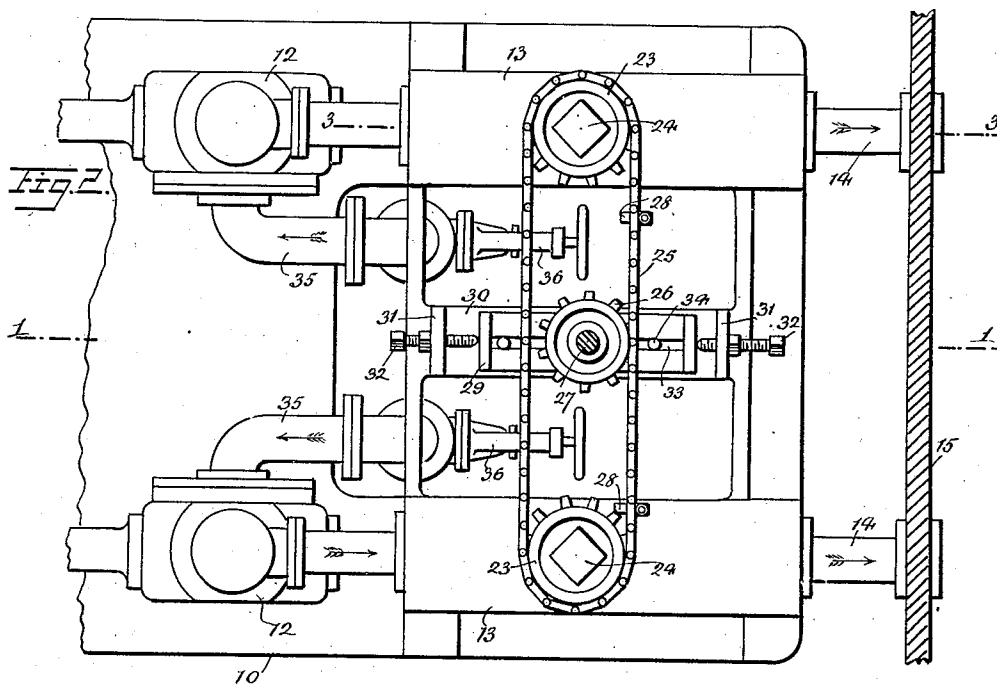
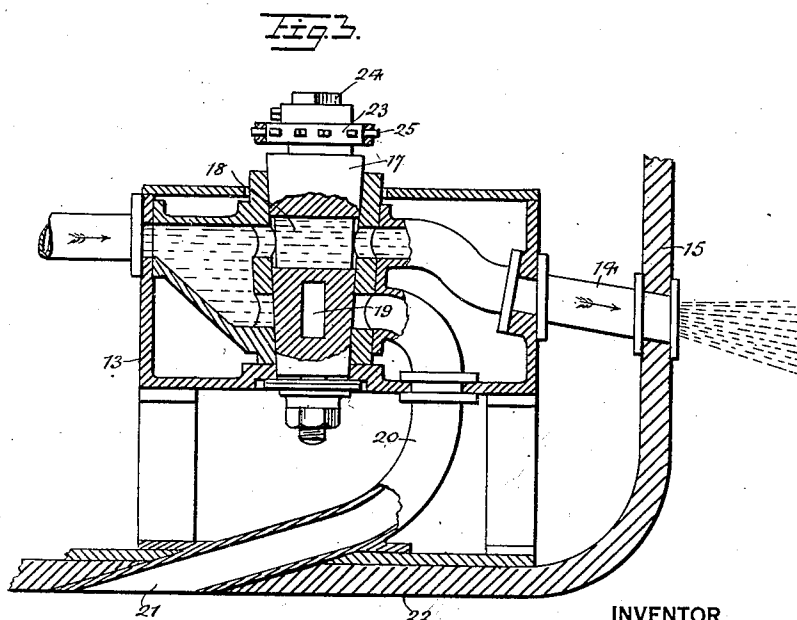
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WITNESSES

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SHIP-PROPELLING MEANS

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My invention relates to hydraulic ship propulsion, and the invention has for its general object to provide a novel assemblage of mechanism whereby to effectively direct a jet or stream rearwardly for the propelling of the ship forwardly, or a jet or stream in a forward direction to reverse the vessel.

The nature of my invention and the distinguishing features in which the invention resides, as well as their advantages, will clearly appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a longitudinal vertical section through a portion of a vessel equipped with my improved ship-propelling means, the section being taken on the line 1—1 of Figure 2;

Figure 2 is a plan view with part in section, as indicated by the line 2—2 of Figure 1;

Figure 3 is a longitudinal section on the line 3—3 of Figure 2.

In carrying out my invention in accordance with the illustrated example I mount engines 11 on a suitable bed 10, associated with which engines are pumps 12, both pumps and engines being of any approved form.

The pumps 12 discharge through cylinders 13, and from said cylinders a stream or jet of water is adapted to be discharged through tubes 14 extending through the stern 15 of the vessel designated generally by the numeral 16.

The flow of water from each pump 12 to a jet tube 14 is controlled by a rotatable two-way valve 17 mounted in a casing having an enlarged chamber at one side, and having a transverse port 18 adapted to establish or disestablish communication between the respective jet tubes 14 and the pumps 12 by the turning of said valves 17.

In each valve 17 also is a second transverse port or passage 19, said port being at right angle to port 18, the ports serving by the turning of the valves 17 to establish or disestablish communication between the pumps 12 and two discharge pipes 20 leading from

cylinders 13 and extending downwardly obliquely and forwardly to constitute jet tubes 21 adapted to discharge streams of water forwardly or in the opposite direction from the discharge from the jet tubes 14, said jet tubes 21 extending through the bottom 22 of the vessel 16 at either side of the keel.

A sprocket wheel 23 is fixed on the stem 24 of each valve 17, and meshing with the respective sprocket wheels 23 of the respective valve stems 24 is an endless sprocket chain 25 for turning the valves 17 the required degree in opposite directions for putting either the jet tubes 14 or the jet tubes 21 in communication with the pumps 12 for propelling the vessel forwardly or in reverse.

On the endless chain 25 for turning the valves 17 are stops 28 disposed laterally inward and adapted to contact with the teeth of the respective sprocket wheels 23 for indicating that the valves 17 are positioned for the flow of water from the jet tubes 14, or the jet tubes 21.

The sprocket chain 25 is adapted to be actuated by a sprocket wheel 26 on a vertical shaft or stem 27 provided with a hand wheel 127. The teeth of said sprocket wheel 26 mesh with one or the other run or side of said chain 25.

For adjusting the shaft 27 and the sprocket wheel 26 thereof positioned in mesh with either run of the chain 25, I provide a slide plate 29 in which is journaled shaft 27, and disposed on a fixed bed plate 30 positioned between the two valves 17. Said bed plate 30 has upwardly extending end flanges 31 through which adjusting screws 32 pass into contact with the ends of the slide plate 29. Said slide plate 29 is formed with longitudinal guide slots 33 through which guide pins 34 pass into the bed plate 30.

The numeral 35 indicates the intake pipes of the pumps 12, and the numeral 36 indicates suitable shutoff valves in said intake pipes 35.

With the above described construction, if it is desired to propel the vessel forwardly, the valves 17 are turned by the sprocket 26 and the chain 25 to the position so that the stops 28 on the chain indicate that the ports

18 have established communication between the pumps 12 and the jet tubes 14, it being understood that the valves 36 on the intake pipes 35 are at this time open.

5 On the other hand, if it is desired to back the vessel, the valves 17 are turned to cut off communication between the pumps 12 and the jet tubes 14, at the same time turning the ports 19 into a position to bring the ports of the valve casings in cylinders 13 into register
10 with the forwardly discharging jet tubes 21, so that the discharged streams of water produced by the pumps cause the vessel to move rearwardly.

15 In practice I provide flanged screens 37 on either side of the keel at the inlet ends of the intake pipes 35 to prevent the entrance of obstructive matter.

I would state furthermore that while the
20 illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated, since, manifestly, the same can be considerably varied without departure from
25 the spirit of the invention as defined in the appended claims.

From the above construction and operation it will be seen that by directing the jets obliquely downwardly that increased lifting or
30 buoyant effect will be secured by virtue of which greater speed may be attained.

I claim:

1. Ship propelling means of the character described including a rearwardly and downwardly discharging jet tube at the stern at
35 each side of the longitudinal center line of the ship, a forwardly and downwardly discharging jet tube at each side of the keel line of the ship, a two-way valve controlling each rearwardly discharging and forwardly discharging jet tube, a sprocket wheel secured to
40 the upper ends of said valves, an endless sprocket chain trained around said sprocket wheels and transversely of the ship, an actuating sprocket wheel mounted at the longitudinal center of the sprocket chain and between the runs thereof, a longitudinally movable support for said actuating sprocket
45 wheel, and means for adjusting said support longitudinally of the ship whereby said actuating sprocket wheel may be adjusted with
50 respect to the runs of the sprocket chain.

2. Ship propelling apparatus as set forth in claim 1, the adjusting means for the actuating sprocket wheel comprising a bed plate
55 having guide pins projecting upwardly therefrom and having end flanges, a slide plate mounted on said bed plate, said slide plate also having end flanges, said actuating
60 sprocket journaled on said slide plate, said slide plate having slots engaged by the guide pins, and means cooperating with the end flanges of the bed plate and slide plate for
65 adjusting the actuating sprocket longitudi-

nally with respect to the ship to engage either run of the sprocket chain.

3. In a means for propelling ships, in combination with pumps and means for operating the same, jet tubes discharging rearwardly
70 and downwardly from the pumps at each side of the medial line of the ship, forwardly and downwardly discharging jet tubes at each side of the keel line of the ship, cylinders from which the respective jet tubes extend,
75 chambered valve casings within said cylinders, valves mounted in the casings and controlling the respective jet tubes, sprocket wheels mounted on the upper ends of the valves, an endless sprocket chain running
80 around said sprockets on the valves, stops projecting inwardly from said sprocket chain adapted to engage with the respective valve sprocket wheels to indicate the position of the
85 valves with respect to controlling the flow of water from the pumps to the respective jet tubes, and means for actuating the sprocket chain.

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