

(No Model.)

L. D. B. SHAW.
PROPELLER.

No. 507,459.

Patented Oct. 24, 1893.

Fig. 1.

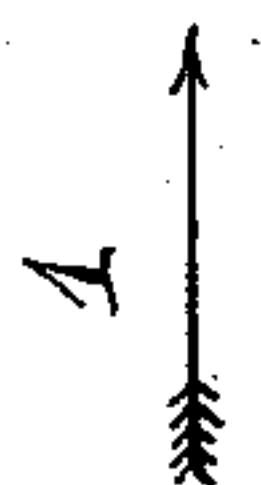
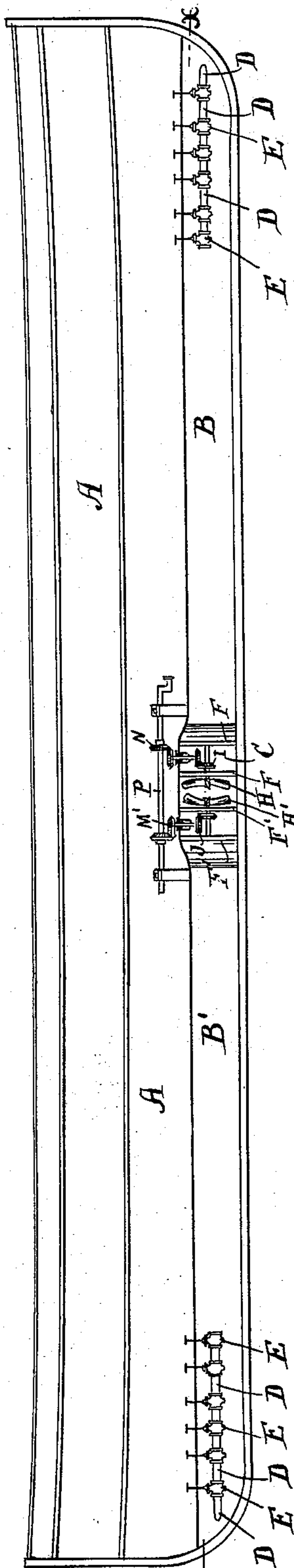


Fig. 2.

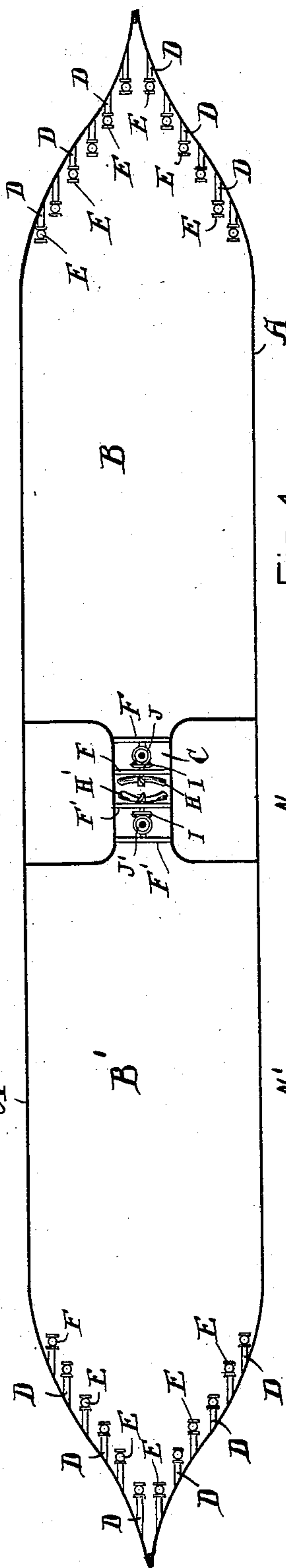


Fig. 4.

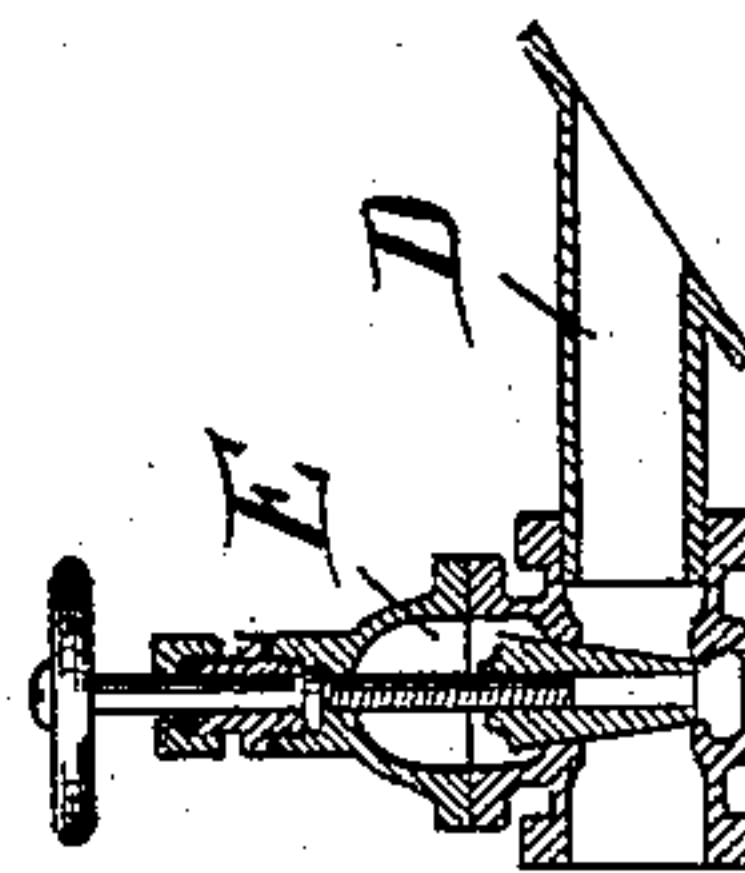
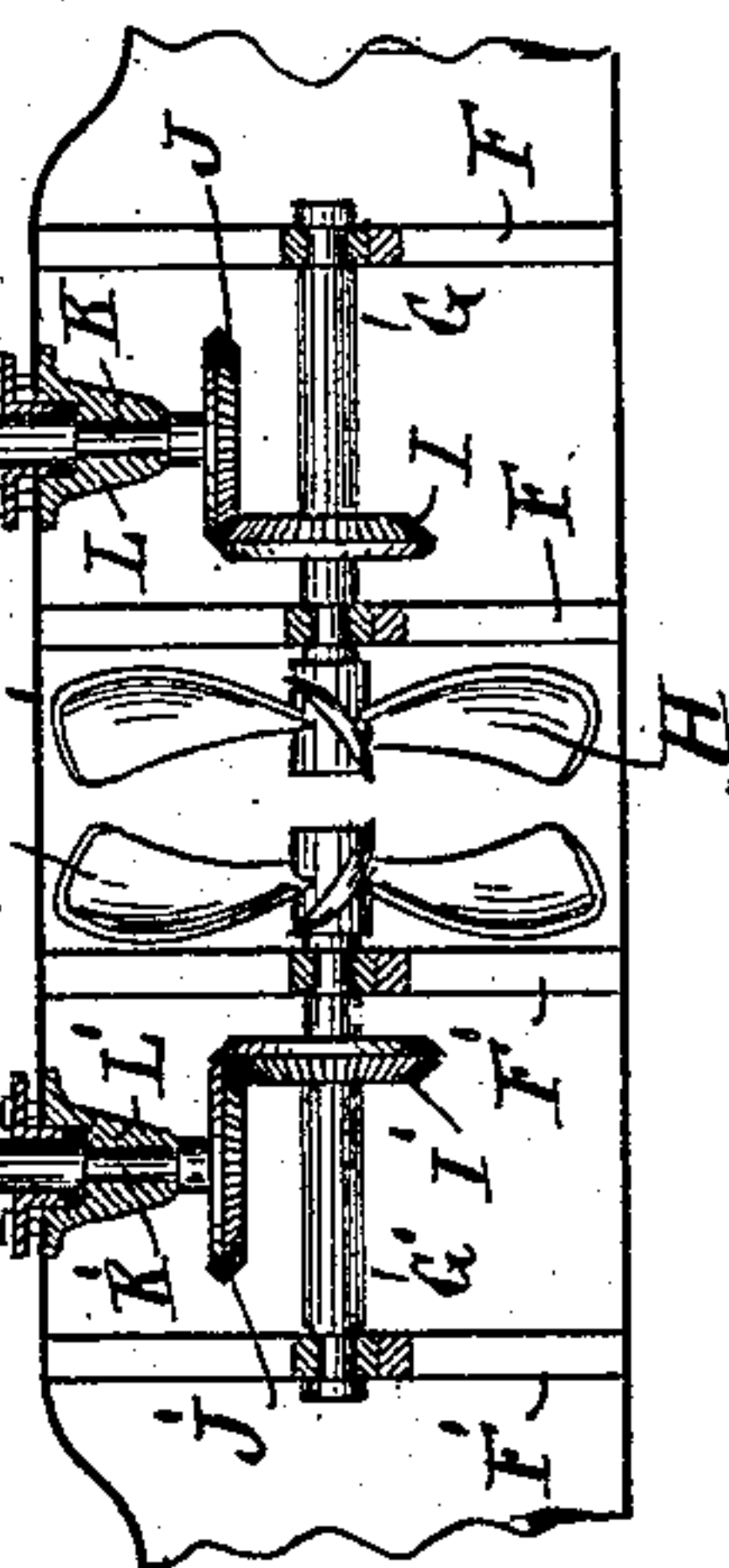


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

LORENZO D. B. SHAW, OF CONEY ISLAND, NEW YORK.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 507,459, dated October 24, 1893.

Application filed November 18, 1892. Serial No. 452,378. (No model.)

To all whom it may concern:

Be it known that I, LORENZO D. B. SHAW, a citizen of the United States, residing at Coney Island, in the county of Kings and State of New York, have invented certain new and useful Improvements in Propelling Steam-Vessels, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to means of propelling steam vessels where the mechanism is contained within the hull of the vessel, and the invention consists in admitting water at either end of the vessel into a ballast chamber from which it passes through a tube in which are mounted two screw propellers operating in opposite directions, whereby the water is taken by the first screw and forced against the other screw in one direction, and is then taken by the second screw and ejected in the opposite direction into the other ballast chamber, as hereinafter fully described and pointed out in the claims.

Referring to the accompanying drawings: Figure 1—represents a longitudinal vertical section of a vessel fitted with a propelling apparatus embodying my invention. Fig. 2—is a longitudinal section taken on line x, x , of Fig. 1. Fig. 3—is a view on a larger scale of the screws and gearing for transmitting motion thereto. Fig. 4—is a vertical section of one of the valves and pipe connecting same to the side of the ship.

A, represents the hull of a vessel which is preferably formed with both ends alike so that the vessel can travel in either direction. In the lower portion of its hold both fore and aft it is formed with water tight compartments B, B', that form water ballast chambers; the two compartments B, B', extend nearly to the center of the ship and are there connected by a large tube C. The bow and stem of the vessel are provided with a series of short pipes D, the inner end of each of which is fitted with a gate valve E. When all these valves E, are open the water has a free passageway through the vessel.

In the tube C, connecting the two water compartments B, B', are secured suitable frames F, F', having bearings in which are mounted shafts G, G', on the ends of which

nearest to the center of the vessel are mounted screw propellers H, H'. The propeller H', being set in the opposite direction to the propeller H, motion is transmitted to each of the shafts G, G', but in opposite directions by means of bevel wheels I, I', mounted upon said shafts, which wheels are in gear with bevel wheels J, J', secured on the ends of short shafts K, K', held and rotating in suitable bearings L, L', secured to the top of the tube C. On the upper ends of the shafts K, K', are secured bevel wheels M, M', in gear with bevel wheels N, N', on the main driving shaft P, to which a rotary motion is imparted from any suitable engine.

The operation is as follows:—Supposing all the valves E to be open, and it is desired that the vessel shall travel in the direction of the arrow I. The chambers B, B', and tube C, being filled with water motion is now imparted to the shaft P, in the required direction so that the water in the compartment B, will be taken and thrown toward the stern of the vessel by the screw H, but immediately upon its leaving the screw H, it is caught by the screw H', and an opposite motion is imparted thereto. Thus one screw draws the water toward the center of the boat while the other screw forces it from the center. Thus a very great propelling power is exerted upon the said water, and as all the valves E, at the bow, and all the valves E' at the stem of the vessel are open, it will be readily seen that the resistance of the water to the progress of the vessel is to a great extent overcome, as the water is drawn with the compartment B, through said valves E, and ejected from the compartment B', through the valves E', thus while the screws H, H', exert all the propelling power that they could do were they placed outside of the vessel, there is still a much greater advantage in having said screw working in reverse direction, because the first screw draws upon the water thus forcing the vessel forward, while the second screw forces the water from it thus rendering the power of the two screws nearly if not quite equal to double the power of a single screw, while at the same time the resistance of the water is to a certain extent overcome as the spaces occupied by the tubes D, do not offer any re-

sistance but in the fore part of the vessel act as a sucker or means for drawing the vessel forward, while the water being discharged from the rear part of the vessel through the tubes D', act as a force to assist in propelling the vessel forward.

Should any accident happen to the machinery, all the valves E, E', may be closed, and the water be pumped out of the compartments B, B', so that access to the working parts may be had to make the necessary repairs. Or should the vessel come into contact with a sand bar, then the valves may be closed, and the water pumped out, thus rendering the vessel more buoyant so that she will rise so as to be free from said sand bar.

Although I have shown the valves E, as being independent of each other, it is obvious that they could all be connected so as to be operated simultaneously.

What I claim is—

1. In a steam vessel two screw propellers arranged in a tube, one immediately in the rear of the other, each of said propellers rotating in opposite directions in combination with chambers or conduits for conducting the water to and from said screw propellers as set forth.

2. In a steam vessel having water compartments in the lower part of the hold a central

tube connecting, and means for admitting water into said compartment, two screw propellers arranged in said central tube, and means for rotating them in opposite directions as set forth.

3. In a vessel, two screw propellers arranged in midships and having a rotary motion in opposition to each other and chambers or conduits for conducting the water to and from said screw propellers as set forth.

4. In a steam vessel, compartments B, B', connected by a tube C, screw propellers H, H', mounted upon shafts G, G', carried by suitable bearing in said tube C, cog wheels I, mounted upon said shafts G, cog wheels J, in gear with the wheels I, and carried by short shafts K, cog wheels M mounted upon the upper end of said short shafts K cog wheels N, in gear with the wheels M, and mounted upon the main driving shaft P, to which a rotary motion is imparted, from any suitable engine as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 8th day of October, A. D. 1892.

LORENZO D. B. SHAW.

Witnesses:

CHAS. STEERE,
EDWIN PLANTA.