J. M. LEMIEUX.

PROPELLER.

APPLICATION FILED MAR. 7, 1921.

1,387,416.

Patented Aug. 9, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

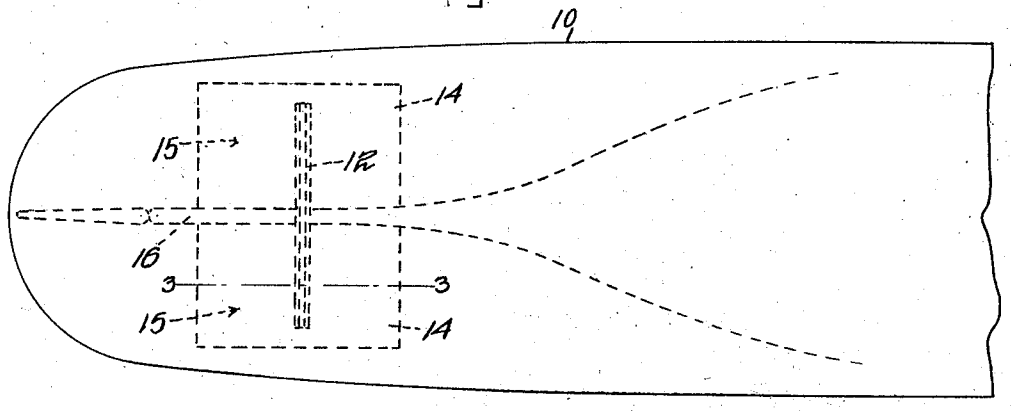
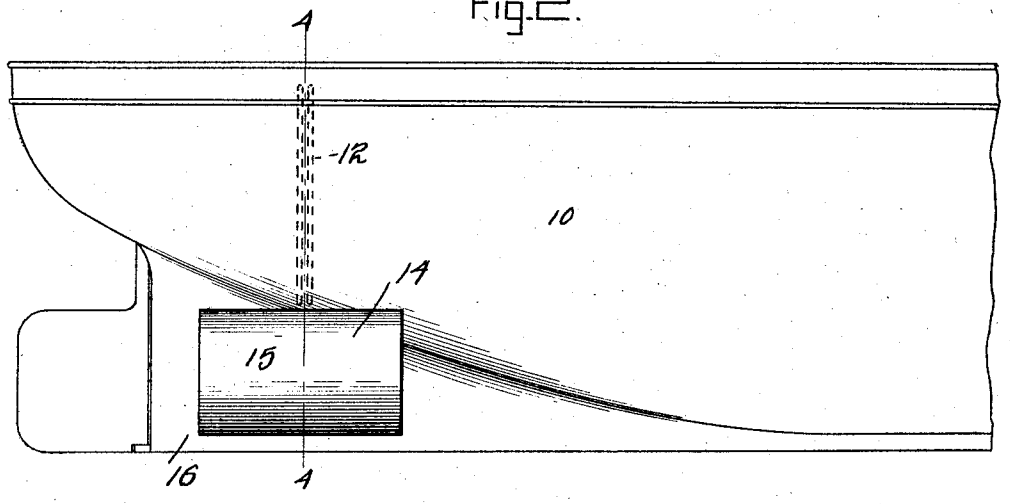


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

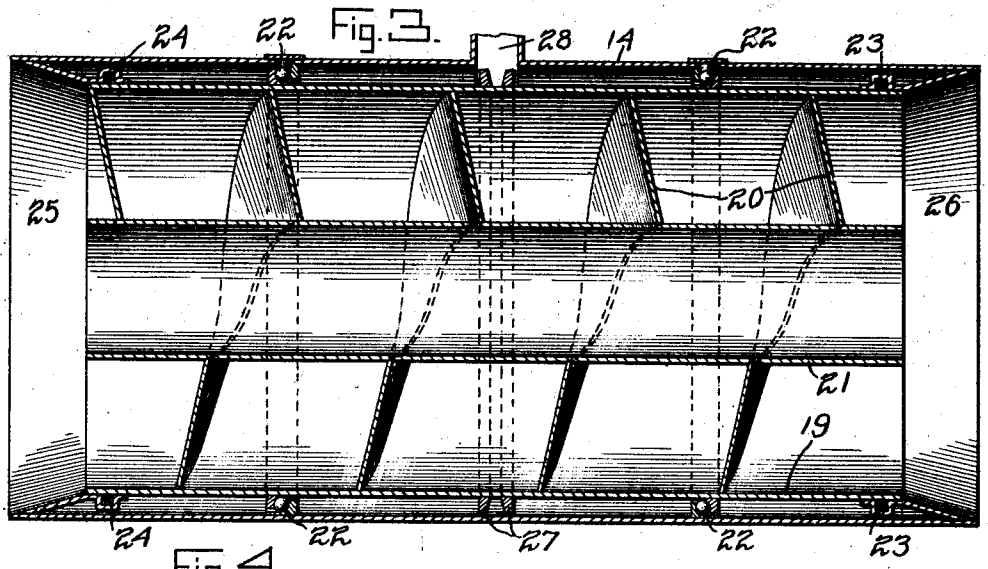
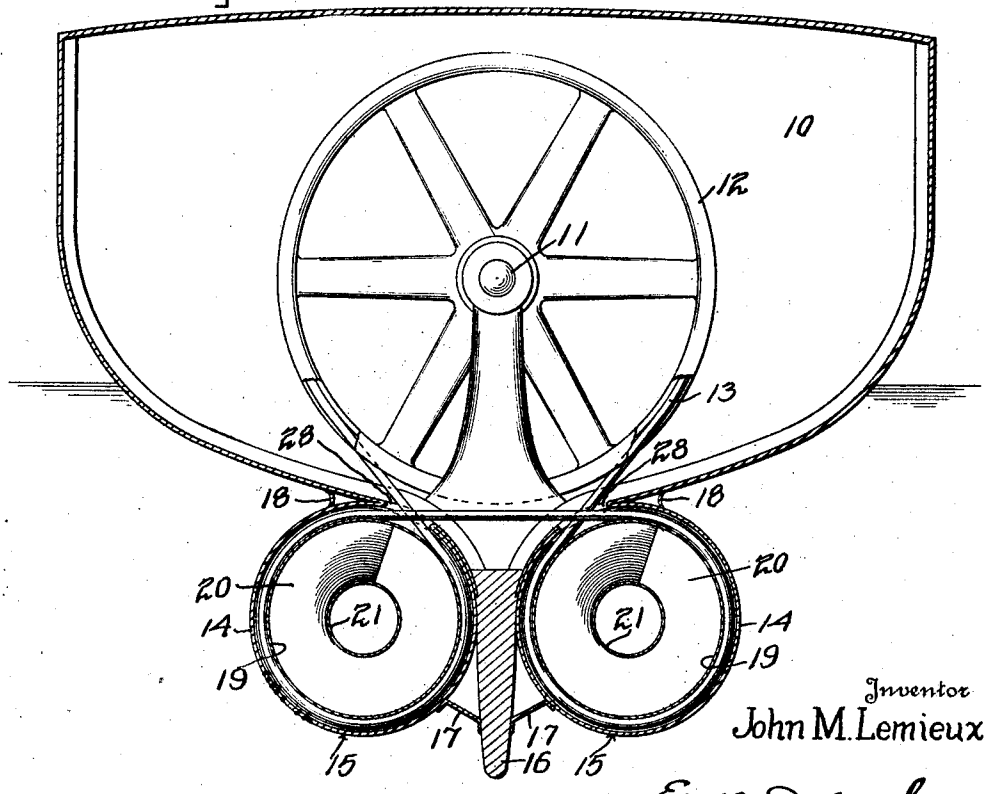


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN M. LEMIEUX, OF BATH, MAINE.

PROPELLER.

1,387,416. Specification of Letters Patent. Patented Aug. 9, 1921.

Application filed March 7, 1921. Serial No. 450,234.

To all whom it may concern:

Be it known that I, JOHN M. LEMIEUX, a citizen of the United States, residing at Bath, in the county of Sagadahoc and State of Maine, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My said invention relates to a propeller and driving means therefor intended primarily for marine use but not limited thereto, since the device may evidently also be applied as a driving means for airplanes, and is adapted for use in various situations and for a variety of purposes.

It is an object of my invention to provide a device of this sort which shall run easily and shall operate with very little application of power.

A further object of my invention is to provide a propeller in which the head resistance shall be diminished substantially to the vanishing point.

Another object of my invention is to provide a propeller which shall be capable of running at any required speed without producing any cavitation effect.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a plan of a portion of a ship embodying my improvements,

Fig. 2, a side view of the same,

Fig. 3, a longitudinal section on line 3—3 of Fig. 1, and

Fig. 4, a transverse section on line 4—4 of Fig. 2.

In the drawings 10 indicates the hull of a ship having a driving shaft 11 which supports a wheel 12, preferably in the form of a grooved pulley, though my invention is not necessarily limited thereto.

In the embodiment shown a round belt or cable or rope 13 engages a groove in the pulley and passes from thence through an opening in one of the duplicate propeller casings 14, thence around a propeller 15, across to the other propeller 15, around the same and back to the pulley 12. The propeller casings 14 are supported in any convenient manner at any preferred position on or with reference to the hull and I have shown them as being supported at opposite sides of the keel 16 by means of braces 17 and 18. The manner and position of support are not of the essence of my invention and may be varied in accordance with the needs of the particular case. In certain situations it will be possible to drive with a single propeller as on a small boat and in some instances it will be necessary to support the propellers at some distance from the body of the vessel. It may also be desirable in some instances to use other driving means for the propeller though I prefer the driving means herein illustrated.

The propeller 15 comprises an external casing 19, a single continuous screw blade 20 and central supporting means 21. The latter is preferably in the form of a hollow cylinder and both this cylinder and the casing 19 are rigidly connected to the blade 20. While I have shown a hollow cylindrical support or tube 21 I do not limit myself thereto as it will be apparent that the same may take other forms, it being essential only that there shall be a central opening in the propeller while at the same time the blade must be centrally supported. The advantage of the central opening is that whereas in the ordinary propeller a volume of water must be pushed ahead of the propeller shaft, in my device this water slips through the central opening without offering any resistance to the progress of the vessel. Neither is it essential that the impelling means be a single blade as a plurality of blades may be substituted and they may take various forms.

It will be seen that the phenomenon of cavitation will not occur in this device as the water cannot escape from the propeller, being confined by the outer casing. The blade 20 is of uniform thickness at all points so as to offer a minimum resistance to its passage through the water and preferably extends at an angle between the cylinders 19 and 21 to secure the maximum propelling effect and at the same time brace the concentric cylinders effectively. In its progress through the water the blade will cut into a cylindrical volume of water and work its way through the same on the principle of an auger, causing very little disturbance in the water and having to overcome correspondingly little resistance.

On the outer periphery of the casing are fixed the inner race members of a pair of ball-thrust bearings 22, the outer race members being attached to the casing 14. Other forms of thrust-bearings may be substituted for the ball-thrust bearing if desired. I also provide annular packing of any desired

form at 23 and 24 between the casing 14 and 16.

At the front and rear ends of the propeller I preferably provide means on the casing to close the annular opening between the casings 14 and 19, such means consisting of outer annular extensions 25 and 26 fixed to the stationary casing 14. I have shown these extensions as flaring outwardly from the inside to a point in line with the wall of casing 14 so that the water will be forced inward toward the screw, instead of pressing on the outside of the casing 14 and retarding the passage of the propeller through the water.

A pair of flanges 27 are fixed to the casing, leaving a groove between them for the cable 13. The number of flanges may be increased if desired to provide for additional driving cables. In the embodiment shown the opening 28 in each casing 14, through which the cables 13 enter the casing, is adjacent to and inclosed by the wall of the hull structure 10.

It will be seen that my propeller is not subject to the ordinary limitations as to speed, and it will be particularly useful in connection with turbine engines, since it will operate effectively whatever the speed of the engine may be.

I may modify the structure of the device and details thereof in various ways. It will be obvious that the device shown and described may be modified in various ways without departing from the spirit of the invention, and while specific terms are employed in the claims, they are so employed for purposes of description and not for limitation.

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

1. A propeller comprising impelling means, supporting means for the outer edges thereof, and a tubular support for the inner edges of said impelling means allowing free passage of the water therethrough, substantially as set forth.

2. A propeller comprising blades, an outer casing attached thereto, and a tubular support for the inner edges of the blades allowing free passage of water therethrough, substantially as set forth.

3. A propeller comprising blades, an outer casing attached thereto, a tubular support for the inner edges of the blades allowing free passage of water therethrough, and means on the outer casing for driving the propeller, substantially as set forth.

4. A propeller comprising blades, an outer casing attached thereto, and a tubular support for the inner edges of the blades allowing free passage of water therethrough, a fixed casing about the rotary casing having inturned flanges at its outer ends, annular packings between said flanges and said propeller, and bearings on the fixed casing supporting the rotary casing.

5. In a propulsion device, a pair of propellers, each comprising a rotary casing having central grooves, a central cylinder, and impelling means between the casing and cylinder and rigidly connected to both, a grooved driving pulley, and driving cables engaging the grooves of the pulley and the rotary casings, the cables extending about the pulley, then about the casings in succession and then back to the pulley, substantially as set forth.

6. In a ship, a pair of cylindrical grooved propellers at opposite sides of the keel and adjacent the stern, a fixed casing inclosing each propeller, a driving shaft, a grooved pulley thereon, a cable extending from the pulley to the propellers through openings in the casings in register with openings in the bottom of the ship and engaging in grooves in said pulley and propellers, said cable passing about the pulley, thence to the propellers in succession and then back to the pulley, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Washington, District of Columbia, this fifth day of March, A. D. nineteen hundred and twenty-one.

JOHN M. LEMIEUX. [L. S.]