Oct. 13, 1942. B. A. COGSWELL 2,298,869

MARINE PROPELLER

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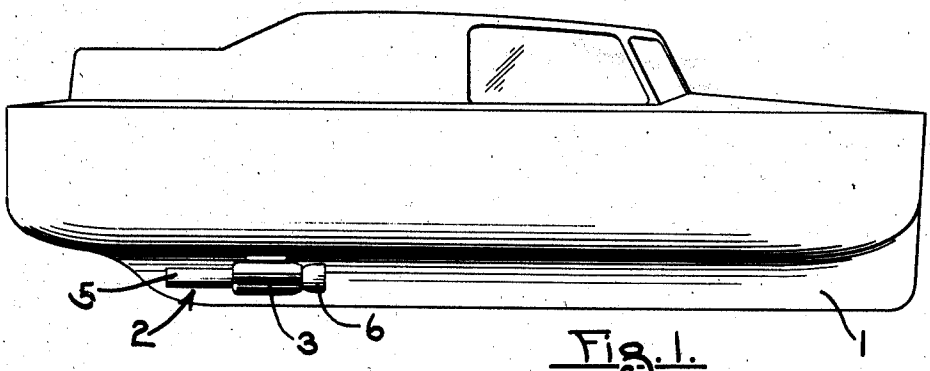


Fig. 1.

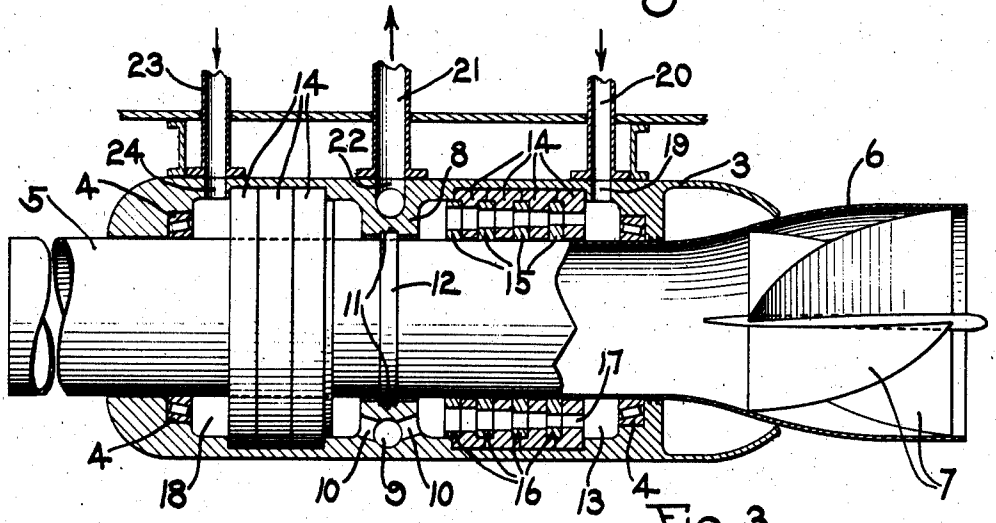


Fig. 3.

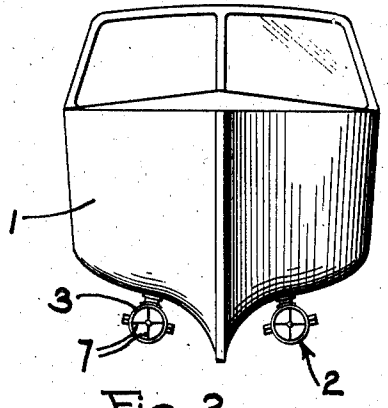


Fig. 2.

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MARINE PROPELLER

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5 Claims. (Cl. 115—34)

This invention relates generally to a marine propeller, and has as its principal object the provision of a novel marine propeller structure which may be fluid operated thereby increasing the available space within the vessel to which it is attached by eliminating the usual gear box and drive shaft.

Another object of the invention is to provide a novel marine propeller which will produce a more efficient type of propulsion for marine vessels.

A further object of the invention is to provide a propeller having such construction that, when it is located properly at the bottom of the vessel, the discharge from the propeller will be at the stern of the vessel thereby reducing the flow of water along the bottom thereof resulting in decreased resistance due to skin friction.

Other objects and purposes of the invention will appear more fully as the description proceeds.

To the accomplishment of the foregoing and related ends said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and following description set forth in detail certain means for carrying out my invention, said means constituting, however, but one of various ways in which the principle of the invention may be employed.

In said annexed drawing wherein like reference numerals refer to like parts throughout the various views:

Fig. 1 is a side elevational view of a vessel showing one of my improved marine propellers attached thereto.

Fig. 2 is a front elevational view thereof, and

Fig. 3 is an enlarged longitudinal section through the propeller structure itself and its associated mechanism.

Broadly speaking, my invention consists primarily in the provision of an elongated tube within which is located and secured thereto a screw type or turbine type propeller so that the propeller and the tube are rotated together. Unlike prior constructions of this nature, I provide fluid operated means to rotate the propeller instead of the usual gears and drive shaft. While throughout this description I shall refer to steam as the specific fluid which I prefer to use, it is to be understood that any other suitable fluid may be used without departing in any way from the spirit of the invention.

Referring now more particularly to the drawing, the vessel itself is indicated by the numeral 1 and at the under side thereof adjacent the stern and preferably located one at each side of the ship I provide my novel propeller which is generally indicated by the numeral 2.

Referring now specifically to Fig. 3, the propeller mechanism consists of an outer housing 3 which is preferably formed in two parts for ease in assembling. Within the housing and at each end thereof I provide bearing members 4 within which the elongated tube 5 is located and is rotatable with respect thereto. At the forward end of the tube 5 I prefer to flare it outwardly as at 6 so that at its forward end it has a larger radius than throughout the length thereof. The screw or turbine type propeller 7 is located in this enlarged portion 6 and the blades thereof are secured to the inner surface of the tube at its forward end. The specific manner in which the propeller 7 is secured to the tube is immaterial so long as it is attached securely thereto so that it is rotatable therewith.

Within the housing 3 at substantially midway between its ends there is provided an inwardly extending annular flange 8 which has an annular opening or passageway 9 therein. At the bottom of the housing the two passages 10 lead outwardly from the passage 9, one to the forward chamber in the housing and the other to the rear chamber, the forward and rear chambers being separated by means of the flange 8.

Centrally located on the inner edge of the flange 8 is an annular groove 11, and an annular ring 12 surrounds the tube 5, is secured thereto and is adapted to be received within the annular groove 11, thereby preventing any longitudinal movement of the tube but permitting a rotative movement thereof.

In the forward chamber 13 of the housing there is provided the usual steam turbine construction which consists of a plurality of spaced apart rings 14 secured to the inner surface of the housing 3 and between which are located the other rings which have the inner portions 15 surrounding and secured to the tube and the outer portions 16 located between the rings 14 and rotatable with respect thereto. In the space between the inner and outer portions 15 and 16 of the turbine rings are located a plurality of spaced apart fins, and the rings 14 are each provided with a plurality of spaced apart openings 17 so that as steam, or any other fluid, under pressure, passes through the openings 17, the force is transmitted to the fins causing a rotation of the rings to which they are secured and the tube 5 together with the propeller 7 secured therein.

As many of these rings may be used as is deemed desirable, and for the purposes of illustration I have preferred to show four such rings separated by four of the rings 14 so that a greater amount of power may be had for a given amount of steam passing therethrough.

The rear chamber 18 is also provided with a similar turbine arrangement and is only used when it is desired to reverse the rotation of the propeller.

At the upper side and adjacent the forward end of the housing 3 there is provided an opening 19 which leads upwardly to a tubular passageway 20 which in turn is connected to a steam or fluid inlet. Rearwardly of the stem conduit 20 is another and slightly larger conduit 21 which is in alinement with an exhaust passage 22 communicating with the annular passageway 9. As the steam enters the conduit 20 and the opening 19 and is received in the forward chamber 13, it passes rearwardly through the turbine thereby imparting a swift rotative movement to the propeller and tube 5. After such steam has passed through the turbine it then moves downwardly through the passageway 10 into the annular passage 9 and outwardly through the exhaust passages 22 and 21.

Adjacent the rear of the housing is another steam inlet 23 which communicates with the passage 24 thereby admitting steam into the rear chamber 18. This steam then passes through the turbine located in the rear chamber the fins of which are so located as to rotate the propeller in the opposite direction thereby reversing and moving the vessel rearwardly. The steam thus passing through the rear turbine then passes outwardly through the exhaust passageway 21 as has been explained with respect to the steam in the forward chamber. Of course, only one of the steam turbines is operated at a time.

By this construction none of the usual gear boxes, drive shafts, etc. are necessary, the entire rotating means being actuated by a fluid under pressure. I prefer to mount one of these devices at each side of the vessel with the rear of the tube near or at the rear end thereof with the propeller end of the tube forward so that water is drawn into the tube amidship of the vessel and discharged with an increased velocity at the rear. There are several advantages in this type of mechanism when mounted in this manner. In the first place, this arrangement increases the overall slip of the propeller by increasing the pitch of the blades past that which is practical with an open propeller; the arrangement also draws water into the propeller at a point somewhat forward of the rear of the vessel to reduce the flow of water along the bottom thereof thus reducing skin friction and preventing the rear end of the boat from dipping down into the water and raising its forward end upwardly.

Other modes of applying the principle of my invention may be used instead of the one here described, change being made as regards the structure herein disclosed provided, however, that the means stated by any of the following claims or the equivalent of such stated means be employed.

I, therefore, particularly point out and distinctly claim as my invention:

1. A marine propeller comprising, a housing, an elongated tube rotatably mounted within said housing and extending beyond one end thereof, a propeller mounted within said tube, secured thereto and rotatable therewith, and means within said housing to rotate said tube and propeller.

2. A marine propeller comprising, a housing, an annular groove within said housing, an elongated tube rotatably mounted within said housing and extending beyond each end thereof, an annular ring secured to said tube and located within said groove to prevent longitudinal movement of said tube, a screw propeller mounted within and secured to said tube at one end thereof, and means within said housing to rotate said tube and propeller.

3. The combination of elements defined in claim 2, wherein said means is fluid operated.

4. A marine propeller comprising, a housing, an annular groove within said housing, an elongated tube rotatably mounted within said housing and extending beyond each end thereof, an annular ring secured to said tube and located within said groove to prevent longitudinal movement of said tube, a screw propeller mounted within and secured to said tube at one end thereof, means at one side of said ring within said housing to rotate said tube and propeller in one direction, and means at the other side of said ring to rotate said tube and propeller in the opposite direction.

5. The combination of elements defined in claim 4, wherein at least one of said means is fluid operated.

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