Nov. 19, 1935. R. D. STROUT 2,021,815

MARINE PROPULSION

Filed Sept. 6, 1934

Fig. 1.

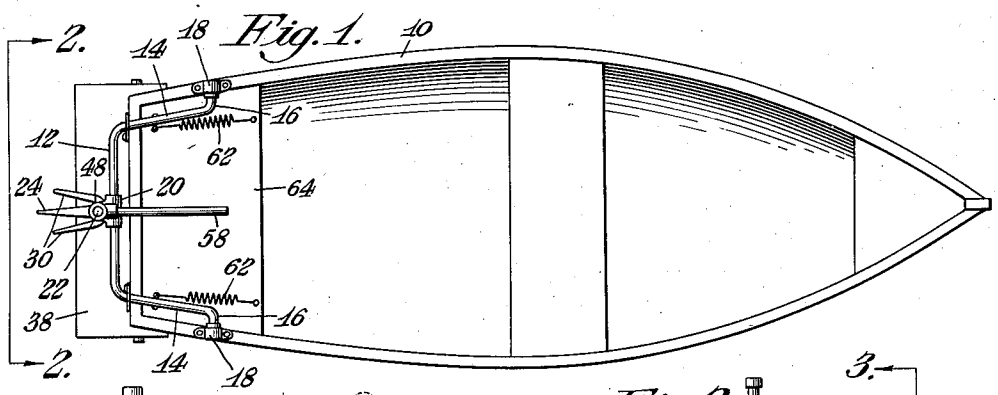


Fig. 2.

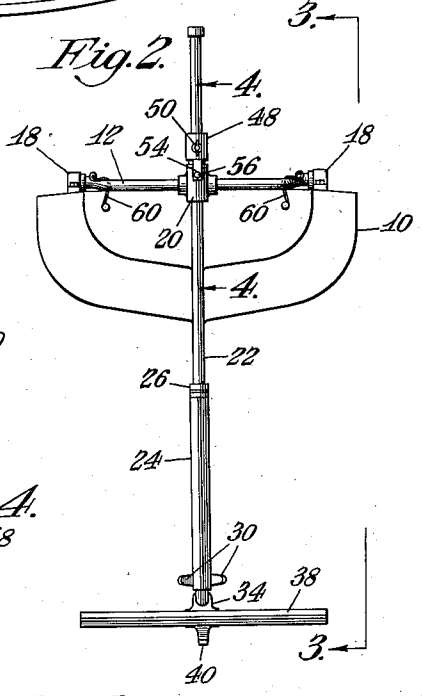


Fig. 3.

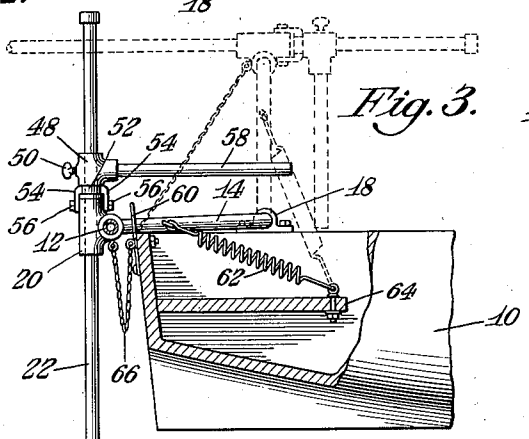
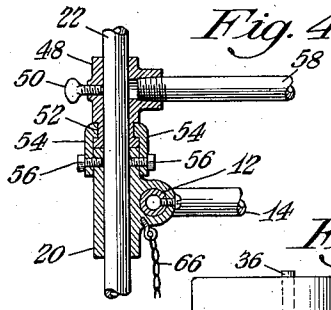


Fig. 4.



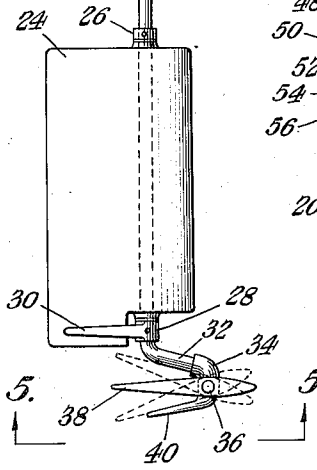


Fig. 5.

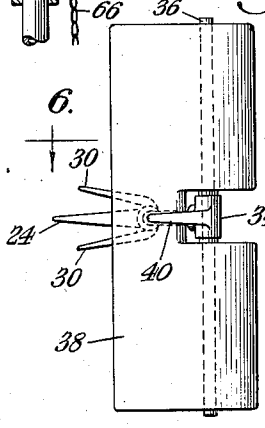
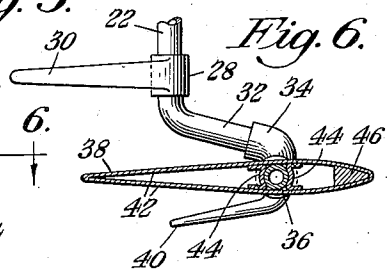


Fig. 6.



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UNITED STATES PATENT OFFICE

2,021,815

MARINE PROPULSION

Ray D. Strout, La Salle, Ill.

Application September 6, 1934, Serial No. 743,003

5 Claims. (Cl. 115—4)

My invention relates to marine propulsion, and has among its objects and advantages the provision of an improved propelling apparatus.

An object of my invention is to provide a wave operated propelling apparatus.

A further object is to provide a propelling apparatus in which the apparatus is positioned below the boat in a body of still water and actuated by the rocking action of the boat in any direction, or by the bodily movement of the boat in a vertical direction.

A further object is to provide a device in which means is provided for combining the propelling and steering apparatus, and in which compensation is provided for variable depths of the still water.

Another object is to provide an apparatus which may easily be associated with boats of conventional design.

In the accompanying drawing:

Fig. 1 is a top plan view of my invention;

Fig. 2 is a rear view as indicated by the line 2—2 of Fig. 1;

Fig. 3 is an enlarged view of the invention, partly in section, as indicated by the line 3—3 of Fig. 2;

Fig. 4 is a sectional detail view along the line 4—4 of Fig. 2;

Fig. 5 is a bottom plan view of the invention as indicated by line 5—5 of Fig. 3; and

Fig. 6 is a sectional view along the line 6—6 of Fig. 5.

In the embodiment selected to illustrate my invention, I make use of a boat 10 to the rear end of which I connect a supporting bar 12 having reaches 14 provided with shaft extensions 16 housed within bearings 18 bolted to the boat. Upon the bar 12 I mount a bearing 20 for rotatably supporting a vertical shaft 22. I mount an impeller blade 24 upon the lower end of the shaft 22, which blade is mounted for rotary movement upon the shaft, but is supported against endwise movement by reason of collars 26 and 28. Two arms 30 limit the rotary movement of the blade 24 upon the shaft 22. These arms are formed integrally with the collar 28.

The shaft 22 is bent to provide a short reach 32 upon which I mount a casting 34 supporting a shaft 36 upon which a second impeller blade 38 is mounted. In Fig. 3, the casting 34 is provided with an extension 40 co-operating with the reach 32 for limiting the rotary movement of the impeller blade 38.

Referring to Fig. 6, the impeller blade 38 comprises two spaced apart metal sheets 42 between which I fasten curved members 44 arranged to provide bearings for the impeller. The leading edge of the impeller is provided with a metal filler 46 tending to counterbalance the impeller upon the shaft 36. However, the shaft 36 is so positioned with respect to the impeller that the area between the shaft and the leading edge is considerably less than the area between the shaft and the rear part of the impeller. In this way, any vertical movement of the shaft 22 in the water imparts an oscillating movement to the impeller 38.

The impeller 24 is constructed in the same way as the impeller 38 and is mounted upon the shaft 22 in the same offset manner, whereby any lateral movement of the shaft 22 in the water imparts an oscillating movement to the impeller. In counterbalancing and offsetting the impellers in the manner illustrated, I provide a construction which is sensitive in a high degree to any shifting of the shaft 22 laterally or vertically.

To prevent longitudinal shifting of the shaft 22 within the bar 20, I provide an abutment in the nature of a collar 48 fastened to the shaft by a set screw 50. This collar is provided with a groove 52 within which two hook members 54 are positioned, which members are fastened to the bearing 20 by means of bolts 56. Thus, the shaft 22 is supported against longitudinal movement in either direction, while rotary movement is permitted.

In operation, the shaft 22 is adjusted to position the impellers 24 and 38 in a body of still water. Thus, any rocking motion imparted to the boat by reason of surface irregularities will cause a shifting movement of the shaft 22. Any rocking action which imparts an oscillating movement to the shaft 22 shifts the impeller 24 to an angular position, whereby continued movement of the shaft imparts a forward impulsion to the boat. Similarly, any rocking action which imparts movement to the shaft 22 in a vertical direction operates the impeller 38 in the same way. Thus, I attain a propelling effort regardless of the nature of the rocking action of the boat.

Referring to Fig. 3, I connect a steering arm 58 with the collar 48, whereby the shaft 22 may be rotated for steering the boat. During the operation of the device, the steering arm 58 serves as a means for holding the shaft 22 against rotary movement, except for steering purposes.

I provide two hooks 60 arranged to latch the bar 12 in fixed relation with the boat 10 to resist shifting during the thrust effort of the impeller

38 in the phase tending to cause a lifting action upon the shaft 22.

My device may be rendered inoperative by shifting the apparatus to the dotted line position of Fig. 3. Each reach 14 is provided with a spring 62 having one end connected with the reach and its opposite end connected with a fixed member 64 within the boat 10, which springs are of sufficient strength to hold the apparatus in the dotted line position of Fig. 3. I provide a chain 66 which prevents shifting of the apparatus beyond the position illustrated.

The boat may be propelled in a reverse direction by rotating the shaft 22 one hundred eighty degrees.

Obviously, more than one unit may be connected with the boat. Of course, the specific mounting for the impeller blades will depend upon the position of the unit.

Without further elaboration, the foregoing will so fully explain my invention that others may by applying current knowledge readily adapt the same for use under various conditions of service.

I claim:

1. The combination with a boat, of a support connected with the boat, a normally vertical shaft connected with said support, an impeller blade mounted for oscillation about said normally vertical shaft, a bearing connected with said shaft and arranged at an angle thereto, a second impeller blade mounted upon said bearing for oscillation thereon, said shaft being of such length as to position both impellers within a body of still water, said impeller blades being actuated for propelling the boat by shifting of the shaft due to a rocking action of the boat caused by surface irregularities, and means for rotating the shaft to change the direction of the impulsive effort imparted to the boat for steering purposes.

2. The combination with a boat, of a support connected with the boat, a normally vertical shaft connected with said support, an impeller blade mounted for oscillation about said normally vertical shaft, a bearing connected with said shaft and arranged at an angle thereto, a second impeller blade mounted upon said bearing for oscillation thereon, said shaft being of such length as to position both impellers within a body of still water, said impeller blades being actuated for propelling the boat by shifting of the shaft due to a rocking action of the boat caused by surface irregularities, and means for varying the distance between the impeller blades and the boat.

3. In a device of the type described, a normally vertical shaft, an impeller mounted for oscillation thereon, means for limiting the oscillatory movement of the blade, a support in the nature of a bar arranged at right angles to said shaft, an impeller mounted for oscillatory movement thereon, and means for limiting the oscillatory movement of said last-named impeller.

4. In a device of the type described, a normally vertical shaft, an impeller mounted for oscillation thereon, means for limiting the oscillatory movement of the blade, a support in the nature of a bar arranged at right angles to said shaft, an impeller mounted for oscillatory movement thereon, and means for limiting the oscillatory movement of said last-named impeller, said last-named means comprising in part a portion of said shaft.

5. The combination with a boat, of a support journaled to the boat, a vertical shaft connected with said support, impelling means carried by said normally vertical shaft, and means connected with said support and the boat for holding the support and the normally vertical shaft in predetermined position, said support and said normally vertical shaft being movable as a unit to position the normally vertical shaft in a horizontal position, said means operating to hold the support and the normally vertical shaft in said horizontal position.

RAY D. STROUT.