Jan. 23, 1945. E. H. FICKLER 2,367,765

MARINE PROPULSION DEVICE

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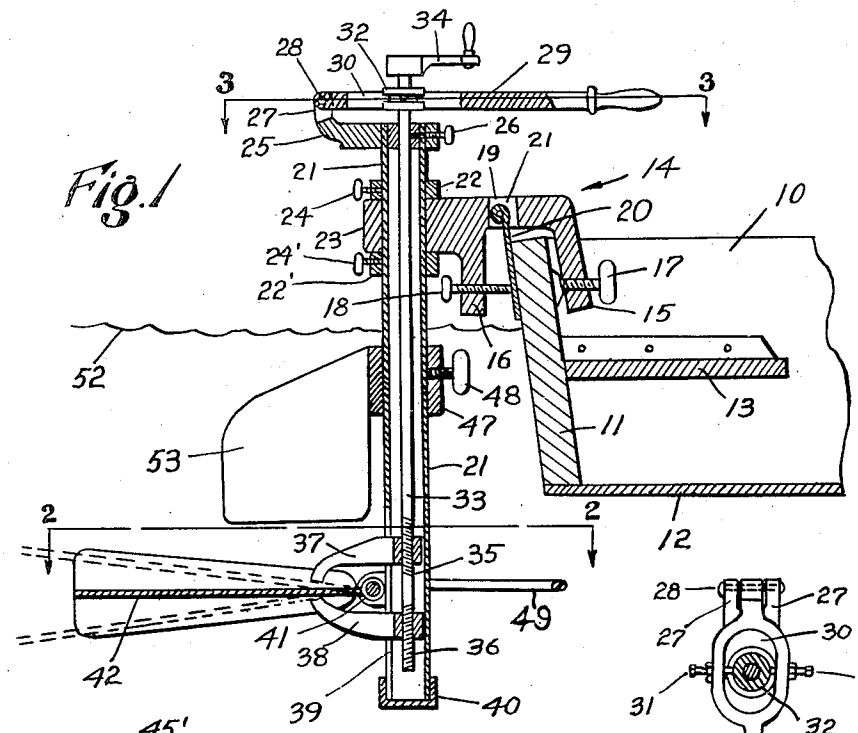

Fig. 1

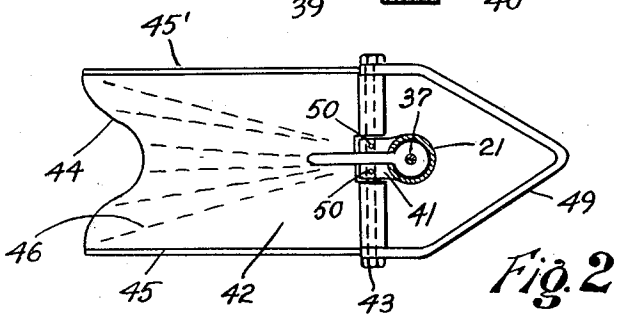

Fig. 2

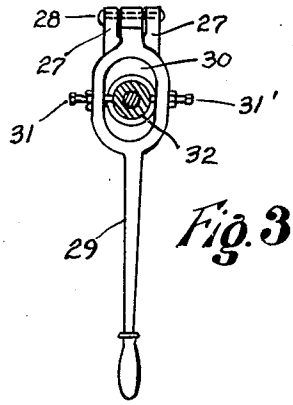

Fig. 3

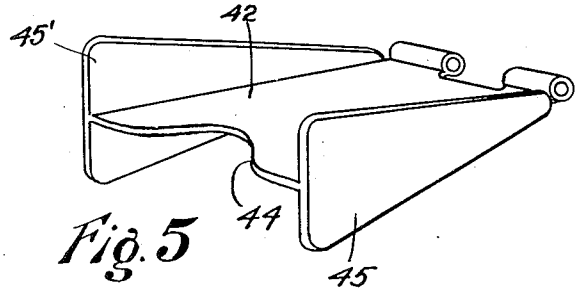

Fig. 5

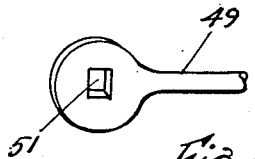

Fig. 4

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MARINE PROPULSION DEVICE

Edwin H. Fickler, Milwaukee, Wis.

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3 Claims. (Cl. 115—4)

My invention relates to improvements in marine propulsion devices, and more particularly to a device for propelling small crafts over the surface of the water.

The object of my invention is to provide a wave operated impelling mechanism that may be attached to a small water craft, and allow it to be guided manually in its path.

Another object of my invention is to provide such a device that may be manually operated and guided by a person on the water craft.

A further object of my invention is to so construct the device in a manner that will permit its operation to be adjustably governed without removing it from the craft or taking it out of the water.

A still further object of my invention is to provide a device of the character described that will perform the functions for which it is intended, that is portable in its construction, and that may be easily manufactured at a reasonable cost.

Other and further objects of my invention will become more apparent as the description proceeds, when taken in conjunction with the drawing, in which,

Figure 1 is a fragmentary cross sectional view of the device, assembled and attached to the stern of a row boat.

Figure 2 is a fragmentary cross section, taken at the line 2—2 in Figure 1.

Figure 3 is a fragmentary view of the steering and actuating lever, taken at the line 3—3 in Figure 1.

Figure 4 is a fragmentary perspective view of one of the attaching ends of the weed guard, and

Figure 5 is a perspective view of the impeller blade.

Similar characters of reference indicate corresponding parts throughout the several views, and referring now to the same, the character 10 shows a fragmentary cross section of a row boat, provided with a board 11 at its stern, a bottom board 12 and a seat member 13 attached in the conventional manner to the stern board 11 and the side boards of the boat 10.

A mounting bracket assembly 14, provided with downwardly extending members 15 and 16, straddles the stern board 11, as shown, and clamps the board 11 by means of screws 17 and 18 threadedly engaging the members 15 and 16 respectively. Within the bracket 14 is shown an aperture 19, in which a plate 20 is shown hingedly supported by means of a pin 21. This plate 20 contacts the rearward face of the board 11, and is clamped thereto in a manner to provide frictional contact with the board 11 by means of the screw 18 in the member 16. This arrangement will permit adjustment and support of the mounting bracket 14 in a manner so that the tubular member 21 may be supported in a vertical position. The tubular member 21 is rotatably mounted within the bracket 14, and held in a predetermined position as to its height by means of collars 22 and 22' encircling the tube 21 above and below the portion 23 of the bracket 14. The collars 22 and 22' are shown provided with set screws 24 and 24' respectively.

At the extreme upper end of the tube 21 is a yoke member 25 rigidly attached to the tube 21, by means of the set screw 26 or in any other convenient manner. The yoke 25 is provided with an upwardly extending hinge 27 supplied with a shaft 28, on which is mounted the actuating and steering lever 29, used for the manipulation of the device.

This lever 29 has an elongated aperture 30, centrally disposed therein, and is provided with two set screws 31 and 31' engaging a grooved wheel member 32, attached to a vertical adjustment rod 33 extending longitudinally within the tube 21, and provided with a crank 34 at its top and a pair of right and left hand threads 35 and 36 at its lower end.

There are a pair of limiting brackets 37 and 38 engaging the threads 35 and 36 respectively and projecting outward from the tube 21 through a slot 39. The tube 21 is shown provided with a cap 40 at its extreme lower end.

Immediately at a point centrally disposed between the brackets 37 and 38, there is a bearing bracket 41, shown welded to the outside of the tube 21 and a horizontally disposed impeller blade 42 is hingedly mounted thereon by means of a shaft 43 extending longitudinally through the bearing bracket 41 and the front of the blade 42. The blade 42 has a rear edge 44 of a curved contour and two vertical fins 45 and 45' at its side. In Figure 2, I show a plurality of serrations 46 in dotted line. These serrations have a tendency, due to their corrugated construction, to cause the water, through which the blade 42 passes, to flow outward toward the inner face of the fins 45 and 45'. This is a form of modified construction not imperative to the successful operation of the device.

In Figure 1, I also show a rudder 53 attached to the tube 21 by means of a hub 47, and a set

screw 48 keeps the hub in proper position and in adjustable contact with the tube 21.

A weed guard 49, fastened to the ends of the shaft 43, pushes the weeds sideways and away from the impeller blade 42. The shaft 43 is kept from turning within the bearing 41, by means of the pins 50 through the shaft 43 and bearing 41. In Figure 4, I show one end of the guard 49 having a square aperture 51, which fits over a square shoulder (not shown) on each end of the shaft 43, and is held onto the shaft 43 by means of the conventional washer and nut on the threaded ends of the shaft.

In operation, the device functions as follows:

The entire device is clamped onto the stern board 11 of a small water craft 10, by means of the mounting bracket assembly 14. The tubular member 21 is raised or lowered to a desired height and retained in the proper position by means of the collars 22 and 22'. This will place the rudder 53 below the water line, shown as 52 in Figure 1. The action of the waves on the surface of the water will cause the water craft 10 to be raised and lowered, which in turn will actuate the impeller blade 42, causing it to be moved up and down at its rearward end, due the surface area of the blade behind its front support on the shaft 43. By turning the crank 34 in one or the other direction, it will revolve the rod 33, thereby causing the brackets 37 and 38 to spread apart or be brought closer toward one another, due to their contact with the right and left threads 35 and 36 on the rod 33, and thereby limiting the actuation of the impeller blade 42. The actuation of the blade 42 will cause an action similar to "sculling" with a conventional oar. As the craft is propelled forward by this impelling action, it may be steered into a desired direction by moving the handle 29 on the top of the tube 21 sideways in either direction depending on the direction desired. The vertical fins 45 and 45' on the blade 42 will also act as rudders, and the device may be steered if desired without the use of the rudder 53.

Obviously, when the surface of the water is calm, and no waves can be employed, the lever 29 may be brought up and down in a pumping action, thereby causing the impeller blade to be actuated and made operative until the waves are encountered in the open water where the surface of the water is usually agitated.

The pumping action of the handle 29, which has the set screws 31 and 31' engaging the groove in the wheel 32, will cause the rod 33, attached to the wheel 32, to be raised and lowered, thereby using the ends of the brackets 37 and 38 to push the blade 42 upward and downward to produce the sculling action.

While I have illustrated and described a specific construction of my device and shown a particular method of using it, I do not wish to be limited to the specific construction shown, for in the embodiment of my invention, there are many changes that can be conveniently made, and I reserve the right to make such changes without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent in the United States is:

1. The combination with a water craft having a stern board, of a mounting bracket connected therewith, a tubular member adjustably and rotatably supported in a vertical plane by said mounting bracket, a rod disposed longitudinally within said tubular member, said rod rotatably mounted near the top of said tubular member, means for revolving the rod within said tubular member, a pair of brackets attached to the lower end of said rod, an impeller blade hingedly mounted on said tubular member at a point between said brackets, said impeller blade supported at its forward end, thereby permitting the blade to be actuated at its extending end within the limiting space provided by said brackets due to the pressure of the water against the area of the blade when said water craft is rising and lowering due to wave action, and means for radially moving said tubular member to produce a steering action.

2. A device of the character described, comprising in combination with a water craft, a mounting bracket assembly clamped to the stern of said water craft, a tubular member adjustably and rotatably mounted within said mounting bracket, said tubular member disposed in a vertical position, a rod encased longitudinally within said tubular member, a lever hingedly attached to the upper end of said tubular member at right angle thereto, said rod attached slidably to said lever at the upper end of said rod, means for revolving said rod, said rod provided with right and left hand threads at its lower end, brackets extending outward from said rod through the wall of said tubular member, said brackets threadedly engaging the right and left hand threads on said rod, an impeller blade, said impeller blade hingedly attached to said tubular member at a point midway between said adjustable brackets on said rod, said impeller blade mounted at its forward end to a bearing on said tubular member, the rearward end of said blade having an edge of an irregular contour, said impeller blade further being provided with vertical fins disposed at both sides of said blade and at right angle thereto.

3. A device of the character described in claim 2, in which the tubular member is provided with a vertical rudder extending backward therefrom and rigidly attached to said tubular member at a point midway between the mounting bracket and the horizontally mounted impeller blade.

4. A propulsion device of the character described comprising in combination with a small water craft having a stern board of a mounting bracket assembly, clamping means for attaching said assembly to said stern board, a clamp plate hingedly supported by said mounting bracket, said clamp plate extending downward and disposed for engagement with said stern board and clamping means, a tubular member adjustably mounted and rotatably supported by said mounting bracket, a rod disposed longitudinally within said tubular member, an actuating lever hingedly supported at the upper end of said tubular member, said actuating lever slidably supporting the upper end of said rod, means for rotating said rod, brackets extending outward and rearwardly from said rod through the wall of said tubular member, said brackets threadedly engaging said rod, a bearing bracket attached to said tubular member at a point midway between said outwardly extending brackets, an impeller shaft journaled within said bearing, said impeller shaft acting as a mounting for an impeller blade horizontally disposed and attached at the forward end thereof to said impeller shaft, said outwardly extending brackets limiting the hinged motion of said impeller blade when brought into action by said actuating lever or the action of

the surface of the water raising and lowering the water craft.

5. The combination with a water craft of a mounting bracket assembly, clamping means on said assembly for attaching it to the water craft, a clamp plate hingedly attached to the mounting bracket, said clamp plate disposed for engagement with said water craft for adjustably supporting the mounting bracket in a horizontal position, a tubular member adjustably and rotatably disposed within said mounting bracket, a rod inserted longitudinally within said tubular member, an actuating lever attached to the upper end of said tubular member for supporting said rod, means for revolving said rod within said tubular member, said rod provided with a right and left hand thread at its lower end, a pair of brackets threadedly engaging the right and left hand threads of said rod and extending rearwardly through the wall of said tubular member, a bearing integrally formed with the wall of said tubular member at a point between said pair of brackets, an impeller blade mounted at its forward end to a shaft journalled within said bearing, said impeller blade permitted to move freely at its extending end in an upward and downward manner and actuated by the action of the water craft on the surface of the water or by means of the actuating lever at the top of the tubular member, the movement of the impeller blade being governed by the distance between the outwardly extending brackets adjusted by the revolving of the rod, said impeller blade being disposed in a horizontal plane and provided with vertical fins extending upward and downward from the side edges of said blade.

6. A device as described in claim 5, in which a vertical rudder extends outward from the vertical tubular member and is slidably and adjustably attached to said tubular member, said rudder being disposed at a point between the mounting bracket assembly and the bearing for supporting said impeller blades.

7. A device of the character described comprising in combination with a water craft, of a mounting bracket, means for clamping said mounting bracket in a horizontal position to said water craft, a tubular member rotatably and adjustably mounted within said mounting bracket, said tubular member provided with a hingedly attached actuating lever at its upper end, a rod slidably supported by said actuating member, said rod disposed longitudinally within the vertical tubular member, rotating means attached to the top of said rod, right and left hand threads at the bottom of said rod, a pair of brackets threadedly engaging said right and left hand threads, said brackets extending outward through the wall of said tubular member in a rearward direction, a bearing integrally mounted to said tubular member at a point immediately between the outwardly extending brackets, a shaft journalled within said bearing in angular relation to said tubular member, a weed guard of a tapered contour extending outward and forward from and attached to the ends of said shaft, an impeller blade mounted at its forward end to said shaft, said impeller blade horizontally disposed extending rearward and permitted to move hingedly between the space provided by the outwardly brackets which brackets are adjusted by the revolving of the rod within said tubular member, and a rudder assembly slidably attached to the vertical tube, said rudder extending vertically outward from said tubular member in a rearward direction, said rudder assembly disposed at a point between the mounting brackets and the bearings supporting the impeller blade.

8. A device as described in claim 7, in which the horizontally disposed impeller blade is provided with fins extending at right angle to the blade on both sides at its outer edges, said blade having its rearward edge shaped to an irregular contour providing the outer edges of a longer dimension than its central portion, and a plurality of serrations on the horizontal section extending from a point near the bearing, acting as a support to the rearward edge of said impeller blade.

EDWIN H. FICKLER.