

April 16, 1935.

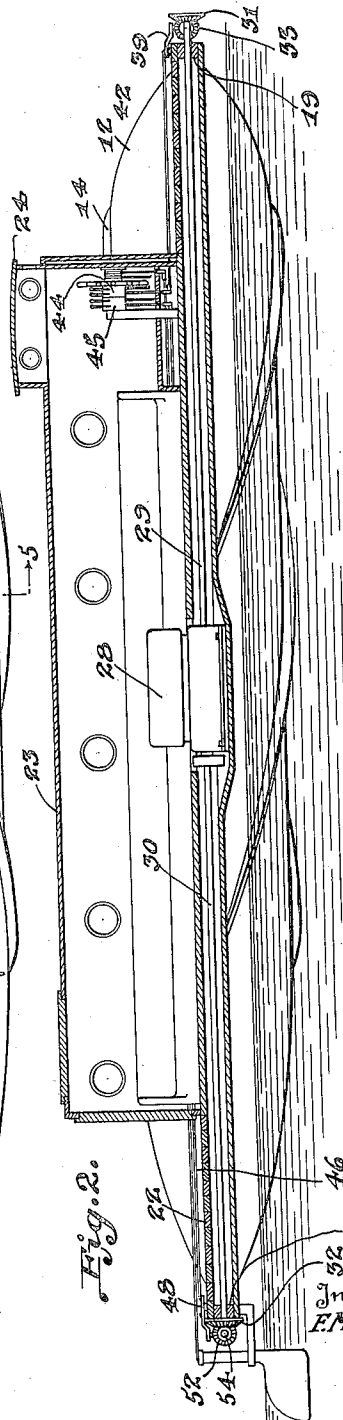
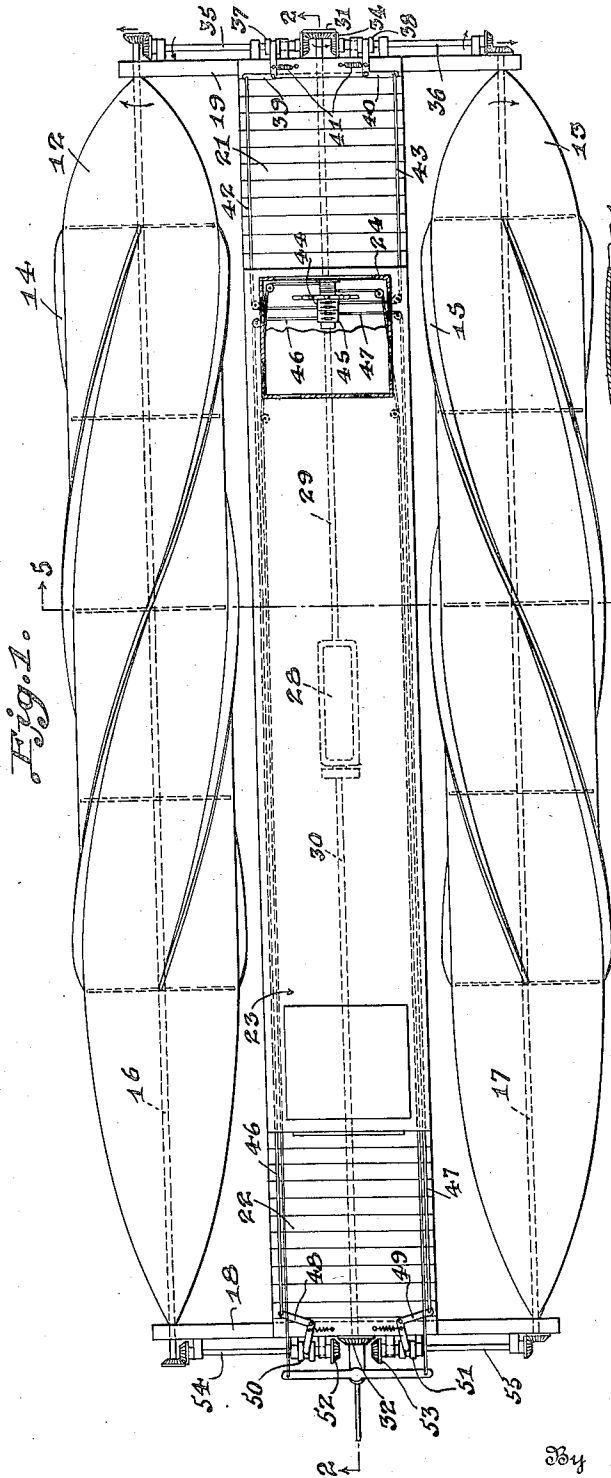
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1,997,578

ROTOR BOAT

Filed June 20, 1933

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 3.

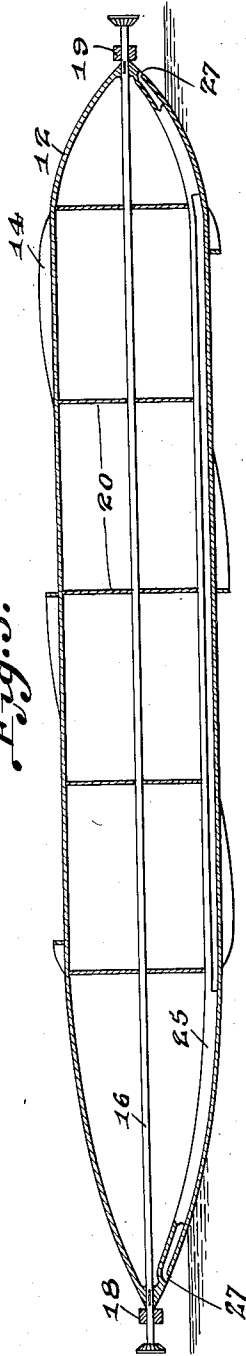


Fig. 4.

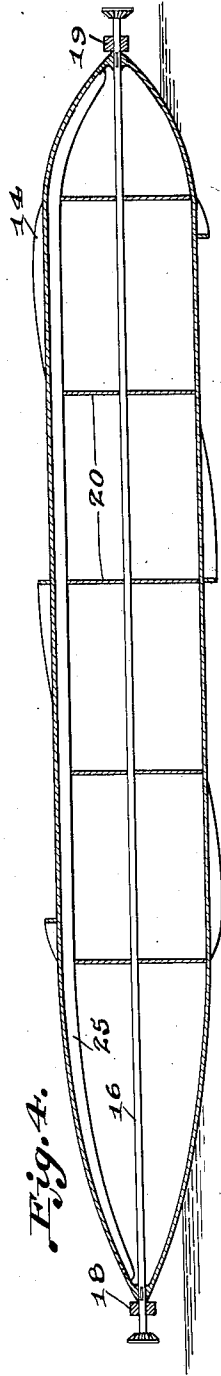


Fig. 6.

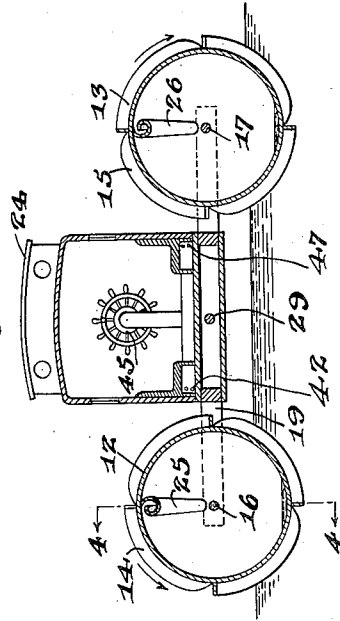
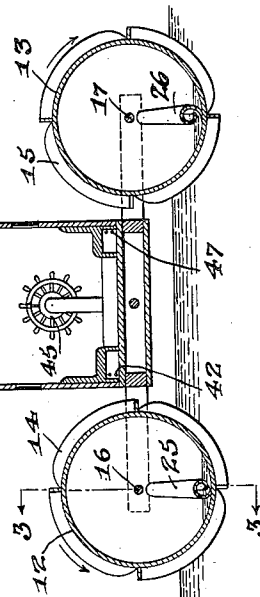


Fig. 5.



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3 Sheets-Sheet 3

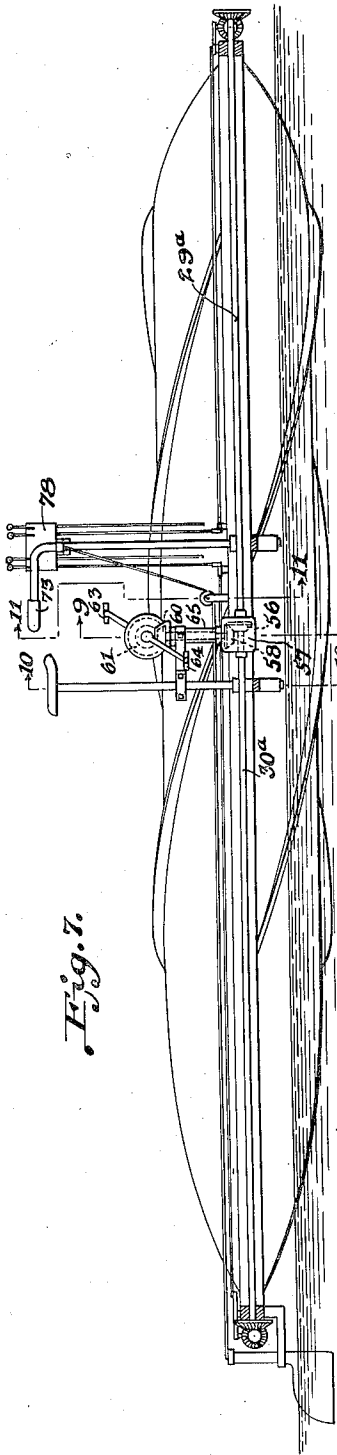


Fig. 7.

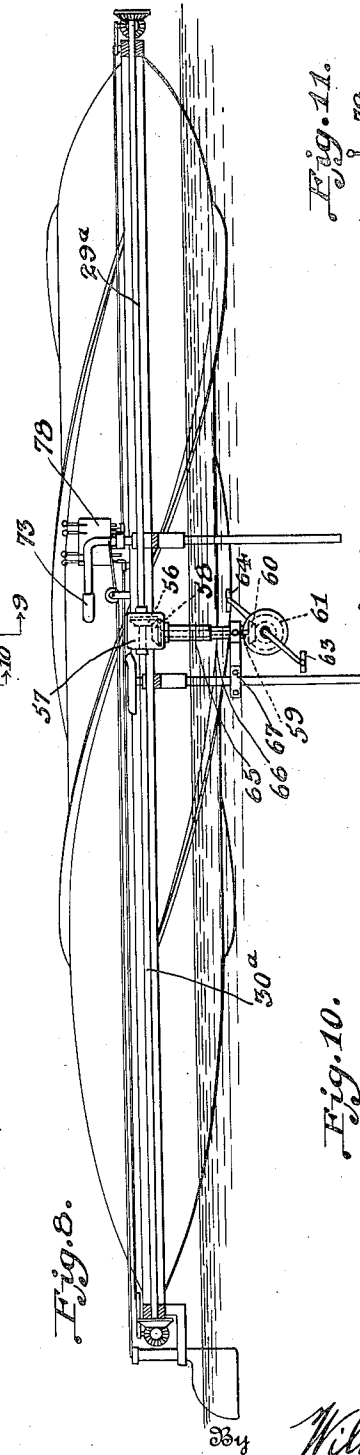


Fig. 8.

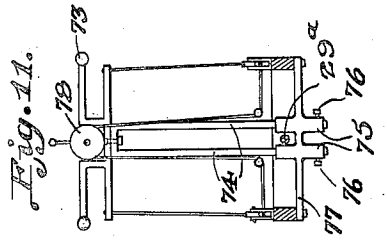


Fig. 11.

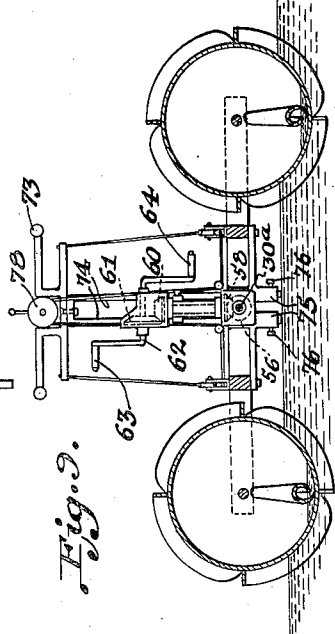
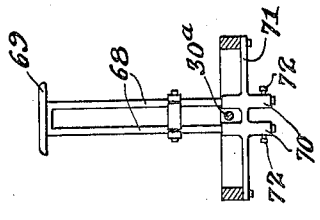


Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE

1,997,578

ROTOR BOAT

Frederick M. Eslick, Savannah, Ga.

Application June 20, 1933, Serial No. 676,716

4 Claims. (Cl. 115—19)

The present invention relates to improvements in rotor boats, and has for an object an improved boat construction which will require less power for its propulsion and involve considerable saving in fuel.

The invention also has for its purpose to provide greater comfort for the passengers inasmuch as the ship is so constructed as to have little roll or pitch.

The invention has for a further object greater safety because of the use of the large rotor floats in which the passengers can enter in time of great danger and which floats would not be apt to sink unless badly damaged in several places.

With the use of the invention no dry-docks will be necessary and the boats or ships will be quicker in starting and stopping and easier to maneuver.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a top plan view, with parts broken away, showing an improved rotor boat constructed in accordance with the present invention.

Figure 2 is a longitudinal central sectional view taken on the line 2—2 in Figure 1.

Figure 3 is a vertical section taken on the line 3—3 in Figure 5.

Figure 4 is a similar view taken on the line 4—4 in Figure 6.

Figure 5 is a transverse section taken on the line 5—5 in Figure 1 and showing one position of the rotor floats.

Figure 6 is a similar view with the floats in another position.

Figure 7 is a view similar to Figure 2 without the superstructure but showing a cycle arrangement with the parts in the raised position.

Figure 8 is a similar view showing the lowered position of the parts.

Figure 9 is a cross section taken on the line 9—9 in Figure 7.

Figure 10 is a cross section taken on the line 10—10 in Figure 7, and

Figure 11 is also a cross section taken on the line 11—11 in Figure 7.

Referring more particularly to the drawings the boat consists of two or more floats 12 and 13 shaped somewhat similar to torpedoes, with one or more spiral fins 14 and 15 on the outside

of each float, so placed and at such angle that the rotating of these floats or rotors will cause the boat to move with the desired speed. Suitable power for rotating the floats or rotors is provided as hereinafter described. Also a framework connected with and supported by the floats or rotors is preferably employed together with such superstructure as may be desired. Any usual method of steering may be employed.

As shown more particularly in Figures 3 to 6 inclusive, the floats 12 and 13 consist of outer hulls mounted on shafts 16 and 17, which shafts are supported in cross beams 18 and 19. Within the hulls are water-tight bulkheads 20. These rotors may be additionally strengthened and braced, as desired.

Figure 1 shows the fore and aft decks 21 and 22 mounted upon the beams 18 and 19 and upon such additional beams as is desired. The cabin or superstructure is represented at 23, at the forward end of which is a pilot house 24.

One of the rotors turns to the right and the other turns to the left as shown by the arrows in Figure 1. The superstructure may be of such shape, height and width as desired.

If desired the beams 18 and 19 may be arched upwardly from the water to raise the superstructure higher above the water level. The superstructure is for passengers, crew, machinery and cargo. The beams 18 and 19 will, of course, be provided with bearings where the ends of the shafts 16 and 17 pass through same.

Troughs or buckets 25 and 26 traverse the floats longitudinally from end to end and have outlets 27 near the ends of the floats above the water level. The troughs 25 may be made of metal or other appropriate material subject to rolling or curling, as indicated in Figure 5, whereby one free longitudinal edge of the trough may be welded or otherwise secured to the interior wall of the hull while the other longitudinal edge is disposed in a volute curve and is spaced preferably substantially radially inward from the first mentioned edge, thereby providing a space between the edges for the inflow of water. The inner edge is so curled in the position shown in Figure 5 as to catch and retain the water as the float rotates in the direction of the arrows, shown in Figures 5 and 6. The buckets or troughs scoop up any water that may leak into the floats and as the rotor turns this water is carried up with the trough until the position indicated in Figure 6 is reached, whereupon the water will flow by gravity longitudinally of the floats down toward the ports

27, whereby the floats will be self-evacuating of any leakage water.

An engine is shown at 28 in Figure 2 connected to fore and aft shafts 29 and 30. These shafts carry bevel pinions 31 and 32. The pinion 31 at the front is disposed in mesh with bevel pinions 33 and 34 affixed to transverse shafts 35 and 36 respectively, which are mounted in appropriate bearings on the front transverse beam 19. Clutches 37 and 38 operate to connect and disconnect the shafts 35 and 36 from the pinions 33 and 34. Bell crank levers 39 and 40 operate such clutches. Springs 41 hold the clutches normally engaged and cables 42 and 43 act to move the bell cranks to disengage the clutches. These cables extend to an operating unit 44 in the pilot house. A similar operating unit 45 is provided for operating through cables 46 and 47 extending to the rear of the boats and being connected respectively to bell cranks 48 and 49. These latter bell cranks are coupled to clutches 50 and 51 for shifting the pinions 52 and 53 into and out of mesh with the bevel rear drive pinion 32. Such pinions 52 and 53 are connected to shafts 54 and 55. These four transverse shafts 35, 36, 54 and 55 are connected by bevel pinions to the float shafts 16 and 17.

This shows one method only of driving the rotors. Either rotor may be thrown out of gear by slipping back the clutches that mesh with the main shaft gears 31 and 32. In this way the rotors may be driven in one or the other direction.

The boat will use less fuel and will throw a very small wave and it will not churn the bottom of shallow waters.

Referring more particularly to Figures 7 to 11 inclusive, the device is shown applicable to water cycles. The cycle or pedal motor is used in place of the engine 28 and is connected to the shafts 29^a and 30^a. These shafts may be one and the same shaft passing through a bevel gear wheel 56. Surrounding this pinion and the shaft is a rotatable box 57 containing a bevel pinion 58 meshing with the pinion 56. The pinion 58 is mounted on a shaft 59 having a pinion 60 disposed in mesh with a pinion 61 on the pedal shaft 62. Such pedal shaft 62 is provided with the cranks or pedals 63 or 64. The shaft 59 is mounted in sections 65 and 66 of a telescopic housing which housing is connected to the box 57 and to stabilizing arms 67 which are removably secured to the posts 68 of the seat 69. These posts 68 are slidably mounted in slots 70 carried by a cross beam 71 and set screws 72 are employed to hold the seat at any desired elevation.

The handle bars are represented at 73, such handle bars being supported on the posts 74 slidable vertically in slots 75 and held in adjusted position by set screws 76.

The slots 75 are carried in a cross beam 77. The handle bars 73 and the steering unit 78 are carried upon the posts 74 and are adjustable up and down.

In Figure 7 the seat and handle bars are shown in the elevated position out of the water.

In Figure 8 the seat and handle bars are shown as lowered much closer to the water line. The housing 65, 66 has been rotated to the position shown in Figure 8, and the arm 67 again connected to the seat posts below the water line so that the pedals are in the water. The arm 67 may be connected at any point along the posts 68 to enable an adjustment of the height of the pedal.

The boat could be driven by a wind rotor similar to that used on the German rotor ship.

Also the invention is susceptible of embodiment in miniature form as a toy rotor boat in which the rotors would be turned out of light wood subsequently dipped in paint and driven by rubber bands inside the rotors, one end of which would be attached to a rotor and the other end to a wire leading through the opposite end of the rotor and fastened to the frame. The rotors would be wound up in the opposite direction from which they were to run and the rubber bands would drive them when released.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims:—

What is claimed is:—

1. In a rotor boat, a hollow float, a trough in the float rotating with the float and having ports open at opposite ends, and means to rotate the float.

2. In a rotor boat, a hollow torpedo shaped hull having driving means on the exterior thereof, means to rotate the hull, and a trough extending longitudinally within said hull and having open ends near the ends of the hull raised above the water level.

3. In a rotor boat, a hollow torpedo shaped hull having external driving means thereon, means to rotate said hull, a trough consisting of a curled piece of sheet material having its outer edge secured longitudinally within the hull, said hull having ports therein raised above the water level and at opposite ends of said trough.

4. In a rotor boat, hollow floats, a boat structure carried thereby, a shaft for operating said floats, a box rotatably mounted about said shaft, a telescopic housing connected to said box, a drive shaft geared to said first shaft and mounted in said housing, a pedal shaft connected to said housing shaft, a seat having adjustable posts, detachable arms connected between the posts and said housing, and handle bars and steering mechanism mounted also for vertical adjustment in front of said seat.

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