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WATER VEHICLE

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FIG. 1

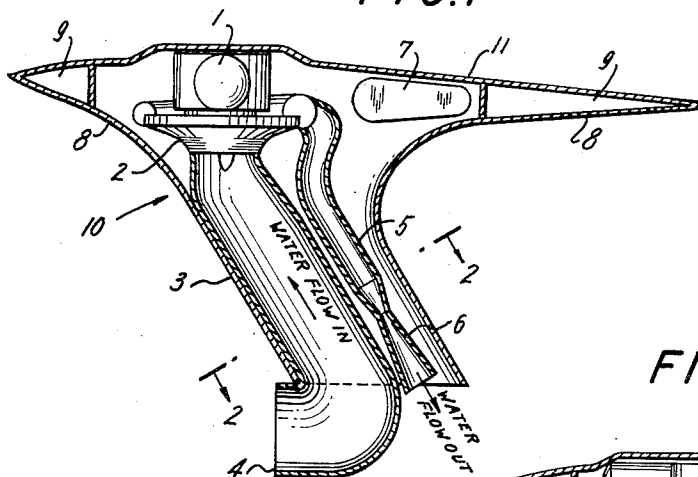


FIG. 3

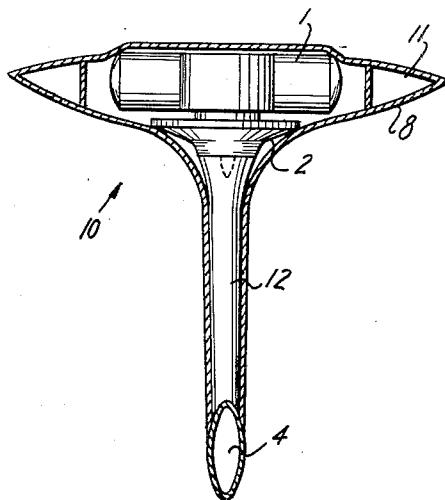


FIG. 2

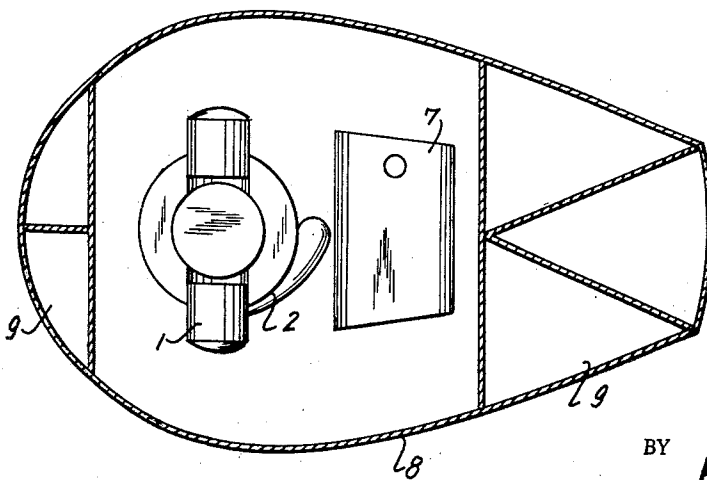


FIG. 4

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1

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WATER VEHICLE

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7 Claims. (Cl. 115-70)

The present invention relates to water vehicles.

More particularly the present invention relates to boats and the structure which propels them.

At the present time it is conventional to propel boats with sails and/or propellers. Both of these boat-propelling devices have their disadvantages. Sails are bulky, inconvenient to manipulate, and, of course, require a breeze, while propeller assemblies are complex and expensive.

One of the objects of the present invention is to provide a boat which is propelled by the thrust derived from water running from a nozzle or the like.

Another object of the present invention is to provide a boat which is extremely simple and inexpensive while at the same time capable of travelling at relatively high speeds.

A further object of the present invention is to provide a water vehicle which will have very little frictional contact with a body of water while travelling therethrough.

An additional object of the present invention is to provide a vehicle whose speed of travel can be quickly and accurately regulated.

According to the invention, the boat carries an engine-driven pump which moves water out through an exhaust conduit means. The water issuing from the exhaust conduit means provides a thrust which propels the vehicle.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a diagrammatic side view of a boat according to the present invention;

FIG. 2 is a sectional view taken along line 2-2 of FIG. 1 in the direction of the arrows;

FIG. 3 illustrates the boat of FIG. 1 in front elevation;

FIG. 4 is a top plan view of the boat of FIG. 1.

The water vehicle 10 of the present invention includes a framework which carries an outer, water-tight body envelope 8 forming the entire hull of the vehicle and made of sheet aluminum, for example. The vehicle 10 includes an upper main body portion 11 and a lower fin portion 12, as is apparent from FIGS. 1 and 3, and these portions are limited outwardly by the envelope 8. The main body portion 11 has the configuration shown in FIG. 4, and in FIGS. 1 and 4 the front of the vehicle is at the left and the rear at the right. Thus, as is apparent from FIG. 1, the fin portion 12 extends downwardly from the main body portion 11 and is inclined toward the rear. The fin portion 12 is of streamlined configuration as shown in FIG. 2.

The main body portion 11 encloses the buoyant volumes 9 and carries the fuel tank 7 and engine 1. Engine 1 may be a conventional gasoline engine supplied with fuel from the tank 7. The framework of the vehicle carries the engine 1 and tank 7 in any suitable way.

At the junction between the main body portion 11 and fin portion 12 (FIGS. 1 and 3) the framework carries a pump 2 which is preferably a centrifugal or mixed flow pump. The pump is of the high-flow-rate, medium-pressure-ratio design. The engine 1 is located directly

2

over and connected directly to the impeller of the pump so that the pump operates whenever the engine runs. If desired, however, any suitable clutch may be located between the engine 1 and pump 2 to connect or disconnect the drive from the engine to the pump at the will of the operator.

The pump has, of course, an intake and exhaust, and an intake conduit means and exhaust conduit means respectively communicate with the pump intake and exhaust to direct water to and from the pump. The intake conduit means is located in the fin portion 12, extends along the leading edge thereof, and includes the intake scoop 4 and duct 3 leading from the scoop 4 to the intake of the pump 2. The exhaust conduit means is also located in the fin portion 12, is adjacent the intake conduit means 3, 4, extends along the trailing edge of the fin portion 12, and includes the discharge thrust nozzle 6 and the duct 5 leading from the exhaust of the pump 2 to the nozzle 6. The water issues from the exhaust conduit means 5, 6 downwardly toward the rear and provides a thrust which lifts the vehicle 10 and propels it forwardly.

When the vehicle is at rest, the main body portion floats on the surface of the body of water in which the boat is located, and the fin portion is completely submerged. The boat of the invention will operate in either salt or fresh water. During operation, the water issuing from the exhaust conduit means 5, 6 provides a total thrust. V thrust force is composed of a lift vector VL and a propelling force. The thrust developed at the nozzle 6 is sufficient to raise the main body portion 11 above the surface of the water but insufficient to locate the scoop 4 above the water surface. Thus, during operation there is no drag resulting from frictional contact between main body portion 11 and the water. Only the streamlined fin portion 12 engages the water.

Assuming the vehicle to be a one-man carrier, the operator can shift his weight to change the attitude of the vehicle and thus change the direction of total thrust. The magnitude can be regulated by regulating the engine 1, but assuming that V thrust remains constant the operator can shift his weight rearwardly to provide a relatively large lift and small propelling force or forwardly to provide a relatively small lift and large propelling force. Thus the operator can regulate the speed of travel simply by shifting his weight forward or aft.

By shifting his weight laterally to one side or the other the operator can steer the vehicle.

Of course, larger craft capable of carrying larger payloads can be designed using the same type of pump-nozzle arrangement to provide both lifting and propelling forces.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A water vehicle comprising, in combination, a main body portion adapted to float on a body of water at least when the vehicle is at rest and a fin portion fixed to and extending downwardly from said main body portion, the vehicle including an exterior body envelope forming the entire hull of the vehicle and defining the outer limits of said main body and fin portions; pump means carried by at least one of said portions and having an intake and an exhaust; and intake conduit means and exhaust conduit means both carried at least in part by said fin

3

portion and communicating respectively with said intake and exhaust of said pump means for directing water respectively to and from said pump means when the vehicle is in a body of water and said pump means operates, the water issuing from said exhaust means providing a thrust which propels the vehicle.

2. A vehicle as recited in claim 1, and wherein said pump means is a centrifugal pump.

3. A vehicle as recited in claim 1, and wherein said exhaust conduit means includes an exhaust duct leading from the exhaust of said pump means and a thrust nozzle connected to an end of said duct distant from said pump means.

4. A vehicle as recited in claim 1, and wherein said intake conduit means includes an intake scoop and an intake duct leading from said scoop to said intake of said pump means.

5. A water vehicle comprising, in combination, a main body portion having front and rear ends and adapted to float on a body of water at least when the vehicle is at rest and a fin portion fixed to and extending downwardly from said main body portion, the vehicle including an exterior body envelope forming the entire hull of the vehicle and defining the outer limits of said main body and fin portions; pump means carried by at least one of said portions and having an intake and an exhaust; and intake conduit means and exhaust conduit means both carried at least in part by said fin portion and

4

communicating respectively with said intake and exhaust of said pump means for directing water respectively to and from said pump means when the vehicle is in a body of water and said pump means operates, said exhaust conduit means having a discharge and directed downwardly toward the rear so that water issuing from said exhaust conduit means provides a thrust which lifts the vehicle and propels it forwardly.

6. A water vehicle as recited in claim 5, and wherein said fin portion is inclined toward the rear of the vehicle, is of streamlined cross section, and has leading and trailing edges, said intake conduit means extending along said leading edge and said exhaust means extending along said trailing edge of said fin portion.

7. A vehicle as recited in claim 6, and wherein said intake and exhaust conduit means are located adjacent each other between said edges of said fin portion.

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