W. B. MOTHERAL.

BOAT.

APPLICATION FILED DEC. 24, 1901. RENEWED FEB. 25, 1908.

900,680. Patented Oct. 6, 1908.

Fig. 1.

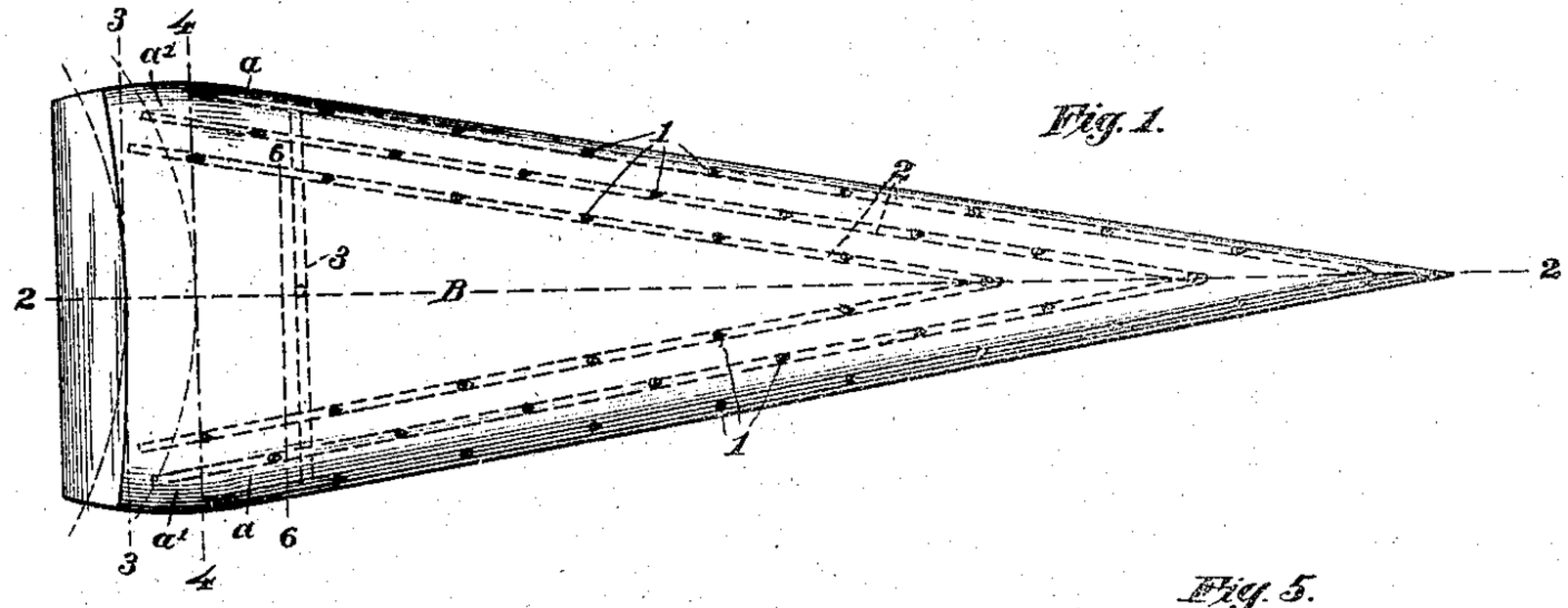


Fig. 5.

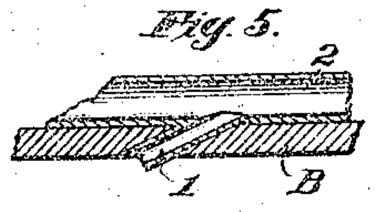


Fig. 6.

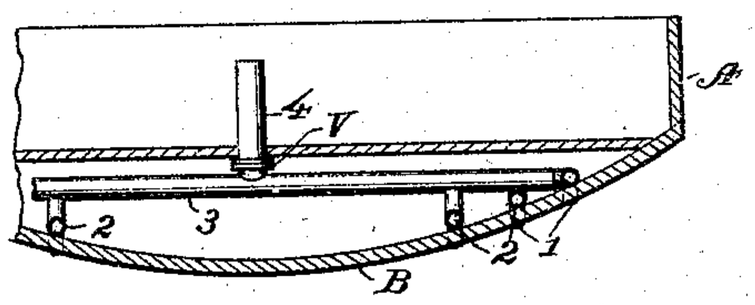


Fig. 2.

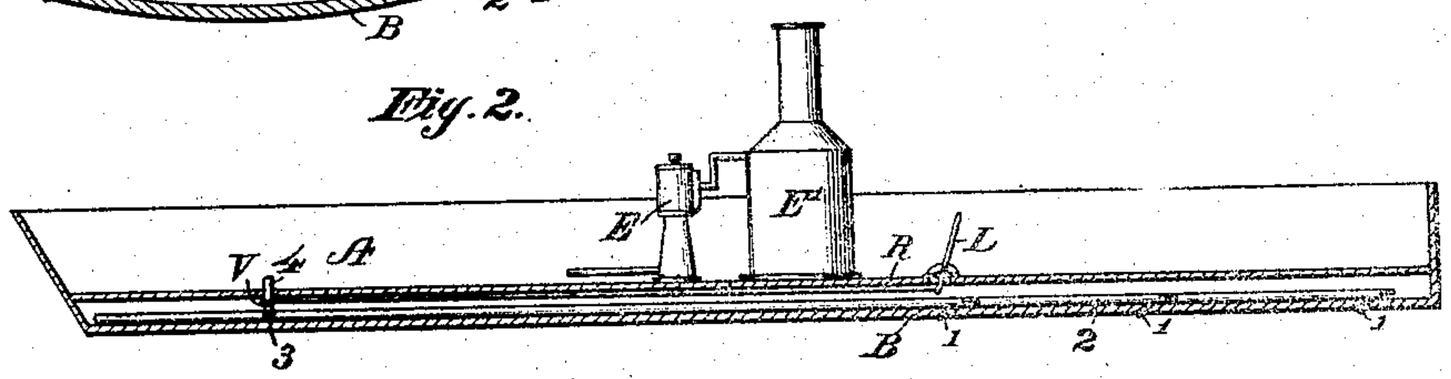


Fig. 3.

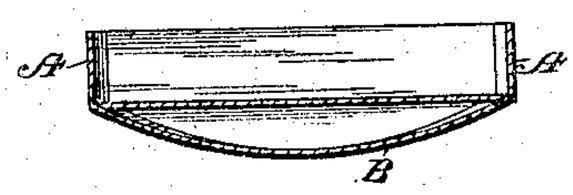
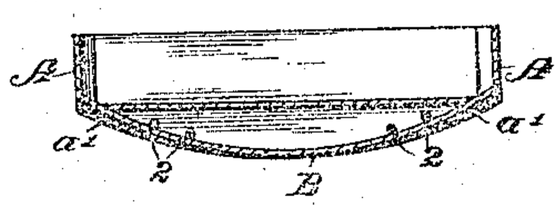


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM B. MOTHERAL, OF NORTH McGREGOR, IOWA, ASSIGNOR TO GLIDING BOAT COMPANY OF AMERICA, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BOAT.

No. 900,680. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed December 24, 1901, Serial No. 87,065. Renewed February 25, 1908. Serial No. 417,703.

To all whom it may concern:

Be it known that I, WILLIAM B. MOTHERAL, a citizen of the United States, residing at North McGregor, in the county of Clayton and State of Iowa, have invented certain new and useful Improvements in Boats, of which the following is a specification.

My said invention consists in various improvements in the details of construction of boats of that general character shown in my Patent No. 690,029 of December 31, 1901, whereby greater efficiency is secured and the cost of construction and operation reduced, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is an underside plan view of a boat embodying my said invention. Fig. 2 a central longitudinal section through the same, on the dotted line 2—2 in Fig. 1, Fig. 3 is a transverse section on the dotted line 3—3, Fig. 4 is a transverse section on the dotted line 4—4, and Figs. 5 and 6 are detail sections showing more clearly the form and relative position of the air tubes to the bottom.

In said drawings the portions marked A represent the sides and B the bottom of the hull.

The construction of said hull is of any appropriate design or plan, except as to its exterior, which is wedge-shaped with an oval bottom having an even keel, as shown, said bottom being in cross section the arc of a circle the radius of which continuously increases from bow toward the stern, forming a bottom which is of considerable curvature at the bow, but gradually flattens from said bow toward the stern. At a point *a* near the stern it is flattened more abruptly, forming downwardly bulged or curved side portions *a'* at this point, but maintaining an ever keel or center, as shown. By this means the stern is given a tendency to rise upon the water as the speed of the boat increases, and thus prevents the bow from rising up out of the water, and also reduces the frictional contact of the boat with the water, as well as its displacement, which results in great speed being made possible with comparatively little power. By the term "even keel" I mean the central portion of the bottom of the boat, as on the dotted line 2—2 in Fig. 1, which is straight or even, as shown clearly in Fig. 2.

I have shown a system of pipes for supplying air to the bottom of the boat which is of peculiar advantage. The short sections 1 are preferably formed of rubber or flexible material and project through the bottom slightly, as shown in Fig. 5, so that a portion of their diameter will bear upon the surface of the water below the bottom of the boat. By forming said tubes of flexible material they will give to the pressure of the water and thus offer less resistance than if made of rigid material. These sections are arranged in several rows extending longitudinally of the boat and are each connected to longitudinal chambers or pipes 2, which in turn are connected by a cross pipe 3, and said cross pipe is connected to a vertical pipe 4, which leads to the air when open. A valve V is provided in this pipe for closing the same when desired, so that the supply of air may be cut off when it is desired to increase the frictional contact with the water, as when the boat is to be stopped, and also to prevent the water from backing into the boat. A lever L located convenient to the engineer or pilot is connected to the stem of valve V by a rod R, whereby said valve may be operated by the one controlling the boat. In use, the valve V is normally closed, and the pipes 1, 2, 3, and 4, are of course, filled with water when the boat is at rest. After started in motion the valve is opened and the action of the water in passing over the ends of tubes 1 draws the water from said pipes and air down through them to beneath the boat, serving to lubricate the bottom and enable greater speed to be secured with the power.

An engine E and boiler E' are shown as the means for supplying motive power to drive the boat.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A boat formed with a bottom curved in cross section, the curvature gradually decreasing from bow to stern.

2. A boat having a wedge shaped hull with a bottom curved in cross section, the greatest curvature being near the bow, and the least near the stern.

3. A wedge shaped boat with a bottom

curved in cross section, with an even keel but a bulged down portion on each side near the stern.

4. A boat formed with a wedge shaped hull having a bottom curved in cross section the radius of the curvature increasing from bow to stern, with an abrupt decrease in curvature at a point near the stern.

5. A boat formed wedge-shaped with a bottom curved in cross section, having flexible air supply pipes projecting through its bottom connected to a system of pipes supplied from an outwardly extending supply pipe.

6. A wedge shaped boat, with bottom curved in cross section, the curvature gradually decreasing from bow to stern, with perforated bottom connected to an air supply system.

In witness whereof, I have hereunto set my hand and seal at North McGregor, Iowa, this fourth day of December, A. D. nineteen hundred and one.

WILLIAM B. MOTHERAL. [L. S.]

Witnesses:
E. B. PLUMB,
WM. QUIGLEY.