W. M. & L. E. MEACHAM.

HYDROPLANE BOAT.

APPLICATION FILED JUNE 3, 1913.

1,186,816.

Patented June 13, 1916.

Fig. 1.

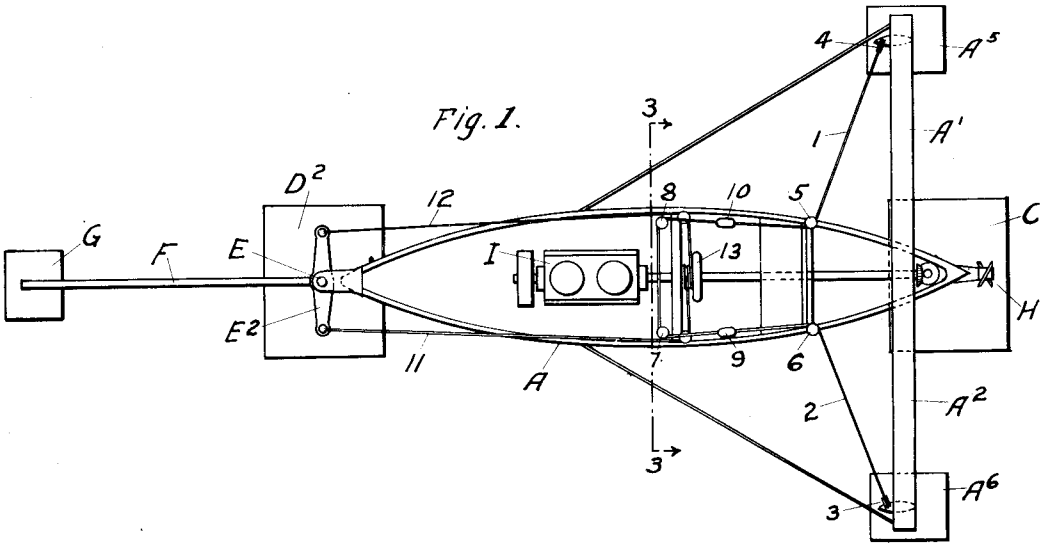
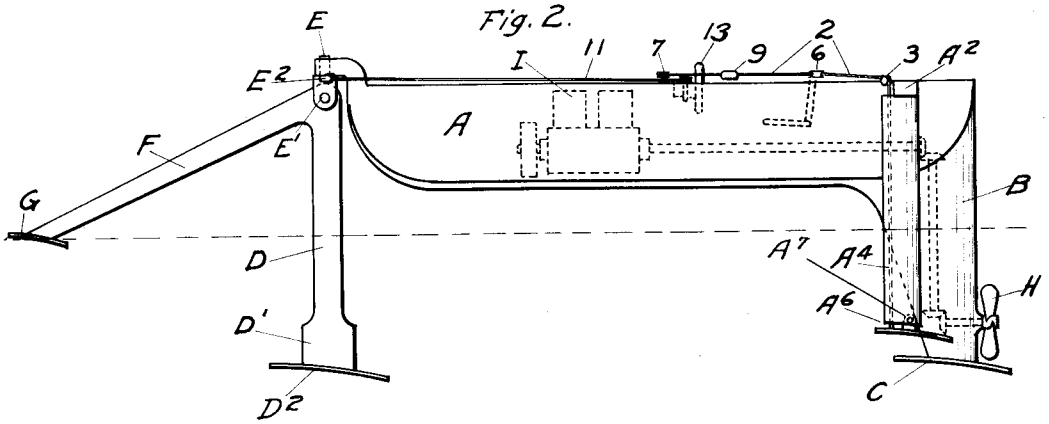


Fig. 2.



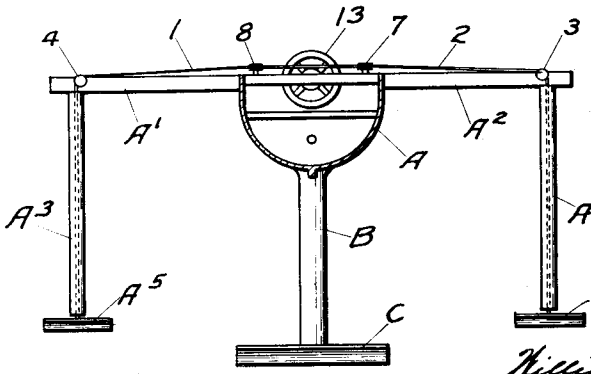


Fig. 3

Witnesses.
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UNITED STATES PATENT OFFICE.

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HYDROPLANE-BOAT.

1,186,816. Specification of Letters Patent. Patented June 13, 1916.

Application filed June 3, 1913. Serial No. 771,432.

To all whom it may concern:

Be it known that we, WILLIAM M. MEACHAM and LARNED E. MEACHAM, citizens of the United States, residing, respectively, in the cities of Seattle, King county, Washington, and Portland, Multnomah county, Oregon, have invented certain new and useful Improvements in Hydroplane-Boats, of which the following is a specification.

Our invention relates to hydroplane boats of the type shown and described in our United States Letters Patent No. 857,951, issued to us June 25, 1907, and also in our United States Letters Patent No. 955,343, issued to us April 19, 1910, and more particularly to the provision of means, adapted for manual manipulation, to restore and maintain the equilibrium of such boats.

By the term hydroplane boat, as used in this specification, we mean a boat of that type which is provided with carrying planes or plates, secured thereto at a distance below its body or keel, and which are adapted to rest in a position slightly inclined from the horizontal and below the surface of the water in which the boat is floated, the object of such carrying planes or plates being to operate under dynamic force to lift the boat body wholly out of the water under speed, for the purpose of eliminating the resistance caused by the body of the boat cutting its way through the water, and also eliminating a retarding wave action caused by surface riding conveyances. This is accomplished by means of carrying planes or plates attached below the body of the boat and which move edgewise through the water, below the surface thereof, in a position inclined slightly upwardly from the horizontal, whereby under dynamic force, as the boat is propelled, it is lifted bodily out of the water and wholly supported and carried by the carrying planes or plates, which are moving edgewise, wholly submerged, through the water.

The object of the present invention is to provide in combination with such a boat, manually operable balancing planes or plates at opposite sides of the boat, which, in combination with a suitable rudder, also manually operable, enable the operator to effectively control his boat, as to its direction and equilibrium.

In order that others may understand our invention, we have shown in the accompanying sheet of drawings, one practical embodiment thereof, as applied to a hydroplane boat of the type referred to, which we will now describe.

In the drawings, Figure 1 is a top plan view of a hydroplane boat with our invention applied thereto; Fig. 2 is a side elevation thereof, and Fig. 3 is a sectional view, looking rearwardly, taken on line 3—3 of Fig. 1.

For the purpose of illustrating our invention, we have made use of the general construction of hydroplane boats shown and described in our United States Letters Patent No. 857,951, hereinbefore referred to, and have applied the improvements constituting this invention to such a construction, although it is to be understood that the invention is applicable to other hydroplane boats.

In the drawings, A represents a boat body having at its rear a downwardly depending standard or leg B, preferably of hollow construction, and carrying at its lower end a supporting or carrying plate or plane, C, inclined slightly upwardly relative to the horizontal, as indicated in Fig. 2. At its forward end, said boat is provided with a downwardly depending leg or member D, rotatably attached at its upper end, as at E, whereby to be turned about a vertical axis extending longitudinally thereof, said leg or member D being of a relatively thin, flat construction, with a widened portion, as at D′, whereby it can be operated as a rudder, for determining the direction of travel of said boat. Projecting forwardly from said leg or member D, as a part thereof, is a leg or member F, provided at its outer end with a regulating plate or float G, which is designed to carry little or no load and to move substantially on the surface of the water, and thus serve as a means for adjusting the angle of the supporting or carrying plane or plate D^2, upon the lower end of the leg D. To this end, said leg D is also pivotally mounted at its upper end, as at E′, to turn upon a horizontal axis, extending transversely of the length of the boat body. The operation of this mechanism may be briefly stated as follows: Under speed, the forwardly projected plate or surface G, op-

erates to automatically control the angle of incidence of the supporting plane D^2, which determines the elevation of the forward end of the conveyance. Any change of elevation of the forward end of the conveyance necessarily changes the angle of incidence of the rear supporting plane C, thus maintaining a longitudinal balance, or equilibrium. Said boat is provided in the rear of the leg B, and at the lower end thereof, with a propeller H, connected by means of suitable shafting and gears, with an engine I, in the boat as indicated.

Extending laterally from opposite sides of the rear of said boat A, are two arms, A' and A^2, suitably braced by means of guy wires, as indicated, and each having a downwardly depending leg or portion, as A^3 and A^4, respectively. Mounted upon the lower ends of said members A^3 and A^4, are balancing plates or planes, A^5 and A^6, pivotally secured thereto, as at A^7. As a means for manually manipulating or moving these balancing planes or plates, we have provided operating cables, as 1 and 2, extending therefrom upwardly through said members A^3 and A^4, around suitable pulleys, as 3 and 4, 5 and 6, and 7 and 8, said cables being provided at opposite sides of the boat with gripping handles, as 9 and 10, whereby said planes or plates can be moved at will in the control of said boat.

As a means for turning the member D in opposite directions as a rudder, it is provided at its upper end with a cross arm or lever, E^2, to the opposite ends of which are attached operating cables 11 and 12, which are extended rearwardly to an operating hand wheel 13, in the boat A, as indicated. Thus by means of the hand grips 9 and 10, on the operating cables 1 and 2, the oppositely disposed balancing planes or plates can be manually moved upon their pivotal mountings in opposite directions, and by the operation of said hand wheel, said rudder can be moved in opposite directions to give direction to the boat.

It will be noted that the balancing planes or plates A^5 and A^6 are pivotally connected to the members A^3 and A^4 at points forwardly of their middles, whereby to give a greater bearing surface in the rear of said pivotal connections, so that the pressure of the water against the under side of said planes or plates will tend to keep them in a horizontal position. The operating cables are attached thereto forwardly of said pivotal connections, and when said cables are in a normal position, with the hand pieces or grips 9 and 10 directly opposite each other, for example, said planes or plates are also in normal positions, slightly upwardly inclined from the horizontal. By moving hand grip 9, on cable 2, forwardly, for example, plane A^6 is given an increased lifting angle, while cable 1 is allowed to slacken and thereby permits plane A^5 to move toward a horizontal position. Thus said balancing planes or plates can be manually moved at will to restore and maintain the equilibrium of said boat while in motion.

We do not, of course, limit the invention to the particular embodiment thereof here shown for illustrative purposes, except as we may be limited by the hereto appended claims.

We claim:

1. In a hydroplane boat or conveyance, adapted to be raised and supported, under speed, solely by dynamic force, a passenger receiving boat or body, a fixed carrying plane which extends laterally equidistant across the longitudinal center of said boat or body in a plane substantially horizontal and having its rear edge lower than its forward edge, whereby to give it a positive angle of incidence, means for maintaining the fore and aft balance of the conveyance, two relatively small oppositely disposed balancing planes attached above the bottom of the passenger receiving boat or body and spaced laterally at a distance from said body and adjustably mounted, and means for manually manipulating said balancing planes at will for maintaining lateral balance.

2. In a conveyance of the character referred to, in combination, a passenger receiving boat or body, a fixed supporting plane which extends laterally equidistant across the longitudinal center of said body in a plane substantially horizontal and of slightly curved construction from its front edge rearwardly, whereby its rear edge is lower than its front edge, to give it a positive angle of incidence, a vertical rudder, means for maintaining the fore and aft balance of conveyance, two relatively small balancing planes attached above the bottom of the passenger receiving body, at opposite sides thereof, and spaced laterally at a distance therefrom, and adjustably mounted for maintaining lateral balance, and controlling means for manually manipulating said balancing planes and said vertical rudder at will.

3. In a hydroplane boat, a passenger receiving boat or body, a supporting plane which extends laterally equidistant across the longitudinal center of said boat in a plane substantially horizontal and fixedly secured thereto at a distance below the bottom of said boat and having its rear edge lower than its forward edge, whereby to give it a positive angle of incidence, adjustably mounted balancing planes at opposite sides and at a distance therefrom for maintaining lateral balance, controlling means for manually manipulating said bal-

ancing planes at will and means for maintaining the fore and aft balance of the conveyance.

4. In a conveyance adapted to be raised and supported, under speed, solely by dynamic force, plural supporting planes, a forwardly projecting member for regulating the elevation of said conveyance, two relatively small balancing planes adjustably mounted at opposite sides of the longitudinal center of said conveyance and spaced at a distance therefrom, a vertical rudder, means for manually manipulating said balancing means and said vertical rudder at will and means for maintaining the fore and aft balance of the conveyance.

5. In a conveyance adapted to be raised and supported, under speed, solely by dynamic force, a passenger receiving boat or body, a supporting plane which extends laterally equidistant across the longitudinal center of said body in a plane substantially horizontal and having a fixed angle of incidence, balancing means comprising two relatively small movable surfaces disposed equidistant at opposite sides of the longitudinal center of said conveyance and spaced at a distance from said passenger carrying boat or body, means for adjusting the angles of said surfaces relative to the angle of the supporting plane, a vertical rudder, means for manipulating said vertical rudder, means for maintaining the fore and aft balance of the conveyance, and means for regulating the elevation of said conveyance.

6. In a conveyance adapted to be raised and supported, under speed, solely by dynamic force, a passenger receiving boat or body, plural supporting planes which extend laterally equidistant across the longitudinal center of said boat or body in a plane substantially horizontal, means for regulating the elevation of said conveyance, balancing means, independent of said supporting planes, adjustably mounted at opposite sides of said boat or body and spaced at a distance therefrom for maintaining lateral balance, a vertical rudder, means for manually manipulating said balancing means and said vertical rudder at will and means for maintaining the fore and aft balance of the conveyance.

Signed at Seattle, King county, Washington, this 12th day of May, 1913.

WILLIAM M. MEACHAM.
LARNED E. MEACHAM.

In presence of—
FRANKLIN SHEEHY,
DOROTHY TIMLIN.