920,849.

W. H. FAUBER.
HYDROPLANE BOAT.
APPLICATION FILED JAN. 28, 1907.

Patented May 4, 1909.

4 SHEETS—SHEET 1.

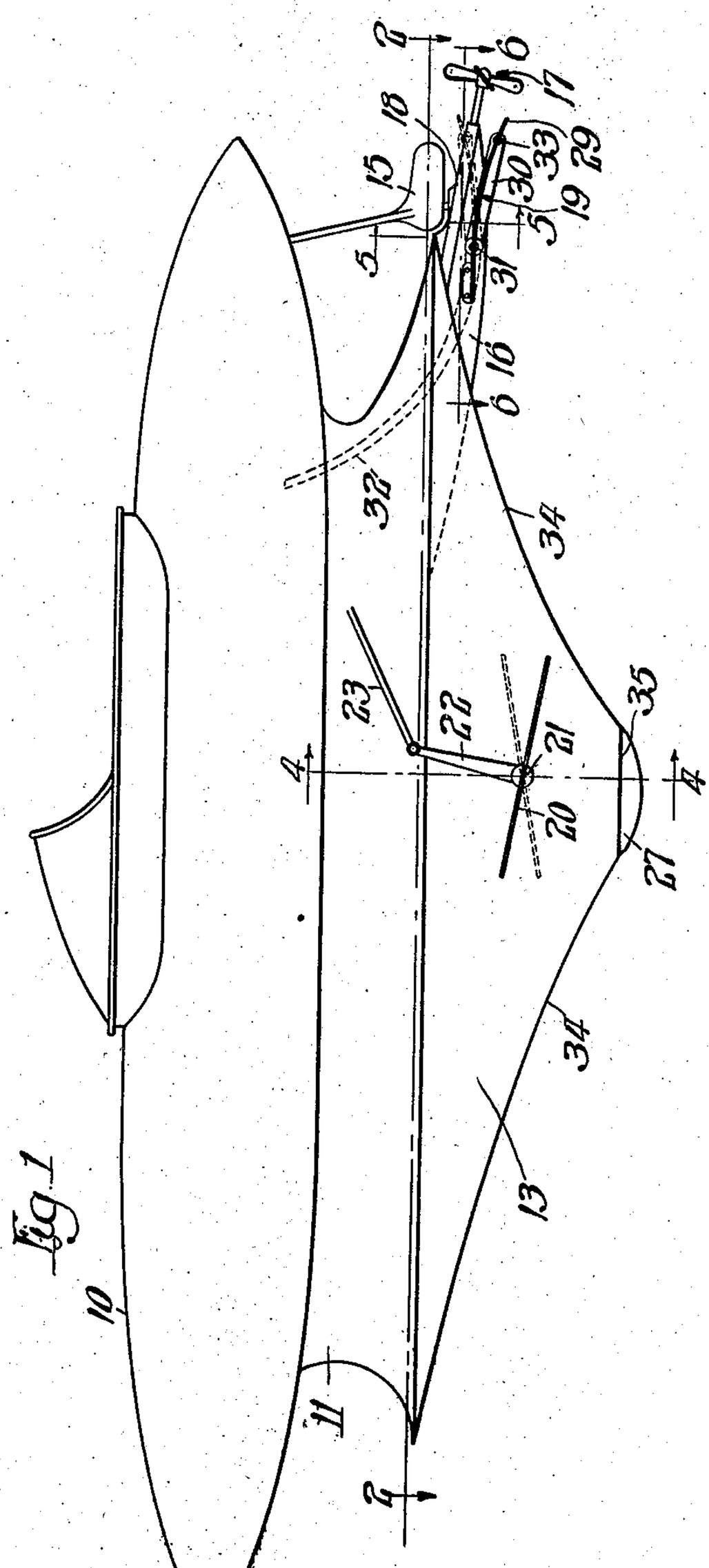

Fig. 1

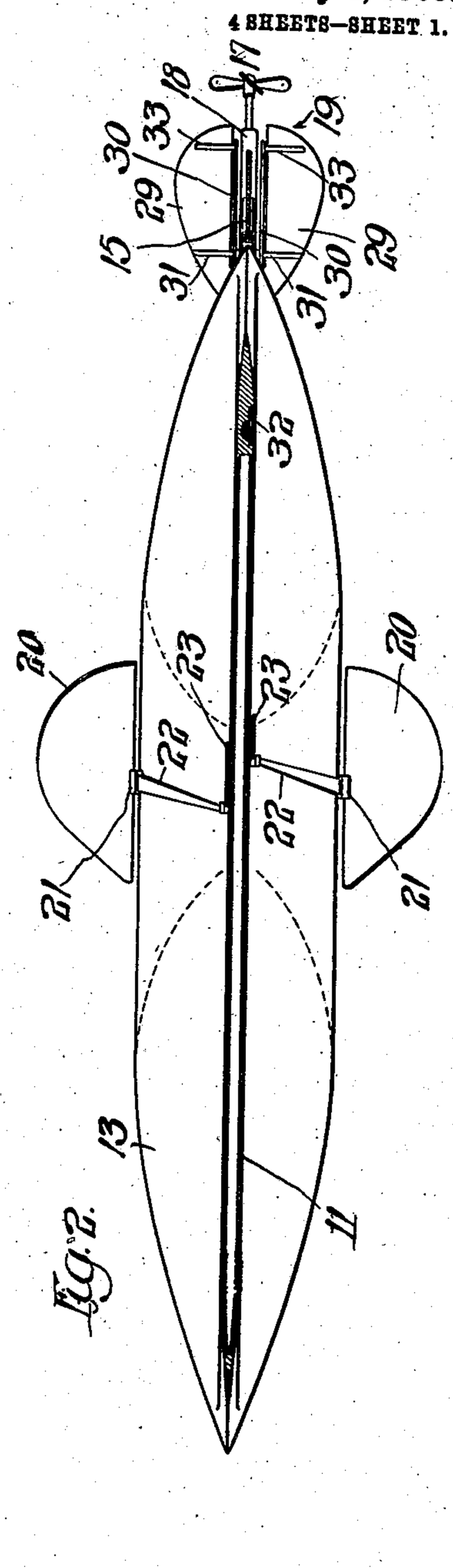

Fig. 2.

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4 SHEETS—SHEET 2.

Fig. 7.

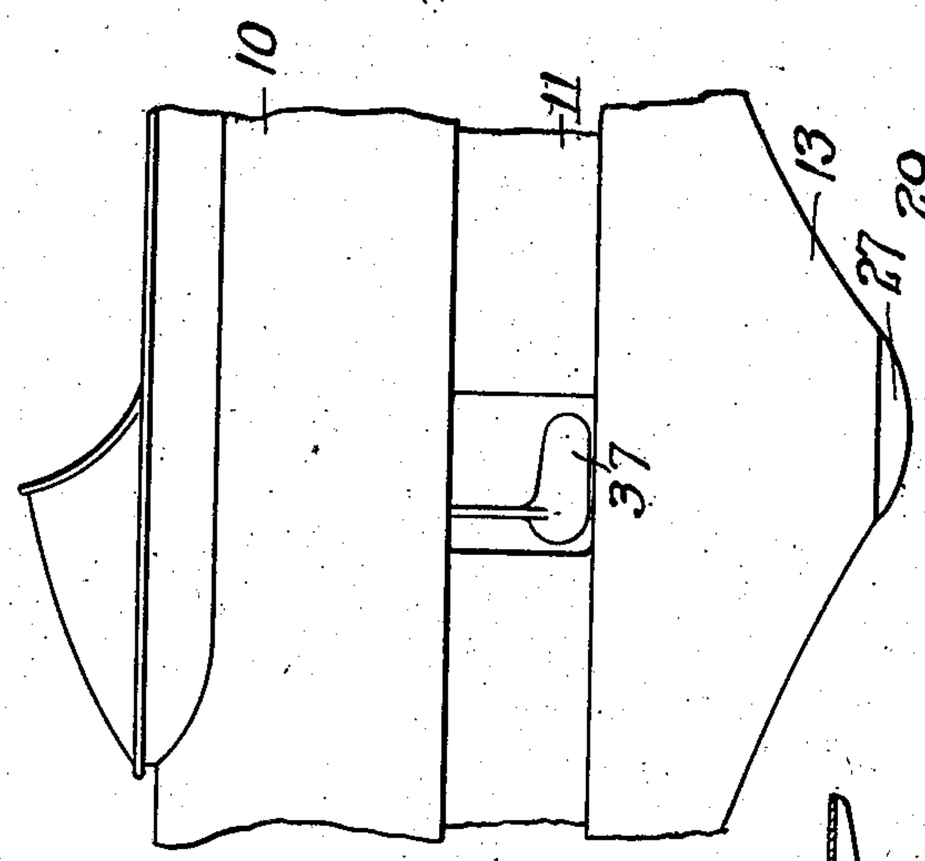


Fig. 6.

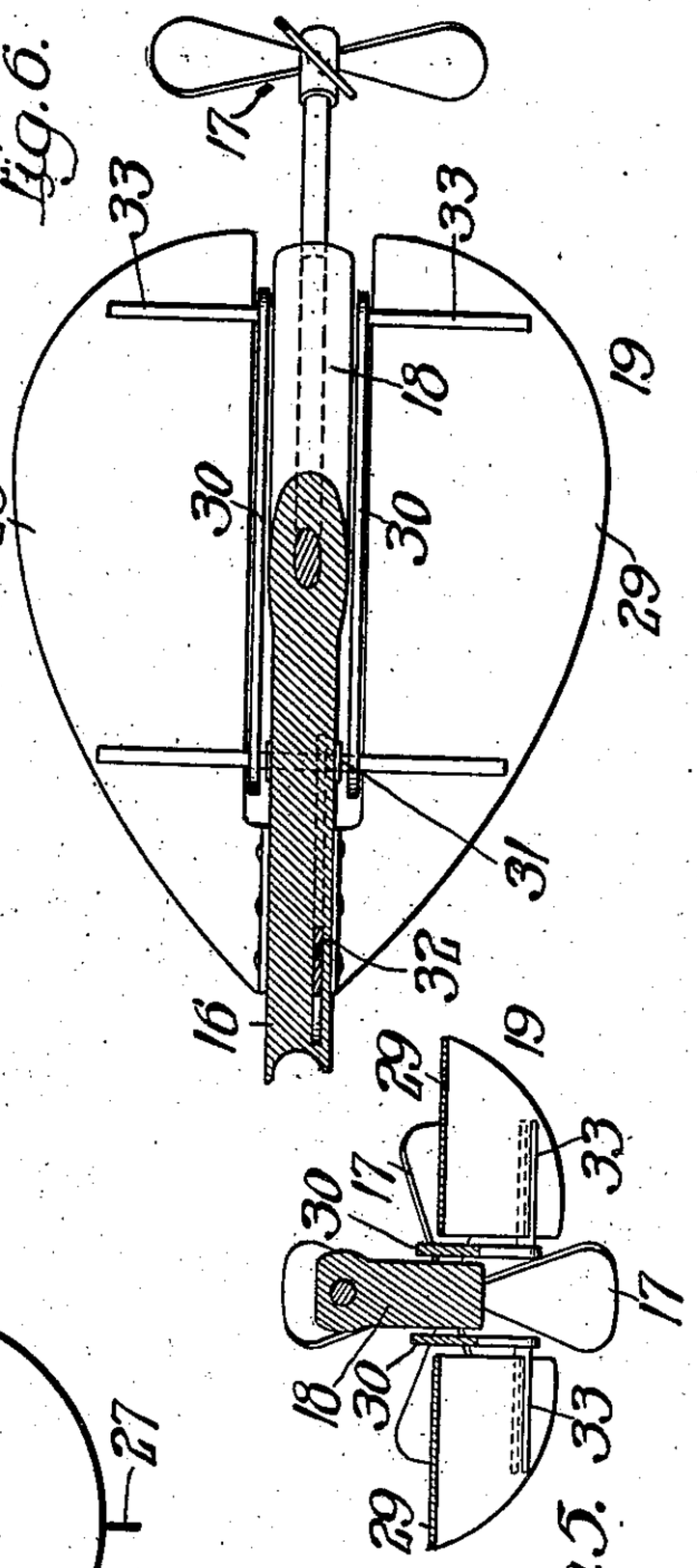


Fig. 4.

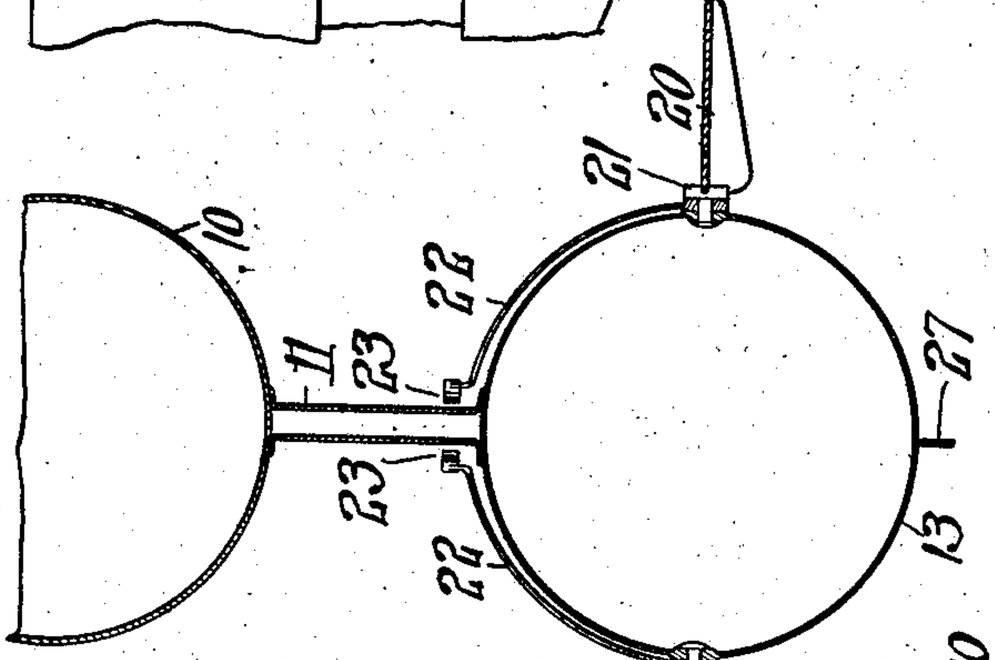
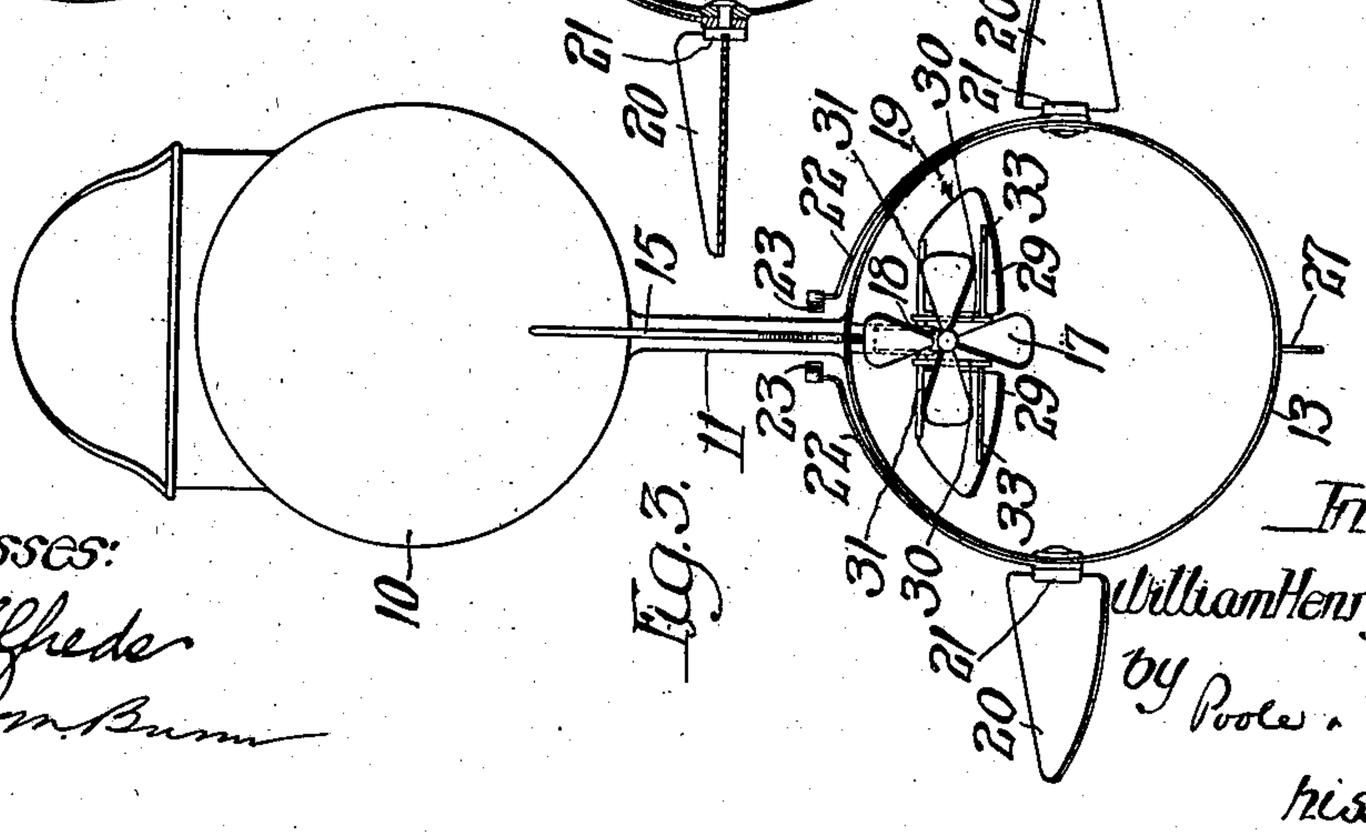


Fig. 5.

Fig. 3.



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4 SHEETS—SHEET 3.

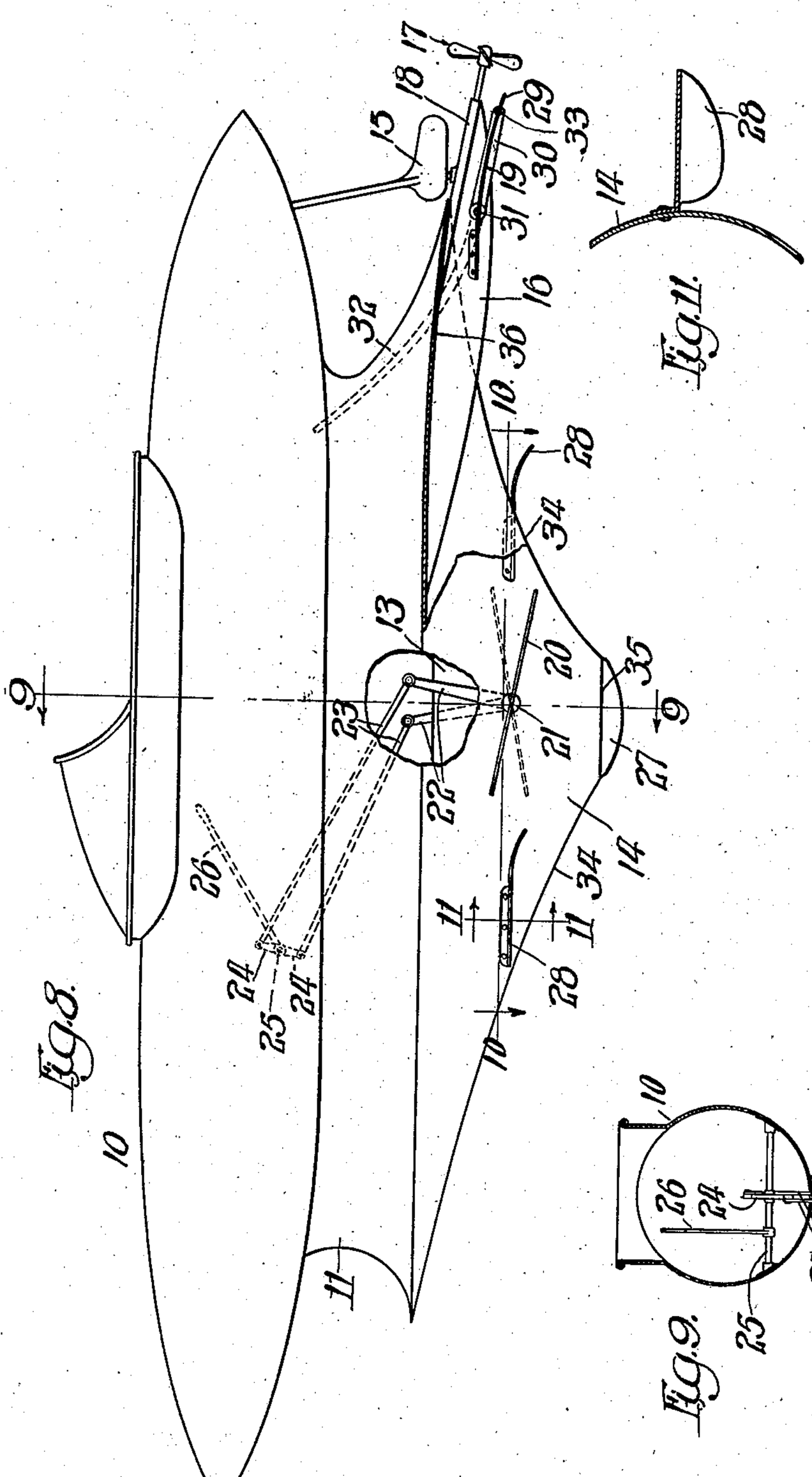

Fig. 8.

Fig. 11.

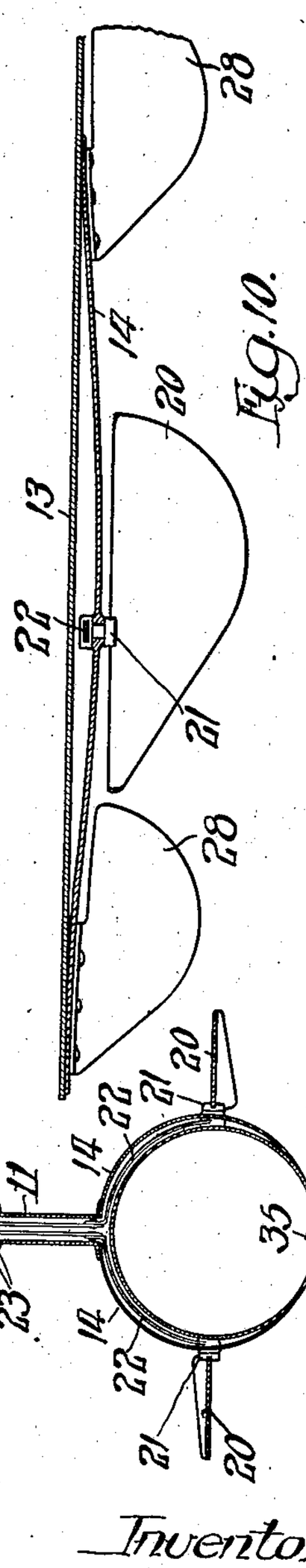

Fig. 10.

Fig. 9.

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HYDROPLANE BOAT.

APPLICATION FILED JAN. 28, 1907.

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Patented May 4, 1909.

4 SHEETS—SHEET 4.

Fig. 14.

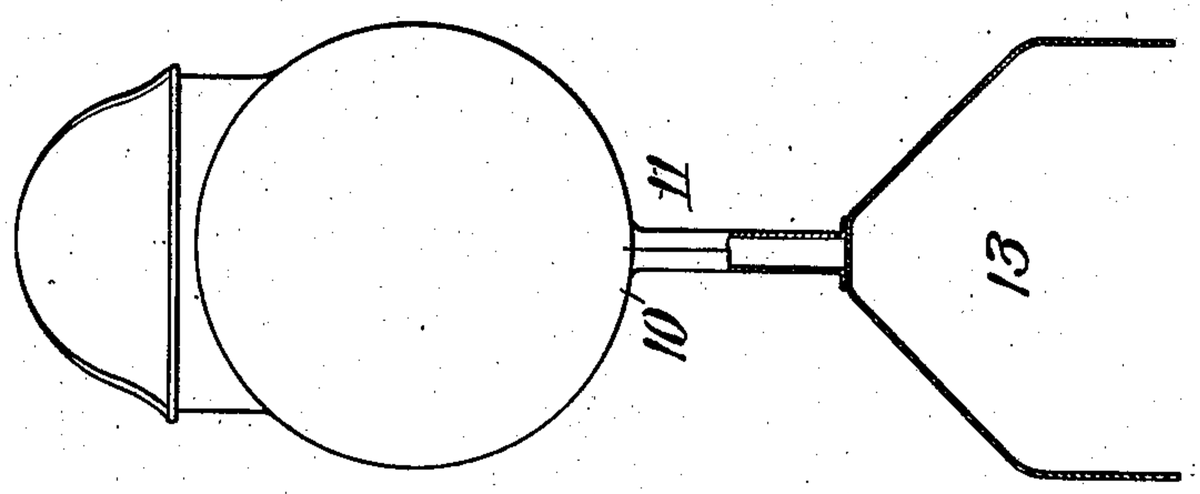


Fig. 13.

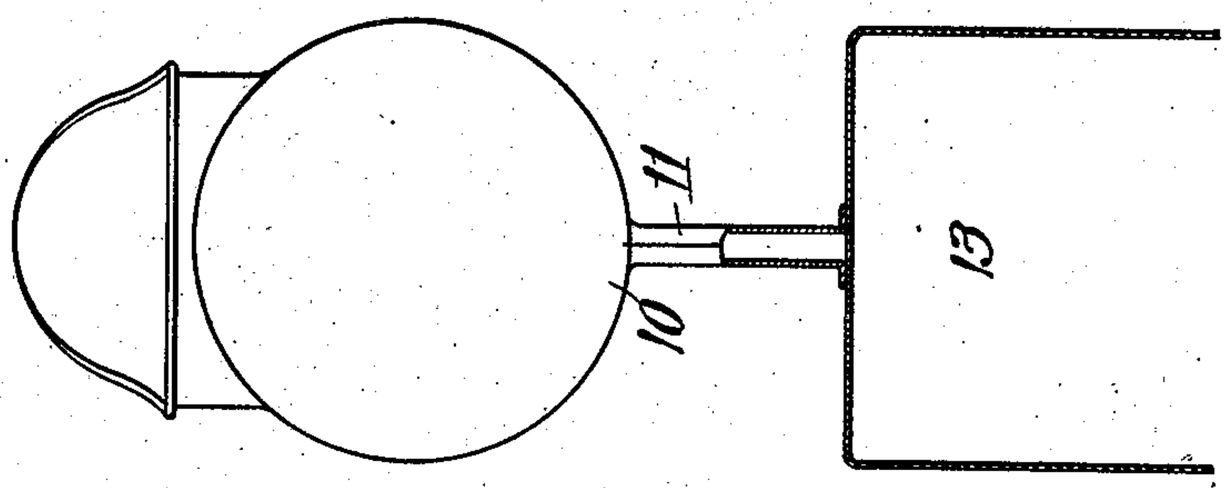
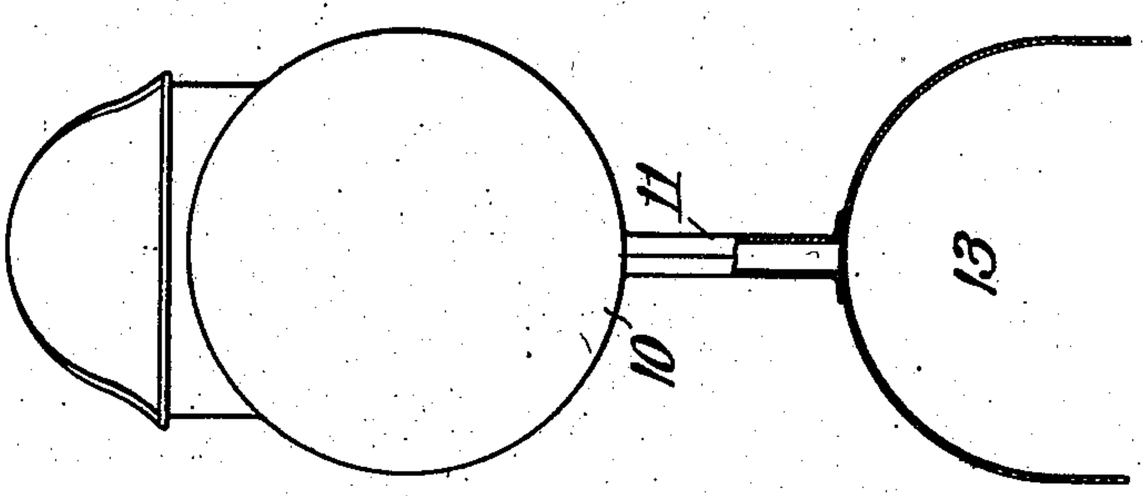


Fig. 12.



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UNITED STATES PATENT OFFICE.

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HYDROPLANE-BOAT.

No. 920,849. Specification of Letters Patent. Patented May 4, 1909.

Application filed January 28, 1907. Serial No. 354,513.

To all whom it may concern:

Be it known that I, WILLIAM HENRY FAUBER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydroplane-Boats; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in that class of water craft known as hydroplane boats which are equipped with inclined surfaces or planes designed to act on the water when the boat is traveling at high speed in a manner to lift the boat and lessen the submerged area of the hull thereof, with consequent reduction of wave and skin resistance and the attainment of high speeds in proportion to the propelling power employed.

Craft of this character heretofore proposed have the form of flat bottomed boats or boats provided with flat surfaces or planes designed to ride on or skim the top of the water. Such hydroplane boats when equipped with inclined surfaces or planes arranged as heretofore proposed, so far as I am aware, are practicably available for use in smooth waters only, for the reason, first, that in rough water the planes or surfaces by which the load is supported when the boat is under high speed are submerged by the wave action, whereby is introduced a resistance which acts to retard the speed of the boat; and, second, because the constructions heretofore proposed are not stable in disturbed waters and do not respond promptly and accurately to the steering mechanism.

It is the object of my invention to produce a hydroplane boat which is capable of successful use under conditions of high winds and in seas more or less rough or disturbed and which is so constructed as to give great stability and carrying power to the boat and to respond promptly to the steering apparatus under such conditions.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a side elevation of a hydroplane boat made in accordance with my invention. Fig. 2 is a horizontal section, showing the main features of the lifting elements, taken on line 2—2 of Fig. 1. Fig. 3 is an end view, from the rear. Fig. 4 is a cross-section, taken on line 4—4 of Fig. 1. Fig. 5 is a detail cross-section, taken on line 5—5 of Fig. 1. Fig. 6 is a detail horizontal section, taken on line 6—6 of Fig. 1. Fig. 7 is a partial side elevation of the boat, showing a modified form of device for giving lateral stability thereto. Fig. 8 is a view of the boat in side elevation showing variations in several details of construction thereof. Fig. 9 is a cross-section, taken on line 9—9 of Fig. 8. Fig. 10 is a detail, horizontal section, taken on line 10—10 of Fig. 8. Fig. 11 is a detail cross-section, taken on line 11—11 of Fig. 8. Figs. 12, 13 and 14 are views in cross-section of the boat, showing different forms in which the hydroplane element may be made.

The illustration of my invention in the accompanying drawings is largely diagrammatic, in order to clearly show the essential features of the invention, and for the further reason that the details of construction will vary in accordance with the dimensions of the boat, its capacity for speed and other conditions peculiar to any given vessel.

As shown in the drawings, 10 designates the hull of the boat which may be made of any desired shape or material, 11 designates what may be termed a keel attached to and extending downwardly from the hull, and 13 designates, as a whole, a generally horizontal tubular member open at both ends and attached to the hull through the medium of said keel portion and extending from front to rear of the boat. The downwardly facing surface of the upper part of said tubular member constitutes the principle hydroplane surface upon which the weight of the boat is carried when under speed, the said surface being at such time inclined upwardly and forwardly to the horizontal. The said keel 11 constitutes the connection between the hull and the hydroplane member 13 and comprises, as herein shown, two plates, laterally separated, in the middle and joined at their upper and lower edges to the hull and hydroplane member, respectively, thus constituting a hollow keel. So far as its connecting function is concerned, however, this part of the boat may assume other forms. The said hull, keel and hydroplane member are made of any suitable rigid material, such as steel, bronze or the like and as light as practicable consistent with the required strength.

15 designates a stern rudder of common form operating in the usual manner to direct the course of the boat. The post of the rudder extends into the hull for connection with any suitable form of steering mechanism (not shown). The lower end of the rudder post has bearing in a central keel extension or fin 16 which is attached centrally to and extends rearwardly from the rear end of the hydroplane member.

17 designates a stern propeller of any familiar form, the shaft of which is mounted in a stern tube or bearing 18 extending rearwardly from the keel and to which the rear end of the fin 16 is attached. The propeller shaft extends through the hollow keel 11 into the hull for connection with the driving motor (not shown).

19 designates a generally horizontal rudder at the stern of the boat for regulating the inclination of the hydroplane member and consequently the lifting effect of said hydroplane member when the vessel is under speed. A novel form of said rudder is herein shown, and will hereinafter be described.

20, 20 designate horizontal balancing rudders extending one from each side of the hydroplane member and connected therewith to rotate about transverse horizontal axes. The said balancing rudders are attached to hubs 21 which are pivoted or rotatively mounted in the lateral walls of the hydroplane member. The said rudders 20 are operated through the medium of arms 22 that are fixed rigidly to the pivoted hubs of the rudders and extend upwardly and are connected by links or connecting rods 23 with controlling means within the hull, whereby said rudders may be turned simultaneously and to an equal extent in opposite directions. As shown in Figs. 1 to 7, said operating arms are located outside of the hydroplane member and are curved to follow the curvature of said member.

As shown in Figs. 8, 9 and 10, the arms 22 are located in spaces formed between the side walls of the tubular hydroplane member 13 and external walls 14, 14, which latter converge toward and are joined to the body of the hydroplane member near the front and rear ends of the same. The spaces formed by the walls 14, 14 communicate with the interior space of the hollow keel 11, and the arms 22 are located within said hollow keel and extend therethrough upwardly into the hull of the boat where they are connected by rods 23 with oppositely extending arms 24 on a rock-shaft 25 having a hand-lever 26 by which the same may be turned for tilting the said balancing rudders. In this construction, the arms 22, 22 are attached to the inner end of pivotal extensions of the hubs 21, 21 at points inside of the walls 14, 14. The said rudders 20, 20 are located at or near a horizontal plane passing through the axis of the cylindric hydroplane member, and are so disposed and connected to their actuating mechanism that they are parallel with each other when occupying a horizontal or neutral position, but assume opposing angles when rotated away from their horizontal positions to balance the vessel, as indicated by full and dotted lines in Figs. 1 and 8, so as to cause the vessel to right itself in the water by giving turning motion to the cylindric hydroplane member in either direction, as required. The lever connection shown in Figs. 8 and 9 is adapted to give opposite rotative movement to said balancing rudders, it being obvious that the connection of the rods 23, 23 with the oppositely extending arms 24, 24 on the rock-shaft 25 will result in the rudder being turned to an equal extent in opposite directions when said rock-shaft is actuated by the use of the hand-lever 26.

27 designates a fin attached to and extending downwardly from the hydroplane member near its longitudinal center. The said fin aids to prevent rolling of the vessel under the effect of waves and wind, and operates in connection with the balancing rudders to keep the hull upright. In small boats, the lateral balancing rudders 20 and the depending fin 27 are usually sufficient to keep the boat balanced or stable under ordinary circumstances. It is evident that the connection of the said lateral balancing rudders with the sides of a cylindric hydroplane member, near the plane of the longitudinal axis thereof, is advantageous, inasmuch as the breadth gives great leverage to the rudders to hold the boat stable, and also because this location of the rudders insures that they shall be submerged in a comparatively quiet body of water under ordinary conditions of weather and sea. In some instances, however, and specially with larger size boats, it may be desirable to employ fixed or stationary, horizontal fins 28, such as are shown in Figs. 8, 10 and 11. Such fins 28 extend laterally from the hydroplane member and may be located either in front or rear of the movable balancing rudders 20 or both, at the front and rear thereof, as shown in said Figs. 8 and 10. Such auxiliary fins aid the hydroplane member in sustaining the load when under speed and also aids to give lateral stability to the boat. In order to increase the capacity of the auxiliary stationary fins to lift the boat at high speeds, said fins may be curved downwardly at their rear ends, as shown in Fig. 8.

The horizontal rudder 19 is designed to regulate the inclination of the hydroplane member or the depth at which the said hydroplane member is submerged in the water when the vessel is under speed. The said rudder may be the ordinary balanced type of rudder, but I have shown herein a peculiar and novel construction designed more espe-

cially for use on light or small craft. Said rudder 19 is made of thin and flexible sheet metal and is fastened rigidly at its forward end to a suitable support and is adapted to be curved upwardly or downwardly at its rear end by the action thereon of a suitable operating device. In adapting this form of rudder to the type of boat herein illustrated, it is shown placed below the rear end of the pen point surface and is centrally divided, giving it the form of two separate flat plates or blades 29, 29, one located at each side of the propeller shaft bearing 18, as shown in Figs. 2, 5 and 6. Said rudder blades are attached rigidly at their forward ends to the central fin or keel extension 16. The free or rear ends of said rudder blades are connected with the rear ends of lever arms 30, 30 which are attached rigidly to the opposite ends of a transverse pivot shaft 31, mounted in the central fin or keel extension and to which is rigidly attached an operating lever 32. The said lever 32 extends forwardly and upwardly through the hollow keel, into the hull of the boat and is located within the keel at one side of the propeller shaft, as shown in Fig. 6. The transverse pivot shaft 31 extends at both ends outside the side plates of the keel extension and said arms 30 are connected at their rear ends with the rear or free ends of the rudder blades 29, 29. Any suitable form of attaching means may be provided between the rear ends of the rudder blades and the said arms 30, 30 of the rudder. As shown in the drawings, said arms carry outwardly extending, rigid rods 33 that are slitted longitudinally to receive the rear ends of said rudder blades. By reason of the rigid attachment of the forward ends of the rudder blades, as described, with the keel extension, and the connection at their rear ends with the arms 30, 30 on said rudder operating lever 32, the swinging of said operating lever acts to curve the rear ends of said plates upwardly or downwardly and, by the action of the blades on the water, to effect the raising or depression of the stern of the boat, with consequent change of inclination of the hydroplane member to the horizontal, accompanied by corresponding variation in the lifting effect of said hydroplane member. The rudder made as described is preferable, where it is capable of use, to an ordinary balanced rudder for the reason that the deflecting or lifting power of a curved surface is more efficient than an inclined plane surface, relatively to the horizontal force exerted in giving forward movement to the boat.

Instead of making the cylindric hydroplane member of uniform dimensions throughout, it is preferably cut away obliquely on its underside on the front and rear thereof, along the curved lines 34, 34, as shown in Figs. 1 and 8, thereby giving to the ends of the hydroplane members approximately a pen-point shape, thus decreasing the skin resistance of the hydroplane member. The lines upon which the hydroplane members are thus cut away are so curved as to produce sharp points at the ends when seen in plan view, as shown in Fig. 2. Thus, when the hydroplane is of cylindric form and cut away as described, the complete cylinder form is retained only at its portion near the longitudinal center thereof, as indicated at 35 in Figs. 1 and 8.

A general advantage of the cylindric form of the hydroplane member is that this form provides, in addition to the downwardly facing or hydroplane surface, lateral walls extending downwardly therefrom, which act in the manner of horizontal and vertical centerboards to give steering control for depth and course. In other words, in addition to the hydroplane surface, consisting of the downwardly facing surface of the upper part of the hydroplane member, the lateral walls of said cylindric member, which are always submerged, give stability, or lessened tendency to roll, and also afford superior lateral steering control for directing the course of the boat, thereby enabling the boat to be easily steered in rough water under the influence of the course rudder.

It will be evident that the hydroplane member may be made of other form without departing from the spirit of the invention, while maintaining the essentials of the hydroplane member before described, to wit,—the downwardly facing load carrying plane or surface and the lateral walls for giving stability and for steering control.

Fig. 12 shows a semicircular hydroplane member the side walls of which may extend below the axis or not. This semicircular form is adaptable where landings are to be made in shallow water. Fig. 13 shows a form of said hydroplane member consisting of a flat or horizontal top wall, forming the hydroplane surface proper, and two laterally separated, flat, upright walls depending from the side margins thereof. Fig. 14 shows the hydroplane member as shaped to form two outwardly divergent top walls and vertical, laterally separated walls depending from the lower margins of said top walls. The cylindric form of the hydroplane member, however, possesses distinct advantages for the reason, first, that it is a stronger and more practical construction than a member wherein the lateral portions or surfaces thereof are flat or are not connected at the bottom of the hydroplane member, and also because said cylindric member is less affected by the large waves in a rough sea than flat lateral walls would be. A further advantage of the cylindric hydroplane member is that the balancing rudders 20, as well as the load carrying fins 28, 28, when the latter are employed, may be placed respectively at

a greater distance apart thus increasing their leverage and their capacity to maintain the boat upright.

The proportions or form of the hydroplane member may be otherwise varied. For instance, the rear end of the hydroplane surface may be curved downwardly, as indicated at 36 in Fig. 8, in order to obtain the maximum carrying capacity of the hydroplane surface at certain speeds. These are details, however, depending upon the character of the craft.

When the boat is at rest in the water, the hydroplane surface and keel are entirely submerged and the hull is partially submerged and carries the load by displacement.

In starting the boat forward, the propeller is started giving the boat a forward impulse. Either by ballasting the boat or adjusting the angle of the horizontal or depth rudder 19, the front end of the hydroplane surface is given an upward inclination and, as the boat gains speed, it rises by reason of the pressure of the water on the under side of the inclined hydroplane surface, as well as on the rudders 20, 20 and fins 28, 28, when the latter are used, until the said hydroplane surface is near the surface of the water and the hull and principal part of the boat is partially or entirely out of the water and, to a greater or less degree, free from the skin and wave resistance. While under speed, the depth to which the hydroplane surface is submerged is regulated by the horizontal or depth rudder 19, while the course of the boat is determined by the stern or steering rudder 15. In order to maintain the boat in an upright position, the balancing rudders are operated as the conditions require, the said rudders being rotated to bring them into opposing inclinations, thus producing torsional action on the hydroplane member in a manner to counteract tendency to roll or tip under the action of wind or waves on the hull and to thereby maintain the boat upright. The pressure of any side wind and waves may be partially neutralized by inclining the boat in that direction to an angle affording the desired result without producing undue resistance to forward motion under the resistance of the balancing rudders.

In some instances I may employ a vertical balancing rudder 37, as shown in Fig. 7, in lieu of the lateral, horizontal balancing rudders 20, 20, before referred to. In such instance, said rudder will be arranged to turn on a vertical axis and may be located between the hull and hydroplane member, either in an opening in the keel 11, when the keel is made continuous, or in the space between the hull and hydroplane member, in case the hydroplane member is connected with the hull otherwise than by a longitudinally continuous keel. This type of balancing rudder operates to produce the same general result which is gained by the balancing rudders 20, 20 having the effect, when turned at an angle to the line of the keel, of tipping or inclining the hull to one side or the other in order to counteract any tendency of the hull to roll or swing in the opposite direction. The upright balancing rudder 37 may be employed with a lighter craft and has the advantage of being very readily applied and easily operated.

It is to be noted that the hydroplane member shown in Fig. 8, and the balancing and lifting or deflecting fins 28 have in common the feature of a downward curvature at the rear end thereof, while the horizontal rudder is adapted to be curved either upwardly or downwardly at its rear end. An advantage is gained in making a lifting or deflecting surface curved at the rear end thereof, for the reason that the lifting or deflecting effect is greater with such a curved surface than with a flat or plane surface relatively to the horizontally exerted or propelling force employed. Manifestly, the said fins 28 and rudder 19, as well as the hydroplane member 13, equally constitute hydroplanes, in the general sense of that term and I therefore desire to cover such curved form in a deflecting or lifting surface whether applied to a horizontal rudder, to a deflecting and balancing fin, or other like part, or to the main lifting member or members of a hydroplane boat.

I claim as my invention:—

1. A boat provided with a centrally arranged, longitudinally extending hydroplane member located at a distance below its bottom and having a central downwardly facing surface and downwardly extending, laterally separated, longitudinal walls, and a central, longitudinal, upright keel which rigidly connects said hydroplane member with the hull of the boat.

2. A boat provided with a longitudinally arranged hydroplane member having the form of an open-ended cylinder attached centrally to the hull of the boat at a distance below the bottom thereof.

3. A boat provided with a longitudinally arranged hydroplane member having the form of an open-ended cylinder attached centrally to the hull of the boat below its bottom and a depth controlling rudder.

4. A boat provided with a longitudinally arranged, cylindric hydroplane member located below its bottom, and a longitudinally arranged, upright keel connecting the said hydroplane member with the boat.

5. A boat provided with a longitudinally arranged, cylindric hydroplane member, said cylindric hydroplane member being cut away on its under side at its forward part so as to give the forward end of the upper or supporting part thereof the form of a pen point.

6. A boat provided with a longitudinally arranged, cylindric hydroplane member which is cut away on its under side at both ends so as to give forwardly and rearwardly tapering form to the ends of the upper or supporting part of said hydroplane member.

7. A boat provided with a longitudinally arranged hydroplane member having the form of an open-ended cylinder attached centrally to the hull of the boat below its bottom, and a central, longitudinally arranged balancing fin attached to and extending downwardly from the bottom surface of said hydroplane member.

8. A boat provided with a longitudinally arranged hydroplane member of cylindric form rigidly attached thereto at a distance below its bottom and a horizontally arranged depth controlling rudder.

9. A boat provided with a longitudinally extending hydroplane member rigidly attached thereto at a distance below its bottom and having a central, longitudinal, downwardly facing surface and at the center of said surface at the rear end thereof, a downwardly extending, longitudinal fin, and a horizontally arranged depth controlling rudder consisting of two rudder blades supported on said fin at opposite sides thereof.

10. A boat provided with a horizontal rudder embracing a flexible plate attached at one end to the boat and a rudder controlling member having upward and downward movement and acting on the free end of said plate to flex the same upwardly or downwardly.

11. A boat provided with a hydroplane member and a horizontally arranged depth controlling rudder embracing a flexible metal plate rigidly connected with the boat at its forward end, and a vertically movable operating member engaged with the rear end of said rudder plate to flex the same upwardly or downwardly.

12. A boat provided with a longitudinally arranged hydroplane member rigidly attached thereto at a distance below its bottom, a propeller wheel located centrally at the rear of the hydroplane member, a propeller shaft and a horizontally arranged depth controlling rudder embracing two separate rudder blades located one at each side of said propeller shaft forward, and substantially at the level, of the propeller.

13. A boat provided with a longitudinally arranged hydroplane member having a downwardly facing surface and at the rear part of said surface a depending longitudinal fin, a longitudinal keel connecting the hydroplane member with the boat, a horizontally arranged rudder embracing two rudder blades attached at their forward ends to the said fin, pivoted operating arms engaging the rear ends of said rudder blades, and an operating lever rigidly connected with said arms and extending through the said longitudinal keel into the boat.

14. A boat provided with a longitudinally extending, cylindric hydroplane member and a propeller wheel located at the rear of said hydroplane member substantially below the level of the upper downwardly facing surface thereof.

15. A boat provided with a longitudinally arranged hydroplane member having a central downwardly facing surface and two parallel, laterally separated, downwardly extending, longitudinal walls, a central longitudinal upright keel which rigidly connects said hydroplane member with the hull of the boat, and horizontally arranged balancing rudders located at opposite sides of said hydroplane member.

16. A boat provided with a longitudinally arranged, cylindric hydroplane member and with a balancing rudder.

17. A boat provided with a hydroplane member rigidly attached thereto at a distance below its bottom, and with horizontally arranged balancing rudders located at opposite sides of said hydroplane member.

18. A boat provided with a hydroplane member rigidly attached thereto at a distance below its bottom, said hydroplane member having laterally separated, downwardly extending, longitudinal walls, and horizontally arranged balancing rudders mounted upon and extending outwardly from the said longitudinal walls of the hydroplane member.

19. A boat provided with a longitudinally arranged, cylindric hydroplane member provided with horizontally arranged pivoted balancing rudders mounted on and extending laterally from said hydroplane member, near a horizontal plane passing through the longitudinal axis of said member, said balancing rudders being adapted to rotate about horizontal transverse axes.

20. A boat provided with a hydroplane member and at opposite sides of said hydroplane member with horizontally arranged balancing rudders adapted to rotate about horizontal transverse axes, and operating means connected with said balancing rudders for controlling the inclination of the same.

21. A boat provided with a hydroplane member and at opposite sides of said hydroplane member with horizontally arranged balancing rudders adapted to rotate about horizontal transverse axes and operating means connecting said balancing rudders in such manner as to give corresponding movement thereto in opposite directions.

22. A boat provided with a longitudinally arranged cylindric hydroplane member located below its bottom, a central, longitudinally arranged, upright keel connecting said hydroplane member with the boat, and

balancing rudders extending outwardly from opposite sides of said hydroplane member.

23. A boat provided with a longitudinally arranged, cylindric hydroplane member and balancing fins rigidly attached to and extending outwardly from the opposite sides of said cylindric hydroplane member.

24. A boat provided with a hydroplane member, with a balancing rudder and with a horizontally arranged depth rudder for controlling the longitudinal inclination of the hydroplane member and boat.

25. A boat provided with a longitudinally extending hydroplane member having a central, downwardly facing surface and laterally separated, downwardly extending, longitudinal walls, a central upright longitudinal keel rigidly connecting said hydroplane member with the hull of the boat, and fixed horizontally arranged balancing fins extending outwardly from the outer faces of said longitudinal walls.

26. A boat provided with a centrally arranged, longitudinally extending, cylindric hydroplane member, a central upright, longitudinal keel rigidly connecting said hydroplane member with the hull of the boat, and horizontally arranged balancing fins attached to and extending outwardly from the sides of said cylindric hydroplane member.

27. A boat provided with a longitudinally extending hydroplane member having a central downwardly facing surface and laterally separated, downwardly extending, longitudinal walls, balancing rudders mounted on and extending outwardly from said longitudinal walls, and fixed, horizontally arranged, balancing fins extending outwardly from the outer faces of said longitudinal walls.

28. A boat provided with a centrally arranged, longitudinally extending, hydroplane member attached thereto at a distance below its bottom, and having a central downwardly facing surface and laterally separated, downwardly extending longitudinal walls, balancing rudders mounted on and extending outwardly from said longitudinal walls, and horizontally arranged balancing fins attached to and extending outwardly from said longitudinal walls forward and aft of the balancing rudders.

29. A boat provided with a centrally arranged, longitudinally extending hydroplane member attached thereto at a distance below its bottom, and having a central downwardly facing surface and laterally separated downwardly extending longitudinal walls, balancing rudders mounted on and extending outwardly from said longitudinal walls, and balancing fins attached rigidly to and extending outwardly from said longitudinal walls, said fins being curved downwardly at their rear ends.

30. A boat provided with a centrally arranged, longitudinally extending, cylindric hydroplane member located a distance below its bottom and having a central, downwardly facing surface, and laterally separated, downwardly extending, longitudinal walls, a central longitudinal upright keel rigidly connecting said hydroplane member with the bottom of the boat, balancing rudders mounted on and extending outwardly from said longitudinal walls, and balancing fins rigidly attached to and extending outwardly from said longitudinal walls.

31. A boat provided with a centrally arranged, longitudinally extending, cylindric hydroplane member located at a distance below its bottom, a central, longitudinal, upright keel rigidly connecting said hydroplane member with the bottom of the boat, balancing rudders mounted on and extending outwardly from opposite sides of said hydroplane member, and balancing fins rigidly attached to and extending outwardly from the opposite sides of said hydroplane member.

32. A boat provided with a centrally arranged, longitudinally extending, hydroplane member attached thereto at a distance below its bottom, and having a central, downwardly facing, surface and two laterally separated, downwardly extending, longitudinal walls, with a balancing rudder, with fixed balancing fins extending outwardly from said longitudinal walls, and with a horizontally arranged rudder for controlling the longitudinal inclination of the hydroplane member and boat.

33. A boat provided with a hydroplane member having a central, longitudinal, downwardly facing surface, and, at the side margins of said surface, downwardly extending, longitudinal walls, a horizontally arranged rudder controlling the longitudinal inclination of the hydroplane member and boat, and balancing rudders mounted upon and extending outwardly from the said downwardly extending longitudinal walls of the hydroplane member.

34. A boat provided with a hydroplane member provided with laterally separated, downwardly extending, longitudinal walls, balancing fins attached to and extending outwardly from the said longitudinal walls of the hydroplane member and rotative balancing rudders mounted on and extending outwardly from said longitudinal walls.

35. A boat provided with a longitudinally arranged, cylindric hydroplane member provided with horizontally arranged pivoted balancing rudders mounted on the sides of said hydroplane member near the horizontal axis of said member and extending outwardly therefrom, said balancing rudders being adapted to rotate about horizontal transverse axes, and horizontally arranged, fixed, balancing fins secured to and extending horizontally outward from said cylindric hydroplane member.

36. A boat provided with a longitudinally extending, cylindric hydroplane member attached thereto at a distance below its bottom, said hydroplane member being cut away at the lower portion of its rear part so as to give rearwardly pointed form to the rear end of the upper part thereof; the under surface of said pointed rear end being downwardly and rearwardly curved.

37. A boat provided with a cylindric, longitudinally extending hydroplane member rigidly attached thereto at a distance below its bottom, a propeller wheel located at the rear end of said hydroplane member substantially below the level of the top of the same, a horizontally arranged depth controlling rudder located centrally at the rear end of the hydroplane member, below the level of the top of the same, and balancing rudders mounted on and extending outwardly from the sides of said hydroplane member, said balancing rudders being adapted to rotate on transverse, horizontal axes.

38. A boat provided with a cylindric, longitudinally arranged hydroplane member, a propeller wheel located at the rear end of the hydroplane member, a propeller shaft extending through the said keel, a longitudinal, central fin depending from the rear part of the upper, downwardly facing surface of the hydroplane member, and a horizontally arranged rudder consisting of two blades mounted on opposite sides of the said fin.

39. A boat provided with a cylindric, longitudinally arranged hydroplane member, a longitudinal keel connecting the said hydroplane member with the boat, a propeller wheel located at the rear end of the hydroplane member, a propeller shaft extending through said keel, a longitudinal central fin depending from the rear part of the upper, downwardly facing surface of the hydroplane member, a horizontally arranged depth rudder consisting of two blades mounted on opposite sides of said fin, and balancing rudders mounted on and extending outwardly from the sides of the said cylindric hydroplane member, said balancing rudders being adapted to rotate on transverse, horizontal axes.

40. A boat provided with a cylindric, longitudinally arranged hydroplane member which is cut away at its lower part at both ends to give forwardly and rearwardly tapered form to the upper part thereof, a longitudinal keel rigidly connecting said hydroplane member with the boat, a propeller wheel located at the rear end of said hydroplane member, a horizontally arranged depth rudder located at the rear end of said hydroplane member in advance of the propeller wheel, and balancing rudders mounted on and extending outwardly from the sides of said hydroplane member, said balancing rudders being adapted to rotate on transverse horizontal axes.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 9th day of January A. D. 1907.

WILLIAM HENRY FAUBER.

Witnesses:

HANSON C. COXE,

JACK H. BAKER.