Sept. 6, 1932. M. KLOEN 1,875,344

HYDROSPEED VESSEL

Filed July 22, 1930

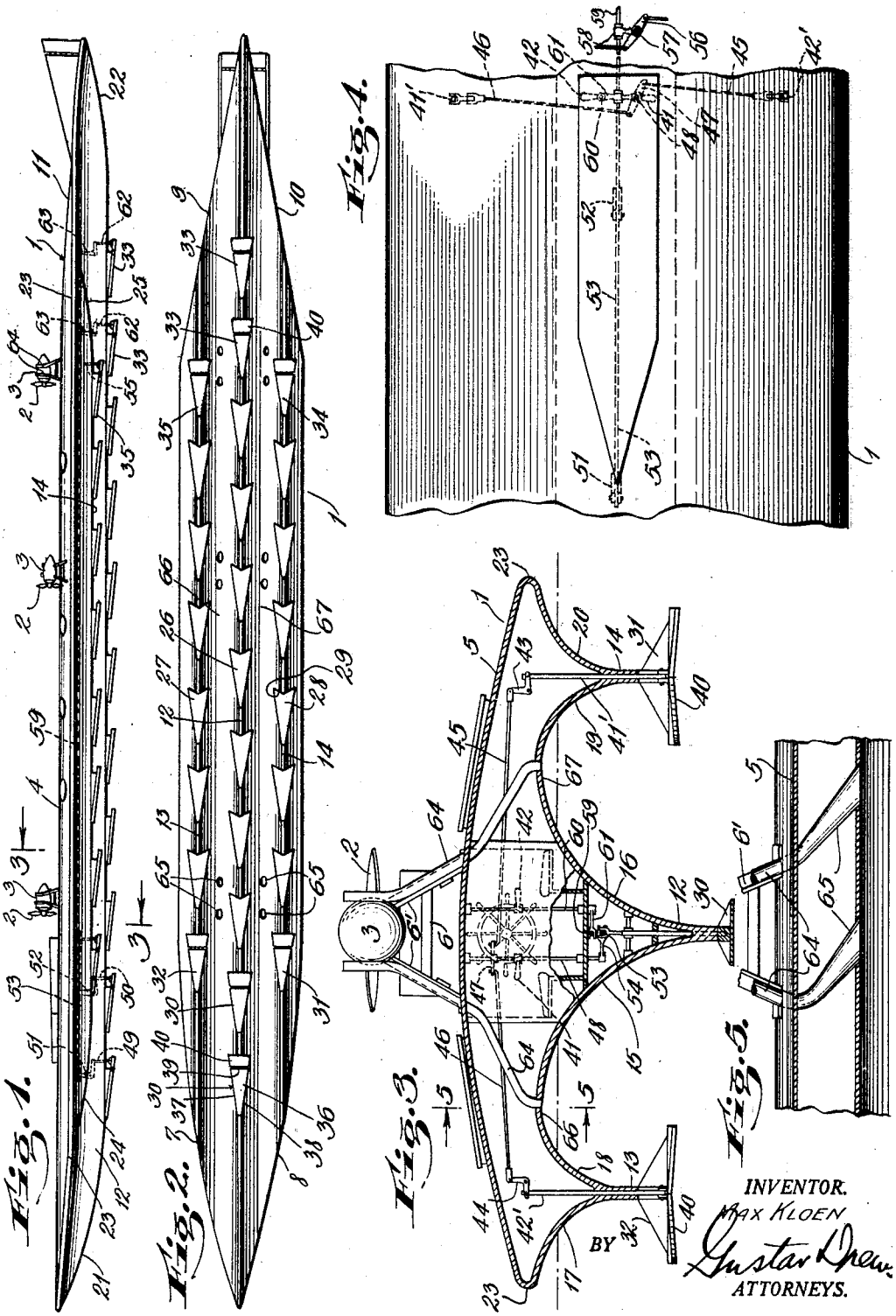


Fig. 1.

Fig. 2.

Fig. 4.

Fig. 3.

Fig. 5.

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Patented Sept. 6, 1932 1,875,344

UNITED STATES PATENT OFFICE

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HYDROSPEED VESSEL

Application filed July 22, 1930. Serial No. 469,713.

This invention relates to ocean going speed boats in general, such as hydro speed boats and more especially to the type illustrated in my co-pending application, Serial No. 388,893, filed August 28, 1929.

Among the objects of the present invention, it is aimed to provide an improved ocean going hydro speed boat of the type illustrated in my aforesaid co-pending application, equipped with controllable governing blades or vanes along the downwardly extending fins of the vessel, which blades may be used both for steering the vessel while in motion and for regulating its speed.

It is still another object of the present invention to provide an improved steering means for a hydro speed boat, especially adapted to regulate the speed and the degree of inclination of the vessel to the surface level of the water when in motion.

Another object of the invention is to provide an improved hull construction, whereby the pressure on the bottom of the hull may be relieved, especially when it is due to change the degree of inclination of the vessel at the surface level of the water, as for instance, when it is desired to depress the bow of the vessel.

It is still another object of the present invention to provide an improved speed regulating device and hull structure which will co-operate to change the speed of the vessel and at the same time relieve the excess pressure produced by such change of speed.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of one specific embodiment thereof illustrated in the accompanying drawing in which

Figure 1 is a side elevation of a vessel made according to the present invention;

Fig. 2 is a bottom plan view of the same;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmental top plan view of the hull illustrating the steering connections; and

Fig. 5 is a section on the line 5—5 of Fig. 3.

In the embodiment illustrated, the hull 1 of the vessel is substantially as shown in my co-pending application which is of the type adapted for use as an ocean going speed vessel. These vessels are preferably driven by airplane propellers. In the present instance, a plurality of such airplane propellers are shown connected to the airplane motors 3 which are mounted on the upper face 4 of the hull 1. While according to the size of vessel any number of such airplane propellers may be used, in the present instance, provision is made for four, one to the rear of the cabin, two slightly to the rear of the middle of the hull alongside of one another and the fourth near the stern of the boat. These motors 3 are preferably mounted on the face 4 of the hull by means of struts 6′ suitably braced by means of cross-pieces 6, as illustrated in Fig. 3.

The upper wall of the hull 1 to wit the wall 5 forming the upper face is preferably convex in shape in a transverse direction, as illustrated in Fig. 3. At the bow of the hull, the sides 7 and 8 of the wall 5 gradually converge, as shown in Fig. 1, although the upper central portion remains substantially at the same level as the face 4 at the center. As the wall 5 approaches the stern as indicated in Fig. 2 its sides 9 and 10 converge and the upper central portion gradually inclines downwardly as indicated by the wall portion 11. The lower wall member of the hull 1 is provided with a central longitudinally extending stabilizing fin 12 and two laterally longitudinally extending fins 13 and 14, the lower wall of the hull having two concave wall portions 15 and 16 forming the stabilizing fin 12, two concave wall portions 17 and 18 forming the lateral fin 13 and two concave wall portions 19 and 20 forming the lateral fin 14. The arc of the wall portion 18 is described by a radius of shorter length than the radius of the arc for describing the wall portion 15. The arcs 15 and 16 are substantially similar and described by the same length of radius, and the arcs of the wall portions 17, 18, 19 and 20 are described substantially by the same length of radius. As clearly illustrated in Fig. 1, the fin 12 as it approaches the bow gradually

inclines upwardly as indicated at 21 and as it approaches the stern it gradually inclines upwardly as indicated at 22. The lateral fins 13 and 14 similarly incline upwardly as indicated in Fig. 1 and terminate on the level with the edge 23 of the hull, a short distance removed from the bow of the vessel as illustrated at 24 and similarly incline upwardly terminating at the level of the edge 23, a short distance removed from the stern of the vessel as illustrated at 25.

The proportion of the vessel is substantially as follows:

For a length of substantially two hundred and eighty (280) feet, the width of the hull at the center would be about twenty-seven (27) feet and the depth at about the center would be about ten and a half (10½) feet.

The present improvement relates mainly to the speed regulating and steering means now to be described. On each of the fins 12, 13 and 14, a plurality of blades 26, 27 and 28 are provided. These blades are used to facilitate maintaining the vessel at the surface of the water. The surface of the water is used merely as an aid in supporting the vessel at such level. In order to facilitate maintaining the vessel at the level of the water, these blades are inclined downward in a rearward direction as illustrated in Fig. 1 and converge to a point in a forward direction as indicated in Fig. 2, preferably being provided with notched rear ends 29 as indicated.

The improved speed regulating means consist essentially in providing a number of blades similar to the blades 26, 27 and 28, as for instance the blades 30, 31 and 32 near the bow of the vessel and the blades 33, 34 and 35 near the stern of the vessel. As illustrated in Fig. 2, two blades 30 are provided on the fin 12, a single blade on the fin 14, a single blade 32 on the fin 13, and at the stern of the boat two blades 33 are provided on the fin 12 of the vessel, a single blade 34 on the fin 14 and a single blade 35 on the fin 13. These blades 30, 31, 32, 33, 34 and 35 are substantially identical in construction and consist of a front portion 36 inclined upwardly in a forward direction, having two side edges 37 and 38 converging in a forward direction and a straight transversely extending rear edge 39. These blade portions 36 in the present instance are shorter in length than the blades 26, 27 and 28. Along the rear edge 39, there is pivotally mounted a flapper or wing portion 40. In the present instance, the four wing portions 40 of blades 30, 31 and 32 are connected to be actuated by the handle portion 41, and the wing portions 40 of the rear blades 33, 34 and 35 are connected to the handle 42. These wing portions 40 are adapted to be used to facilitate regulating the degree of inclination of the hull to the level of the water during motion, and also to serve as brakes to retard the speed of same when desired.

In case of an emergency when the vessel is going at top speed, both sets of wing portions 40 may be swung downwardly to retard the speed of the vessel. On the other hand, in the case of a high sea, when it is desired to change the degree of inclination of the vessel either to raise the bow or depress it, either the front wing portions 40 alone are swung downwardly or the rear wing portions 40 alone swung downwardly, one set to the exclusion of the other.

Any suitable mechanism may be provided for connecting the wings 40 to the handles 41 and 42. In the present instance, see Fig. 3, the wings 40 of the blades 31 and 32 are pivotally connected to the reciprocating rods 41′ and 42′, and the upper ends of the rods 41′ and 42′ connected to the bell cranks 43 and 44 respectively which are connected by the rods 45 and 46 to the ends of the plate 47 pivotally mounted on the rod 48 on which the handle 41 is fixed. The wings 40 of the blades 30, see Fig. 1, are pivotally connected to the rods 49 and 50 which are in turn pivotally connected to the bell cranks 51 and 52 respectively which bell cranks 51 and 52 are connected to the longitudinally extending reciprocating rod 53 which is connected to the forked end of the arm 54 fixed to the lower end of the vertically extending rod 48.

The wings 40 of the blades 34 and 35, see Fig. 1, are pivotally connected to the vertically extending rods 55 which are connected at their upper ends to bell cranks similar to the bell cranks 43 and 44, which bell cranks are pivotally connected by rods similar to rods 45 and 46 to a pivotally mounted plate 56, see Fig. 4, mounted on a rod 57 which is connected by the forked arm 58 to the longitudinally extending rod 59, which in turn is connected to the vertically extending rod 60, see Fig. 3, on which the handle 42 is fixed by the forked arm 61.

The wings 40 of the blades 33 are pivotally connected by the rods 62 to the bell cranks 63 which in turn are pivotally connected to the rod 59. Thus, the wings 40 of the front blades 30, 31 and 32 will be controlled by the handle 41 and the wings 40 of the rear blades 33, 34 and 35 will be controlled by the handle 42. When the inclination of the vessel is thus changed in an emergency, the pressure on the wall of the hull will of course be materially increased.

To relieve such pressure, and incidentally also co-operate to facilitate regulating the speed, the pressure relief means now to be described are provided. Conduits are provided extending from the concave walls formed by the fins 12, 13 and 14 upwardly through the hull of the vessel to permit the air to escape upwardly through the hull into atmosphere and similarly the water to rise

part way up the same if the vessel should be depressed to a level where such concave walls are disposed at a lower level than the surface level of the water. Any suitable means may be provided for supporting such conduits. In the present instance, the struts 6′ of the motors 3 are used as an aid in supporting such conduits. Preferably such conduits should extend from the concave lower walls of the vessel upwardly to a level above the upper wall 5 of the hull. In the present instance, four conduits 64 are provided for the front motor 3, four similar conduits for the rear motor 3, and four conduits for the two intermediate motors 3. Each of the conduits 64 of the front motor, as illustrated in Fig. 3, have an outwardly flaring mouth, 65. The walls 15 and 18 between the fins 12 and 13 merge into one another to form the upper portions 66 and the walls 16 and 19 of fins 12 and 14 merge upwardly to form the portion 67. The mouths 65 of the conduits 64 are located in such portions 66 and 67. The conduits 64, as illustrated in Fig 3, extend through the hull of the vessel and upwardly along the struts 5 to terminte at a point above the struts alongside of the upper end of the motor. The internal diameter of the conduits 64 will of course vary according to the size and weight of the vessel and other conditions, such as speed to be attained. The conduits 64 of the rear motor 3 are similar to the conduits 64 for the front motor 3 and extend through the hull and up along the struts 5 of the rear motor in a manner similar to the manner of location of the front conduits 64. In the present instance, there are only shown four conduits for the intermediate motors 3, the two conduits 64 extending through the portions 66 extending upwardly along the inner struts of one of the intermediate motors 3 and the other two conduits connected to the portion 67, extending upwardly along the inner struts 5 of the other intermediate motor 3. The conduits 64 adjacent to the blades 30, 31 and 32 will serve to relieve the pressure when the wing portions 40 of the rear blades are swung downwardly and the bow of the vessel is depressed, and in turn the conduits to the rear of the middle of the vessel will serve to relieve the pressure when the wings 40 of the front blades 30, 31 and 32 are swung downwardly to depress the bow of the vessel.

The conduits 64 will of course also serve to relieve the pressure on the bottom of the hull when the same is struck by waves especially during a high sea and also make it possible to form a bottom wall of a lower pressure resisting quality to reduce the cost of manufacture, or on the other hand with a given material, add materially to the safety of the bottom wall structure.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. A hydro speed vessel having a hull of greater width than depth to be maintained at the level of the water during transit, parallel fins extending longitudinally at the bottom of said hull the full length of the hull, wings pivotally mounted on the edges of said fins, and extending to both sides of said fin, the wings on each fin being independent in operation and mounting of the wings on another fin, controlling means mounted on said hull, and means for connecting said controlling means to said wings.

2. A hydro speed vessel having a hull of greater width than depth, parallel rows of inclined blades formed on the bottom of said hull to facilitate maintaining said vessel at the level of the water during transit, wings pivotally mounted on transverse axes on the edges of said blades, controlling means mounted on said hull, and means for connecting said controlling means to said wings.

3. A hydro speed vessel having a hull of greater width than depth, parallel rows of inclined blades formed on the bottom of said hull to facilitate maintaining said vessel at the level of the water during transit, wings pivotally mounted on transverse axes on the edges of said blades, said wings being formed in two groups, one group at the rear of the vessel and the other at the front thereof, controlling means mounted on the hull of each group of wings, and means for connecting said wings to said controlling means whereby the groups may be actuated singly or jointly to facilitate regulating the speed of the vessel and steering the same.

4. A hydro speed vessel having a hull of greater width than depth to be maintained at the level of the water during transit, fins on the bottom of said vessel forming longitudinally extending channels, wings pivotally mounted on transverse axes on the edges of said fins, controlling means mounted on the hull, and means for connecting the wings to said controlling means, there being passages formed through the hull extending upwardly from the longitudinally extending channels to form pressure relief passages.

5. A hydro speed vessel having a hull of greater width than depth to be maintained at the level of the water during transit, fins on the bottom of said hull to form longitudinally extending channels, inclined blades formed on the edges of said fins to facilitate maintaining the vessel at the level of the water during transit, and conduits extending through the hull to form pressure relief passages between the longitudinally extending channels and the upper face of the hull.

6. A hydro speed vessel having a hull of greater width than depth, fins on the bottom

of said hull forming longitudinally extending channels, wings pivotally mounted on transverse axes on the edges of said fins, said wings being formed in two groups, one group at the rear of the hull and the other at the front thereof, controlling means for each group of wings mounted on the hull, means for connecting said wings to said controlling means whereby the groups may be actuated singly or jointly to facilitate regulating the speed of the vessel and the steering thereof, and a plurality of groups of conduits extending through the hull, one group extending from said channels up through the hull above the upper surface thereof adjacent to the front group of wings and another of said group of conduits extending from the channels up through the vessel to and beyond the upper surface thereof and adjacent to the rear group of wings.

7. A hydro speed vessel having a hull of greater width than depth, inclined blades on the bottom of said hull to facilitate maintaining said vessel at the level of the water during transit, motors mounted on the upper surface of said hull, air propellers drivingly connected to said motors, and conduits forming pressure relief passages extending upwardly from the bottom of the vessel through the hull thereof to and beyond the upper surface of the motors.

8. A hydro speed vessel having a hull of greater width than depth, fins on the bottom of said hull forming longitudinally extending channels, inclined blades on said fins to facilitate maintaining the vessel at the level of the water during transit, struts extending upwardly from the hull, motors mounted on said struts, air propellers drivingly connected to said motors, and conduits forming pressure relief passages extending upwardly from said channels through the hull and connected to said struts as they extend beyond the upper surface of said hull.

9. A hydro speed vessel having a hull of greater width than depth, means on the bottom of said hull to facilitate maintaining said vessel at the level of the water during transit, and conduits forming pressure relief passages extending upwardly from the bottom of the vessel through the hull thereof to and beyond the upper surface of the hull.

10. A hydro speed vessel having a hull of greater width than depth to be maintained at the level of the water during transit, parallel fins of different depth extending longitudinally at the bottom of, and the full length of the hull, wings pivotally mounted on the edges of said fins and extending to both sides thereof, the wings on each fin being independent in operation and mounting of the wings of another fin and at different levels depending upon the depth of the fin to which connected, controlling means mounted on said hull, and means for connecting said controlling means to said wings.

11. A hydro speed vessel having a hull of greater width than depth to be maintained at the level of the water during transit, three parallel fins, two lateral and one central, all extending longitudinally at the bottom of, and the full length of the hull, the central fin extending down to a lower level than the lower level of the lateral fins, wings pivotally mounted on the edges of said fins and extending to both sides thereof, the wings on each fin being independent in operation and mounting of the wings on another fin and at different levels depending upon the length of the fin to which connected, controlling means mounted on said hull, and means for connecting said controlling means to said wings.

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