

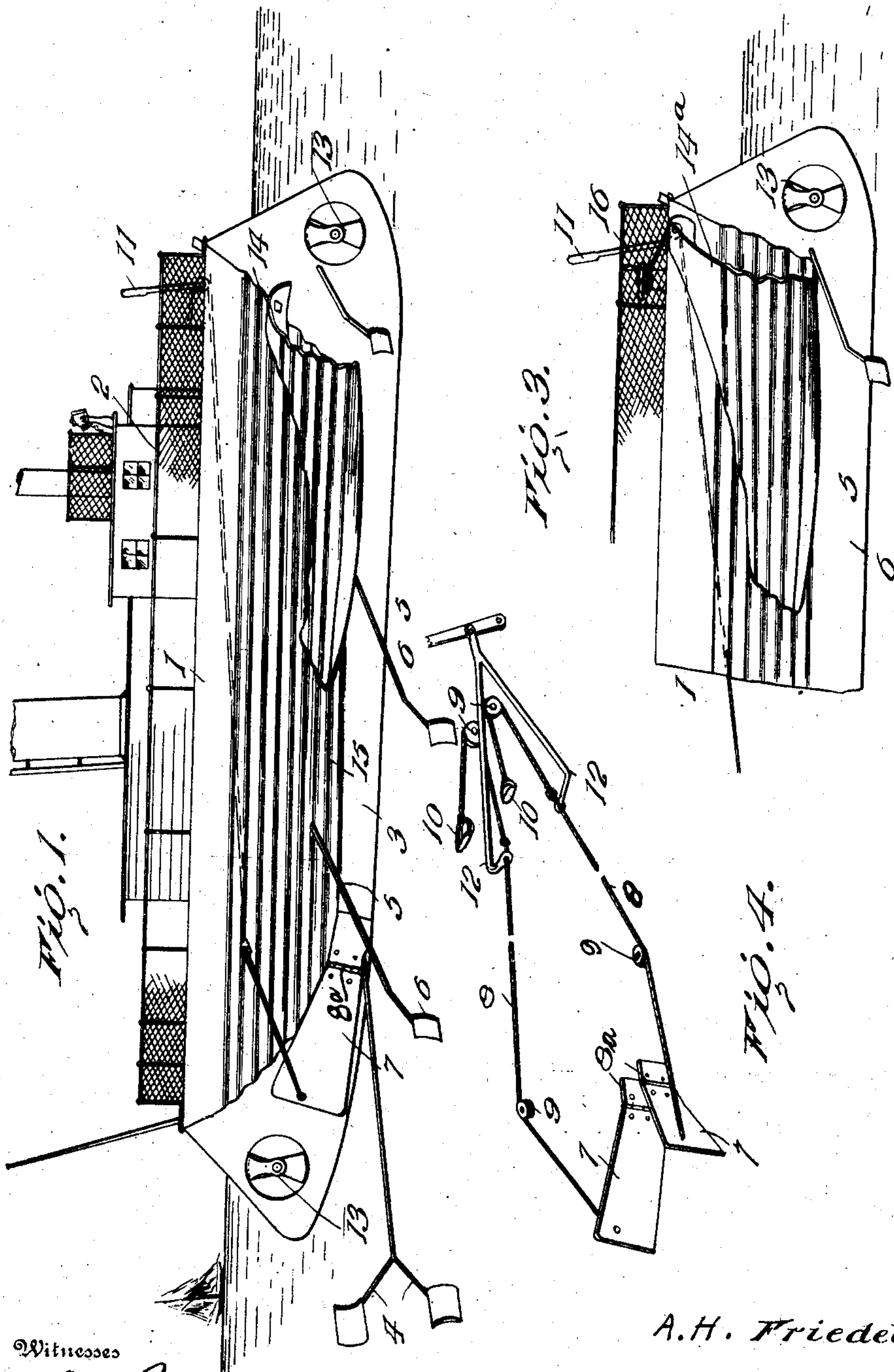
No. 883,455.

PATENTED MAR. 31, 1908.

A. H. FRIEDEL.
BOAT.

APPLICATION FILED SEPT. 16, 1905. RENEWED FEB. 11, 1908.

2 SHEETS—SHEET 1.



Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT HUGO FRIEDEL, OF CLEVELAND, OHIO.

BOAT.

No. 883,455.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed September 16, 1905, Serial No. 278,812. Renewed February 11, 1908. Serial No. 415,371.

To all whom it may concern:

Be it known that I, ALBERT HUGO FRIEDEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Boats, of which the following is a specification.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a boat embodying the essential features of the invention. Fig. 2 is a bottom plan view. Fig. 3 is a partial side elevation showing a modified construction of the receivers at the bow of the vessel. Fig. 4 is a perspective view showing the steering blades or wings and the operative connections whereby the same are actuated. Fig. 5 is a front elevation of the boat. Fig. 6 is a view similar to Fig. 5, embodying a modified form of air passages on the under side of the hull.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

This invention resides in novel improvements in boat or vessel construction and the invention comprises essentially peculiar means for steering the boat, special propelling means therefor, and means for facilitating stopping of the boat, the last mentioned means embodying brake mechanism also adapted to coact in steering the vessel.

The invention further includes the provision of peculiar means for conducting air along the bottom of the hull so as to reduce friction between the water and said hull, thereby securing increased speed of the vessel through the water and buoying the boat in a manner which will be readily appreciated upon reference to the description hereinafter.

Specifically describing the invention, the numeral 1 designates the hull of the vessel, which in the drawing is illustrated as a steamship, and it will be understood that the size of the boat is immaterial and may be varied according to the desire of the manufacturer and the service for which the vessel may be designed. Arranged at the fore part of the vessel may be located the pilot house 2, in which is located the mechanism for op-

erating the steering apparatus. The vessel may be provided with a keel 3, though this is not essential within the purview of the invention, and the means for propelling the boat or vessel will consist of a main propeller 4 located at the stern, and a plurality of side propellers 5, which will be located at opposite sides of the hull 1 and will be of a number determined by the size of the boat and the speed desired to be attained. The propellers 4 and 5 will be driven by the usual propeller shafts leading from a suitable motor or motors in the hull 1, the main propeller 4 preferably having two blades, while each of the side propellers preferably consists of a single blade. It is designed that the blades of the propellers 4 and 5 shall be of special construction to produce a maximum amount of speed, each of said blades having its outer end curved as shown at 6, such construction causing the propellers to gain a greater purchase against the water in a manner which will be evident. It is contemplated that the several propellers 4 and 5 may be driven in reverse directions by reverse engines in the customary way.

The steering mechanism for the boat involves the provision of blades or wings 7 which are arranged upon opposite sides of the hull of the vessel, two of said wings being preferably provided, though the number thereof may be varied. Each of the wings 7 is arranged near the stern of the vessel and is pivotally connected with the hull at its front end, as shown at 8^a. Operating mechanism located in the pilot house 2 is connected with said wings 7 so as to cause the wings to move inwardly and outwardly with respect to the hull, said wings corresponding to fins in assisting in directing the course of the boat. The operating mechanism for the wings or blades 7 preferably consists of operating ropes 8, which are connected at one end with the rear end of each of the blades or wings 7, the opposite end of each rope 8 passing through the hull of the vessel and extending to the pilot house 2. The ropes 8 will pass about pulleys 9 or the like and handles 10 are connected with the ends of the ropes 8 terminating in the pilot house 2. The handles 10 may be grasped by the pilot or steersman who is stationed in the pilot house, and by pulling upon said handles 10, either of the wings 7 may be actuated as desired to effect movement thereof toward and from the hull 1 and cause the same to act as fins. When

one of the wings is pulled outwardly, the same will act as a rudder and will cause the vessel to turn in one direction, the operation of the other wing being exactly the same.

5 The wings 7 are not only designed as steering mechanism, but said wings are adapted to be used as a brake to retard the movement of the vessel through the water. In this instance an operating lever 11 in or near the
10 pilot house 2, is connected by ropes 12 with the operating ropes 8, and this lever may be actuated by the pilot or steersman to pull upon the ropes 8 and simultaneously force the wings 7 outwardly from the hull 1. The
15 wings 7 will offer a great resistance to the water as the vessel moves and by so doing will retard the progress of the vessel in such a way as to quickly stop the same should this be desired. It is of course contemplated
20 that any suitable power mechanism may be operably connected with the blades or wings 7 to actuate the same. Steering propellers are also utilized to assist in steering the vessel, said propellers being of particular advantage in turning the vessel or directing its
25 course where the expanse of water in which the vessel is located is not sufficiently large to permit much forward or sternward movement of the ship. The steering propellers
30 are indicated at 13 and are arranged at the front and rear extremities of the hull, being driven by suitable connection with the engines of the ship. The propellers 13 may be operated in reverse directions, when the ship
35 is stationary and the vessel will turn as if on a pivot in a manner readily apparent. Further, the propellers 13 may be operated in the same direction, and in this instance the vessel may be gradually moved sidewise in the
40 water, the advantages of this being obvious to those versed in the art to which the invention appertains.

Another very important feature of the invention is included in the provision at the
45 forward end of the hull 1, of air receivers 14, these receivers being nearly entirely submerged and arranged upon opposite sides of the hull exterior thereof when the vessel is afloat. The receivers 14 have the front ends
50 of the same projecting above the level of the water so that as the vessel moves forwardly, air will be caused to enter the front ends of the receivers and force downwardly beneath the hull and along the bottom of the latter.
55 The receivers 14 are arranged diagonally, somewhat, of the sides of the hull and in order for the air to have egress from the receivers after once entering the same, said air must pass from the rear extremities of the receivers
60 and will be caused to travel along the hull in longitudinal passages 15 formed, as shown in Fig. 5, by corrugations on the bottom of said hull. The air when caused to take the course above described, increases the buoyancy of
65 the vessel and more important yet, reduces

the friction between the water and the bottom of the hull to such an extent as to give rise to material advantages which have been before premised upon in this description.

Fig. 3 shows a modified form of the invention in which the receivers 14^a are adjustable and may be raised or lowered to vary the amount of air passing beneath the hull as deemed necessary and desirable under actual conditions of service. A suitable windlass
75 16 is connected with the receivers 14^a in this construction, and the front end portions of the receivers may be raised and lowered to the extent desired.

Fig. 6 illustrates a modification of the invention in which the passages 15 on the
80 bottom of the hull, instead of being formed by corrugations, are formed by a plurality of spaced plates 17 attached to the bottom of the hull so as to afford the same function
85 as the corrugated construction herein described.

It will be noted that the exhaust pipes which lead from the engine extend through the hull at the bottom thereof, as indicated
90 at 18, and the exhaust of the engines is thus utilized to discharge against the water and assist in propelling the vessel. The discharged gas, steam, or other medium passing from the exhaust pipes 18, will pass along
95 the bottom of the hull through the passages 15 or those formed by the plates 17, in the modification in Fig. 6.

It is contemplated that various modifications may be made in the details of construction set forth hereinbefore within the broad
100 spirit of this invention.

The exhaust pipes 18 may also be connected up with suitable pumping mechanism whereby air may be pumped through the
105 said pipes down beneath the hull of the vessel, and accomplish the same result as described above with reference to the exhaust. The forward propellers 5 are arranged so as to drive the foam at the bow
110 of the vessel, (caused by the movement thereof,) beneath the hull. The rear end portion of each of the receivers 14 terminates in a fin-like portion which forms a fin keel, virtually, with reference to its functions and
115 it may be made adjustable as found desirable.

Having thus described the invention, what is claimed as new is:

1. In combination, a boat or vessel having
120 the bottom of the hull thereof provided with longitudinal passages, air receivers arranged at one end of the vessel exterior of the hull, each receiver being partially submerged and adapted to cause air to travel to the passages
125 upon the bottom of the hull, and means for adjusting the positions of the receivers to regulate the quantity of air entering the same.

2. In combination, a boat or vessel having
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the bottom of the hull thereof provided with longitudinal passages, receivers arranged at one end of the vessel exterior of the hull, each receiver being partially submerged and
5 adapted to cause air to travel to the passages upon the bottom of the hull, and means for raising and lowering the receivers to submerge the same to a greater or less extent and thereby regulate the quantity of air con-
10 ducted by the receivers to the passages on the bottom of the hull.

3. In combination, a boat or vessel provided upon the bottom of the hull thereof with passages, and adjustably mounted air
15 receivers carried by the hull at one end and adapted to conduct air to the passages beneath the hull for the purpose specified.

4. In combination, a boat or vessel having

the bottom thereof provided with longitudinal passages, air receivers arranged at
20 one end of the hull exterior thereof and inclining upwardly in their length, said receivers being arranged so as to be partially submerged when the vessel is afloat, and
25 hoisting mechanism connected with the receivers to raise and lower the same to regulate the quantity of air which will be conducted by said receivers to the passages beneath the hull.

In testimony whereof I affix my signature
30 in presence of two witnesses.

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