

No. 619,155,

Patented Feb. 7, 1899.

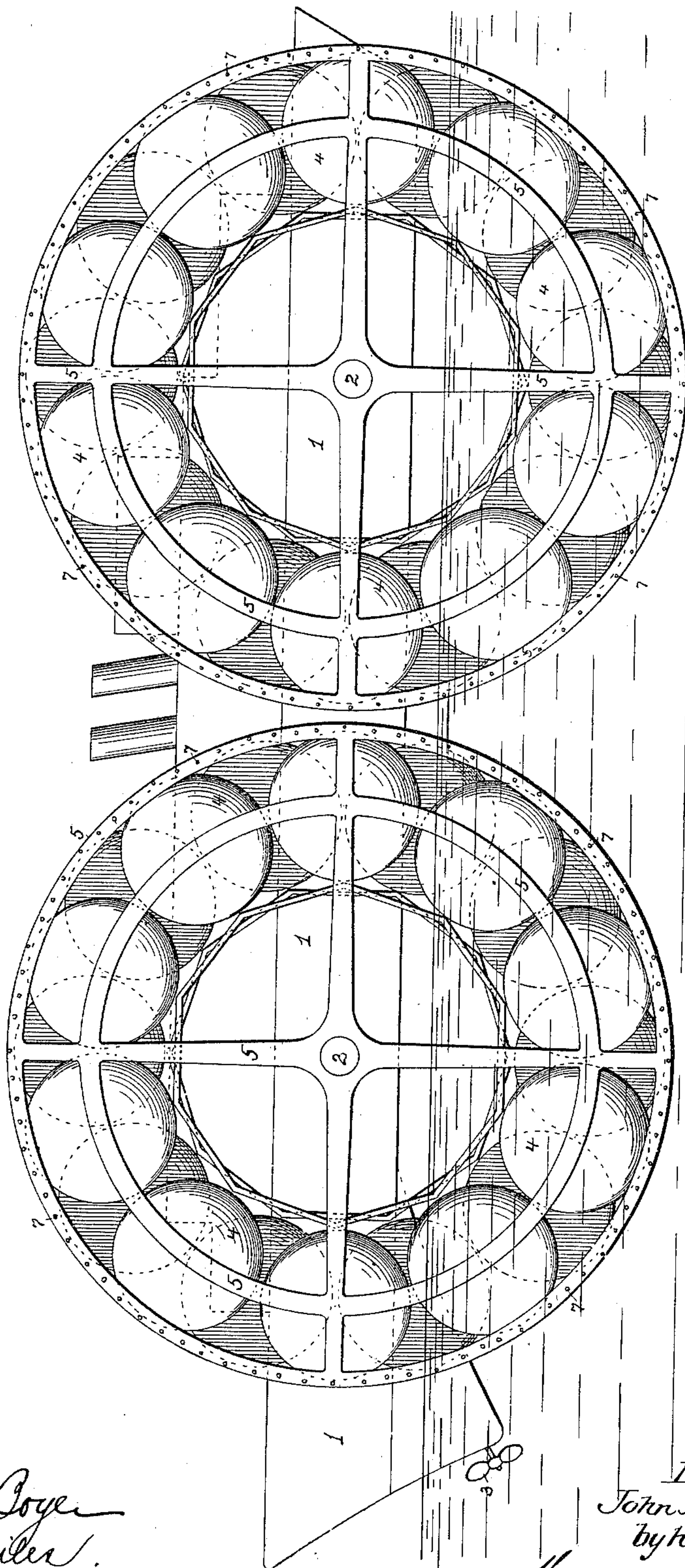
J. M. FEHRENBACH.

CONSTRUCTION OF VESSELS.

(Application filed July 22, 1897. Renewed Aug. 3, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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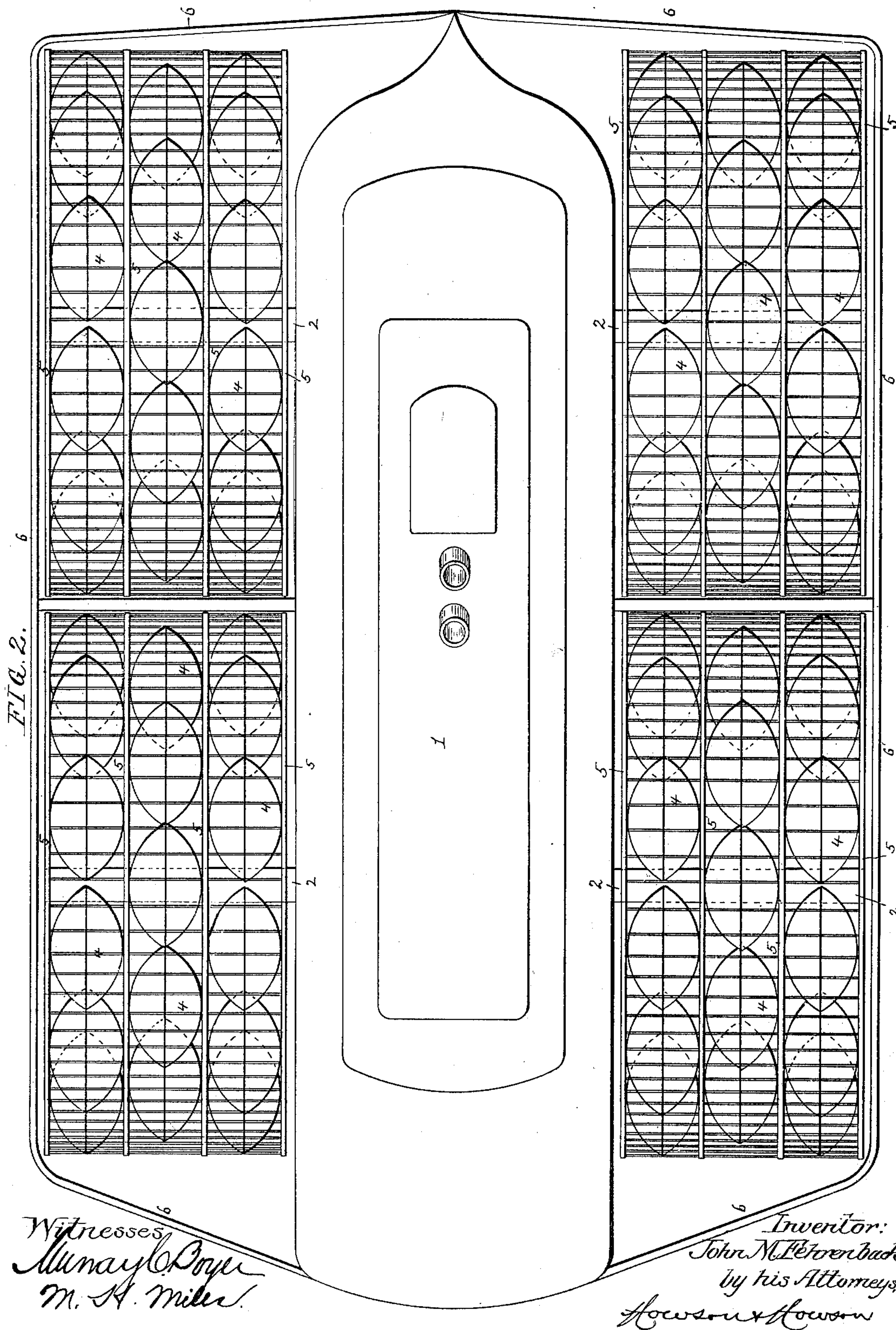
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UNITED STATES PATENT OFFICE.

JOHN M. FEHRENBACH, OF PHILADELPHIA, PENNSYLVANIA.

CONSTRUCTION OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 619,155, dated February 7, 1899.

Application filed July 22, 1897. Renewed August 3, 1898. Serial No. 687,640. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. FEHRENBACH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in the Construction of Vessels, of which the following is a specification.

The object of my invention is to so construct and propel ships as to overcome in great measure the friction due to the forcing through the water of the mass constituting the submerged portion of the hull of an ordinary ship, and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a ship constructed in accordance with my invention, and Fig. 2 is a top or plan view of the same.

It is well known that great power is required to force through the water the mass constituting the immersed portion of the hull of an ordinary ship, and attempts have been made to overcome the defect by the use of circular floats, carrying above the surface of the water the structure of the ship containing the motive power and accommodations for passengers, crew, and cargo, the ship being provided with propelling devices of ordinary character and the theory being that the rotation of the floats would lessen the friction, and thus facilitate the propulsion of the vessel. It is manifest, however, that the immersed portions of the floats present a body of unvarying cross-sectional area and are practically the equivalent of the immersed portion of an ordinary hull, as they have to displace the water in advance of them as the ship is moved forward.

In carrying out my invention I provide buoyant supports which are capable of moving rearward as the vessel is driven forward, so that instead of having to displace the water in advance of them they simply yield to the backward pressure of the water and retreat before it, acting somewhat after the manner of the wheels of a land-vehicle in their turning movement caused by contact with the surface of the road. In the drawings I have shown a ship provided with two pairs of such buoyant and movable supports, 1 representing the hull or main structure of the ship, which is provided with properly rigid sup-

ports and bearings for the shafts 2, which carry the rotatable float-wheels, the buoyancy of the latter being such that said hull or main structure of the ship will be supported above the surface of the water at all times.

The structure 1 carries the boilers and engines for the operation of the propelling means, which I have shown as a single-screw propeller 3, located at the stern of the ship, although there may be more than one propeller, and propellers of any desired character located in any available position may be employed without departing from the spirit of my invention.

Each of the supporting-wheels consists of a series of floats 4, preferably disposed in the form of a ring and mounted so as to be rigidly retained in their proper position upon suitable framework 5, carried by the shaft 2.

Each of the wheels shown in the drawings has three sets of floats arranged side by side at a sufficient distance apart to permit of the free passage of the water between them, each float being, by preference, of double convex form, so that it will enter the water easily and can be lifted therefrom without carrying up the water with it.

Each of the floats is preferably composed of a water-tight casing of metal filled with cork or other buoyant material, so that in the event of a leak in the casing the float will not lose its buoyant property.

The floats are so proportioned in respect to the supporting structure of the vessel and its load that the wheels will never be immersed to a greater extent than half their diameter, and preferably to a less extent, as shown in the drawings. When the vessel is propelled, therefore, the water acting upon the floats of the supporting-wheels tends to turn said wheels in a manner similar to the operation of an ordinary current-wheel, the only resistance to this movement being that due to the displacement of the water while each float is being carried from the surface of the water to a point beneath the center of the shaft 2 and this being counteracted by the buoyancy of each rising float as it travels from the point beneath the shaft 2 to a point at which it emerges from the water.

While under ordinary circumstances the turning of the supporting-wheels may be ef-

affected solely by the backward pressure of the water upon them as the vessel is moved forward, rotative movement may, if desired, be imparted to the shafts 2, so as to turn the supporting-wheels at a speed commensurate with the speed at which the vessel is driven.

By immersing only a limited portion of each wheel that portion which is under water represents an arc of travel in which a maximum of longitudinal movement is attended by a minimum of vertical movement, these conditions best attaining the desired result.

Of course it will be understood that in carrying out my invention the number of supporting-wheels and the number and shape of the floats in each wheel may be varied indefinitely without departing from the spirit of my invention. An outer shell or hood 6 may inclose these portions of the supporting-wheels which are above water, and each wheel may have its frames 5 connected by bars 7, so as to form a screen for preventing injury to the floats 4.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a vessel structure with supports therefor, each of such supports consisting of a rotatable series of floats, disposed so as to be submerged in succession, and with means for propelling the vessel independently of the rotation of said series of floats, substantially as specified. 30

2. The combination of a vessel structure with supports therefor, each of such supports consisting of a rotatable series of floats disposed so as to be submerged in succession, said series of floats being so mounted upon said structure that one or more floats of each series will be wholly submerged at all times, and means for propelling the vessel independently of the rotation of said series of floats, substantially as specified. 35 40

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN M. FEHRENBACH.

Witnesses:

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