

No. 683,260.

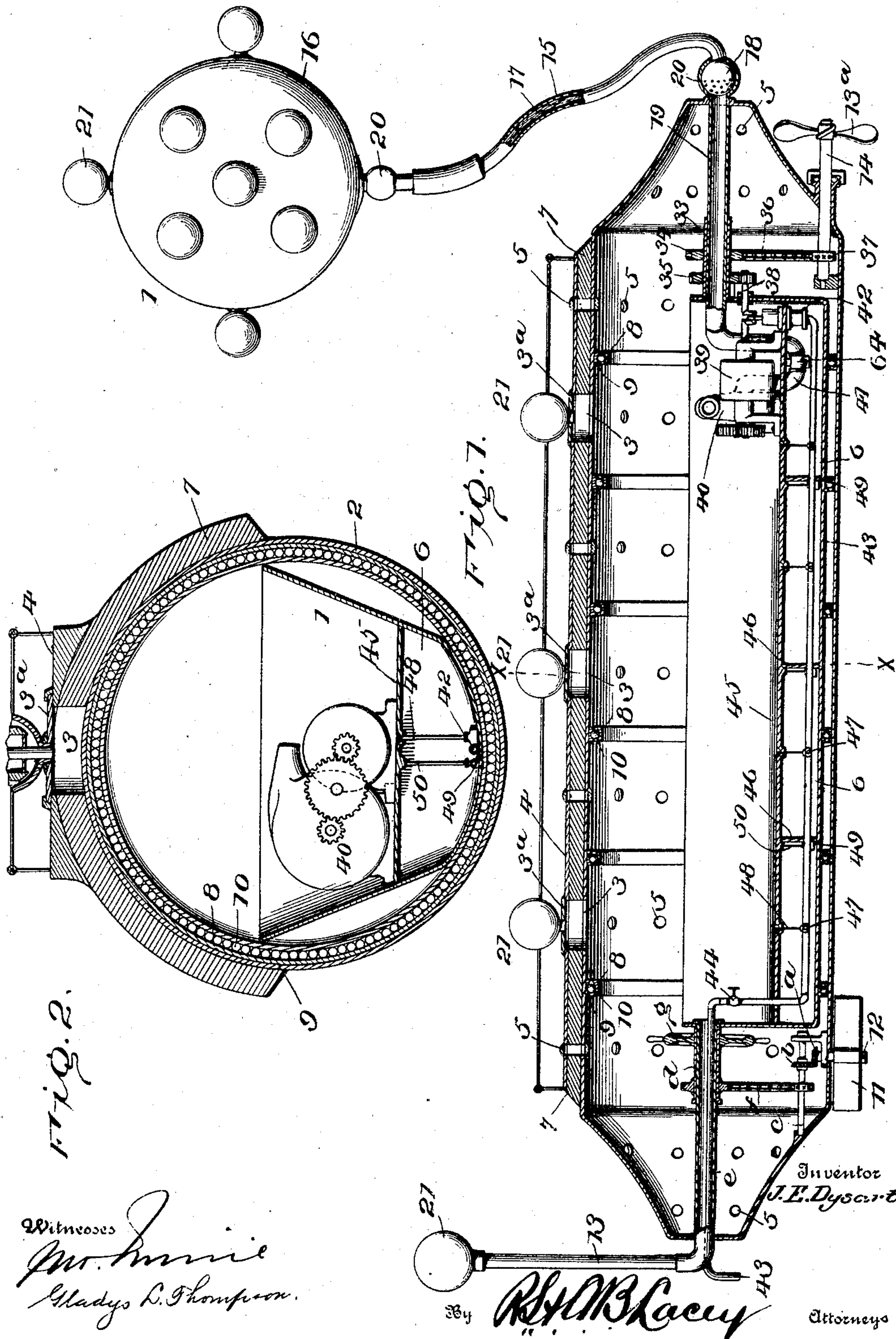
Patented Sept. 24, 1901.

J. E. DYSART.
LIFE BOAT.

(Application filed Nov. 22, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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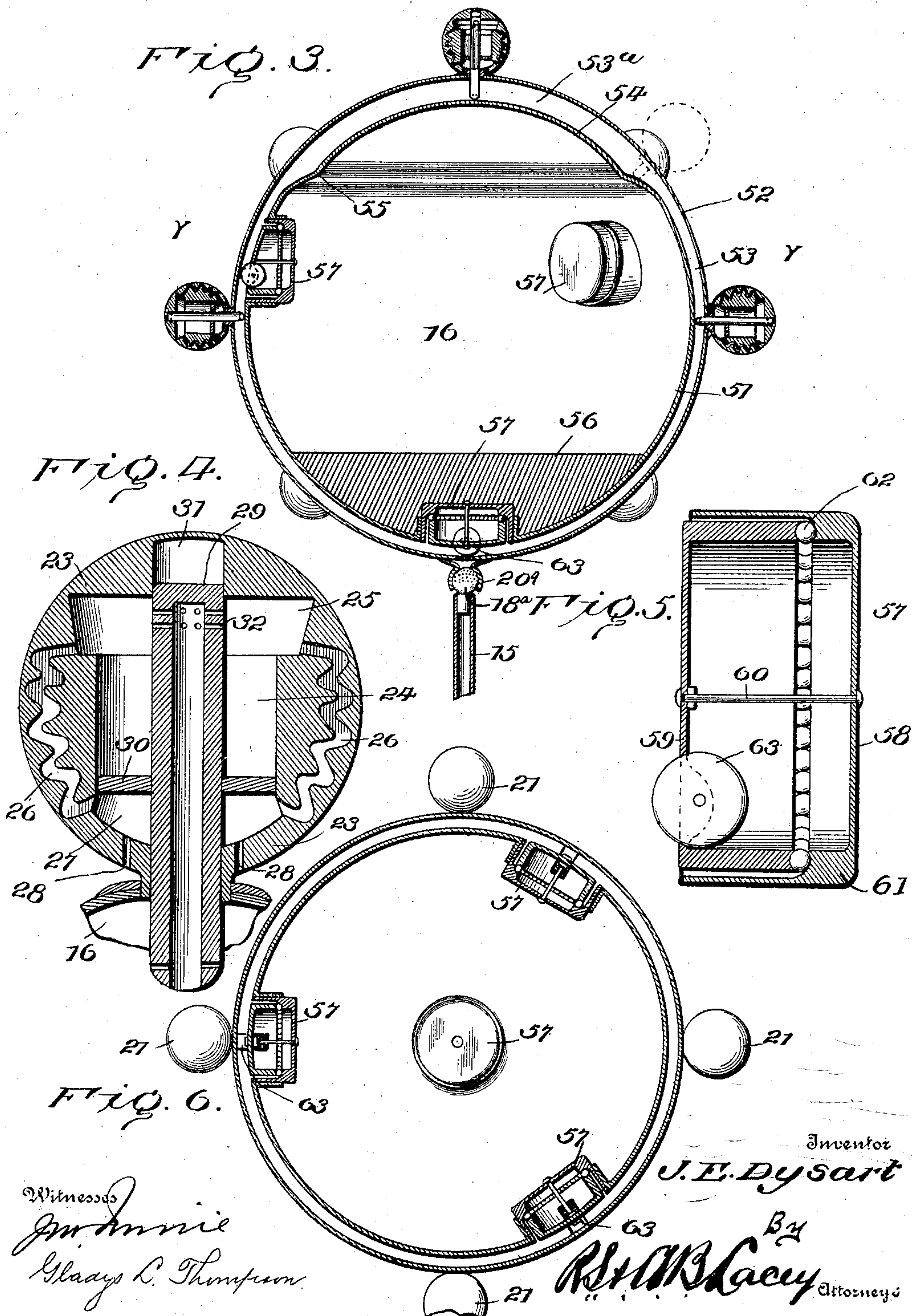
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UNITED STATES PATENT OFFICE.

JOHN E. DYSART, OF CADIZ, OHIO.

LIFE-BOAT.

SPECIFICATION forming part of Letters Patent No. 683,260, dated September 24, 1901.

Application filed November 22, 1900. Serial No. 37,400. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. DYSART, a citizen of the United States, residing at Cadiz, in the county of Harrison and State of Ohio, have
5 invented certain new and useful Improvements in Life-Boats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains
10 to make and use the same.

It is the purpose of this invention to provide a boat which is practically non-sinkable and not adapted to be upset and which will protect the occupants and contents from the
15 water, a circulation of air being maintained under all conditions.

The boat may be of any size and constructed of material best adapted for the purpose, aluminium being preferred because of its light-
20 ness and strength.

The boat consists of inner and outer hulls, with interposed antifriction-bearings, the outer hull being oblong and cylindrical in form and having tapering ends and the in-
25 ner hull having its upper portion removed and constructed to have the weight come below the longitudinal axis of the outer hull, both hulls being ballasted to maintain them in a given position. A float is connected by
30 a tube with the boat and is provided with a plurality of valves automatic in action, closing when submerged and opening when above the water to admit air into the boat.

For a full description of the invention and the merits thereof, and also to acquire a knowl-
35 edge of the details of construction of the means for effecting the result, reference is to be had to the appended description and drawings hereto attached.

40 While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

45 Figure 1 is a central longitudinal section of a boat constructed in accordance with and embodying the essential features of the invention. Fig. 2 is a transverse section about
50 on the line X X of Fig. 1. Fig. 3 is a central section of the float on a larger scale. Fig. 4 is an enlarged section of a valve. Fig. 5 is a sectional detail of a caster operating be-

tween the shells or casings of the float. Fig. 6 is a detail section on the line Y Y of Fig. 3.

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

The body comprises an inner hull 1 and an outer hull 2, the latter being of oblong forma-
60 tion and cylindrical in outline, the ends being tapering or conoidal in shape. The inner hull 1 is preferably of trough shape in transverse section and extends the entire length of the outer hull and may be constructed of
65 wood or metal, whereas the outer hull is preferably constructed of aluminium. Ingress and egress from the boat are effected by means of hatchways 3, which are adapted to be closed by hatches or doors 3^a in order to exclude
70 water when the boat is traveling in turbulent water. A deck 4 is located upon the top side of the outer hull and is protected at its sides by a railing, which forms a safeguard to prevent persons being washed overboard. The
75 outer hull 2 is studded with lights 5, consisting of glass plugs tightly fitted into openings formed therein and which provide a passage for rays of light by means of which the interior of the boat is lighted. The hulls are
80 ballasted in such a manner as to maintain them under normal conditions in a predetermined position—that is, with the deck 4 and the open side of the hull 1 uppermost. The ballast for the inner hull preferably consists
85 of water and is received in a series of compartments 6 at the bottom side of the hull. The outer hull is supplied with buoyant material, which consists, preferably, of a saddle 7, of cork or any light material, or it may be
90 an air-chamber. This buoyant material 7 is fitted to the top portion of the outer hull and extends down along the sides thereof any desired distance to afford a protective covering and maintain the hull 2 in an upright position,
95 or with the deck 4 uppermost.

Antifriction-bearings are interposed between the two hulls to facilitate the turning of the outer hull around the inner hull without displacement of the latter. These bear-
100 ings consist of a series of annular raceways and balls fitted therein. The raceways comprise members 8 and 9 of semicircular formation in transverse section and unitedly form

a raceway of circular form in cross-section. The balls 10 are fitted into said raceways. The members 8 are secured to the hull 1 and the members 9 to the hull 2, and companion members are disposed in coincident relation, so as to register when the two hulls are properly positioned. The boat is steered by means of a rudder 11, which is attached to a vertical shaft 12, extending into the boat, so as to be conveniently manipulated without interference with the free rotation of the hull 2 about the hull 1. Bevel-gearing *a* and *b* connects the shaft 12 with a horizontal shaft *c*, actuated from a tubular shaft *d*, rotatably mounted upon the hollow axis *e* at the bow of the boat by means of a sprocket-chain *f*. This shaft *d* is operated by means of a pilot-wheel *g*, secured thereto. Vitiated air finds an escape through a pipe 13, which extends from the forward end of the boat, the pipe being of such a nature and construction as to maintain a vertical position under all conditions and prevent water passing there-through into the boat. The pipe 13 connects at its lower end with the tubular axis or hollow shaft *e*, attached to the forward end of the hull 1. It is proposed to propel the boat through the water by means of any selected driving mechanism commonly employed in the propulsion of water-craft, and for this purpose a screw-propeller 13^a is illustrated and attached to the outer end of a shaft 14, which is connected with any motive power located within the boat, the gearing being of such nature as not to interfere with the free rotation of the hull 2 with reference to the hull 1.

Fresh air is supplied to the interior of the boat by means of a flexible tube 15 and a valved float 16, the tube 15 having a ball-and-socket connection at its ends with, respectively, the boat and the float. Cords 17 pass through the tube 15 or form a part thereof and are connected at their ends to the ball members of the ball-and-socket joints and relieve the tube 15 of any strain when extended to its utmost limit, thereby preventing rupture thereof and a cutting off of the supply of air to the boat. A metal pipe 19 projects centrally from the rear end of the boat and terminates in a socket 20, of spherical form, which coöperates with the ball 18. A corresponding socket 20^a is applied to the float 16 to receive the ball 18^a at the upper end of the tube 15. These balls are perforated to admit of the free passage of air there-through. The valved float 16 is preferably of ball form and is studded with valves 21, having communication with the tube 15, whereby a supply of air to the boat is assured when any one of the series of valves is above the water. Inasmuch as the valves are of like formation, a detailed description of one only will be given. These valves consist of a ball-shaped casing 23, having a cylindrical chamber 24, an air-space 25 at the upper or outer end of the chamber 24, and tortuous

air-passages 26 in communication at one end with the air-space 25 and connected at their inner or lower ends with an air-space 27 adjacent to the float 16. Openings 28 extend through the inner or lower portion of the casing 23 and communicate with the air-space 27. A tubular valve 29 is mounted to reciprocate in the casing 23 and is provided at a point between its ends with a float 30, which is adapted to operate in the chamber 24. The inner or lower end of the valve 29 is pierced, so as to register with the passage to which the valve is fitted. The outer end of the valve 29 is closed and is adapted to work in a chamber 31, forming a guide, and is provided in its side with a series of openings 32, which are closed by the walls of the chamber 31 when the valve is moved outward and which register with the air-space 25 when the valve moves inward. The topmost valve, when not submerged, occupies a position with the openings 32 in register with the air-space 25. Air entering the openings 28 passes into the space 27, thence through the passages 26 into the space 25, through the openings 32 into the valve 29, from the latter through the passage, and thence to the interior of the boat by way of the tube 15, as will be readily comprehended. When the valve becomes submerged, water enters the openings 28 and passes into the space 27 and lifts the float 30 and valve 29 into the chamber 31, preventing the entrance of water into the boat in a manner similar to the air supplied thereto. A valve 21 is fitted to the upper end of the pipe 13 and to each of the hatches 3^a for the purpose of securing circulation of air through the boat.

The pipe 19 constitutes a hollow axis at the stern of the boat and, like the pipe *e*, is rigidly attached to the hull 1 and passes through the conical end of the hull 2. A sleeve or tubular shaft 33 is rotatably mounted upon the axis 19 and is provided with a sprocket-wheel 34 and a gear-wheel 35, and a sprocket-chain 36 connects the sprocket-wheel 34 with a corresponding sprocket-pinion 37, secured to the propeller-shaft 14. A power-driven shaft 38 is geared to the tubular shaft 33 and is operated by means of a motor 39 of any selected type and which in the present instance is illustrated as an electric motor adapted to be driven by storage battery or other electromotive force. (Not shown.) This motor 39 is conveniently located and is preferably arranged at the stern of the boat to operate the propeller, pump, and fan, which are situated, by preference, at this part of the boat. The fan 40 for supplying air and creating a circulation through the boat is driven by means of the motor through suitable connections, such as illustrated most clearly in Fig. 2. A pipe 41 connects the fan with the pipe 19, through which the air is drawn into the boat from the float 16. The pump 42 is operated by means of the motor 39 through appropriate connections and is adapted to expel the

ballast-water and any other water that may find its way into the boat through the hatchways or in any other way. A pipe 43 connects with the pump 42 and passes along the lower portion of the hull 1 and thence up and out through the tubular axis *e*, with its delivery end bent downward, so as to normally be submerged. A valve 44 is provided in the length of the pipe 43 to control the passage of water therethrough in its inflow and outflow.

The compartments 6 are located at the lower portion of the hull 1 and are formed between the bottom thereof, the false bottom 45, the sides, and transverse partitions 46, attached at their edges to the inclosing walls of the said compartments. The pipe 43 passes through the series of compartments and is provided with valves 47, one for each compartment and adapted to be operated by stems 48, which have their upper ends fitted in depressions formed in the false bottom 45 and adapted to have a key fitted thereto when operating the valve. The valves 47 are constructed to establish communication between the respective compartments 6 and the pipe 43. Hence any compartment of the series can be flooded, drained, or partially filled with water, as may be desired. Gates or valves 49 are provided at the lowermost edges of the partitions 46 to establish communication between adjacent compartments, whereby water may pass from one to the other in order to distribute the ballast without admitting more water through the pipe 43 into the boat. These gates or valves are adapted to be operated by stems 50, which terminate at their upper ends about flush with the false bottom 45 in a manner similar to the stems 48. The compartments 6 are likewise adapted to serve as receptacles for articles to be stowed away, and in the event of the boat being propelled by electricity the storage battery (not shown) may be placed in one or more of said compartments. The water serving as ballast is adapted to flow into any desired compartment either by siphon or hydrostatic action or by a combination thereof, and when it is desired to expel water the pump is set in motion and the valve establishing communication between the compartment to be drained and the pipe 43 is opened, thereby permitting the water to be forced from said compartment out through the pipe 43, as will be readily comprehended.

The float 16 is hollow and is globular in shape and is composed of an inner shell or casing 51 and an outer shell 52, between which a space 53 is formed and with which the flexible tube 15 connects. All the valves 21, fitted to the outer casing 52, are adapted to communicate with the space 53 at its upper end when opposite the depressed crown portion 54 of the inner shell or casing 51. The crown 54 is formed on a radius of less length than the radius of the circle corresponding with the circumference of the casing

51. Hence the space 53^a between the crown portion 54 and the opposing inner wall of the casing 52 is greater than the space 53, and any valve or valves coming opposite the said space 53^a can open under favorable conditions by reason of the inward movement of the parts 29 to bring the openings 32 therein in register with the air-space 25. The portion 55, connecting the base of the crown 54 with the adjacent portion of the casing 51, is inclined at an obtuse angle and constitutes an inclined plane or cam for the inner ends of the valves 29 to ride upon in their opening-and-closing action. In order to maintain the crown 54 at the highest point, the diametrically opposite portion of the casing 51 is supplied with a ballast 56 of any suitable material, but so arranged as not to change its position with reference to the casing 51.

In order to reduce the friction between the casings 51 and 52, antifriction-bearings are provided and are constructed in the shape of casters. (Shown most clearly in Fig. 5.) In practice four casters 57 are employed, one being located at the bottom or lowest point of the casing 51 and three above the center and equally spaced from one another. The casters comprise in their construction oppositely-disposed cups 58 and 59, connected centrally by a bolt 60, which forms an axis for the inner cup 59 to turn about. The cup 58 is attached to the casing 51 in any substantial manner, and the inner portion of its rim or side walls adjacent to the closed end is thickened, as shown at 61, and depressed in its outer edge to form a raceway. The cup 59 fits loosely within the cup 58, and the edge of its rim or side walls is correspondingly depressed to form a raceway to match the raceway in the part 61, and balls 62 are fitted in the raceways and admit of the cup 59 turning freely and accommodating itself so as to position the caster-wheel 63 in line with the direction of movement of the casing 52 with reference to the casing 51. The caster-wheel 63 is set to one side of the axis 60 and is adapted to travel upon the inner wall of the casing 52.

The float 16, in addition to its primal function of admitting an uninterrupted supply of air to the boat, also serves to facilitate the steering of the boat, which is of material advantage in turbulent water and high seas. The float 16, being connected with the stern of the boat by the flexible connection 15, exerts a draft in the wake of the boat, which tends to hold the boat to its course, thereby enabling the boat to be held out of the trough of the sea.

The valves applied to the hatches provide an escape for vitiated air and enable a circulation of air through the boat being maintained. The pipe 41 is of approximately U form and constitutes a trap to catch any water that may enter through the float. A valve 64 is located at the lowest point of the pipe 41 to automatically drain any water there-

from into the adjacent compartment 6 to be pumped off when required.

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

- 5 1. In combination with a boat, a valved float, a flexible tube connecting the float with the boat and having a ball-and-socket connection with each.
2. Means for supplying air to a boat, the
10 same consisting of a float studded with automatically-actuated valves, each communicating with the interior thereof, substantially as set forth.
3. Means for supplying air to a boat, the
15 same consisting of a float composed of inner and outer concentric shells, the inner shell having a crown portion depressed or of less radius than the major portion of the shell, whereby the space between it and the outer
20 shell is greater than the space between the major portion of the inner shell and the outer shell, and automatic valves applied to the outer shell and normally closed by contact with the inner shell and adapted to open when
25 opposite the said depressed portion of the inner shell, substantially as set forth.
4. Means for supplying air to a boat, consisting of inner and outer concentric shells spaced apart and free to move one upon the
30 other, the inner shell having its lower portion provided with a ballast and its upper portion of less radius forming a depressed crown and having the part connecting the said depressed crown with the remaining portion of the shell
35 forming an obtuse angle, and valves applied to the outer casing and normally closed by contact with the inner shell and adapted to open when opposite the aforesaid depressed crown of the inner shell, substantially as set
40 forth.
5. Means for supplying air to a boat consisting of inner and outer concentric shells adapted to move freely one upon the other, automatic valves applied to the outer shell,
45 and caster-bearings between the two shells consisting of oppositely-disposed cups having antifriction-bearings between matching parts

and provided with caster-wheels, substantially as set forth.

6. A boat comprising inner and outer hulls, 50 the inner hull having a compartment in its lower portion to receive ballast, and a valved pipe in communication with the said compartment at one end and adapted to have its opposite end submerged, substantially as set 55 forth.

7. A boat comprising inner and outer hulls, the inner hull having a compartment in its lower portion to receive ballast, a valved pipe in communication with said compart- 60 ment and having its outer end submerged, and a pump applied to said pipe, as and for the purpose set forth.

8. A boat comprising inner and outer hulls, the inner hull having its lower portion pro- 65 vided with independent compartments, and a pipe extending through the several compartments and having valved communication with each and having its outer end submerged, substantially as set forth. 70

9. In a boat comprising inner and outer hulls, the inner hull having its lower portion subdivided into a series of compartments, a pipe having valved communication with each of the compartments and adapted to have its 75 outer end submerged, and valves applied to the lower portion of the partitions separating the compartments to effect communication therebetween, substantially as set forth.

10. In combination, inner and outer hulls, 80 a pipe constituting an axis common to said hulls and constituting a passage-way between the inner hull and the outer air, and a tubular shaft rotatably mounted upon said pipe and provided with gearing to transmit motion 85 to the part to be operated, substantially as set forth.

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

JOHN E. DYSART.

Witnesses:

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GEO. E. GLOVER.