

No. 721,690.

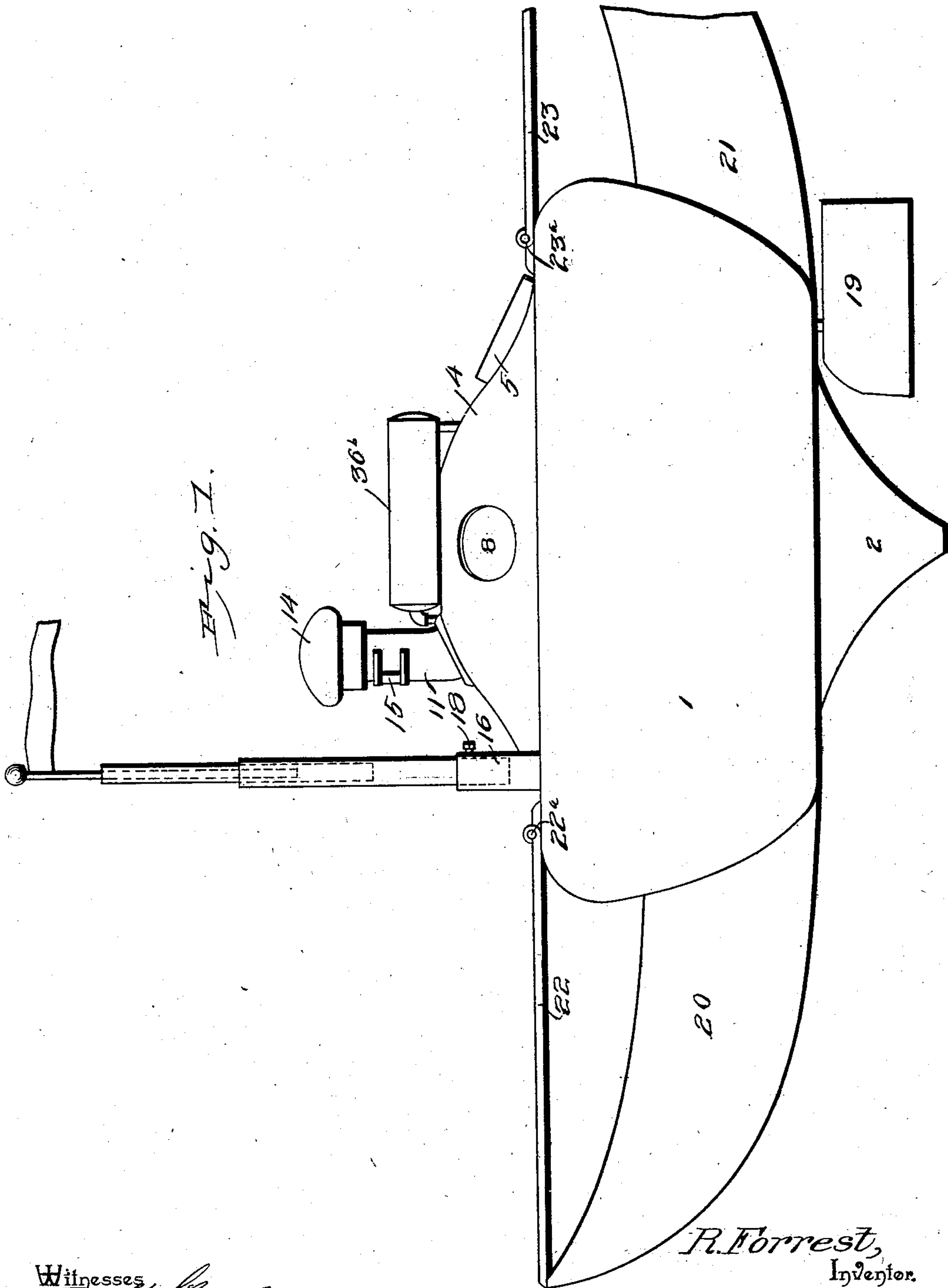
PATENTED MAR. 3, 1903.

R. FORREST.  
LIFE BOAT.

APPLICATION FILED MAR. 1, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses  
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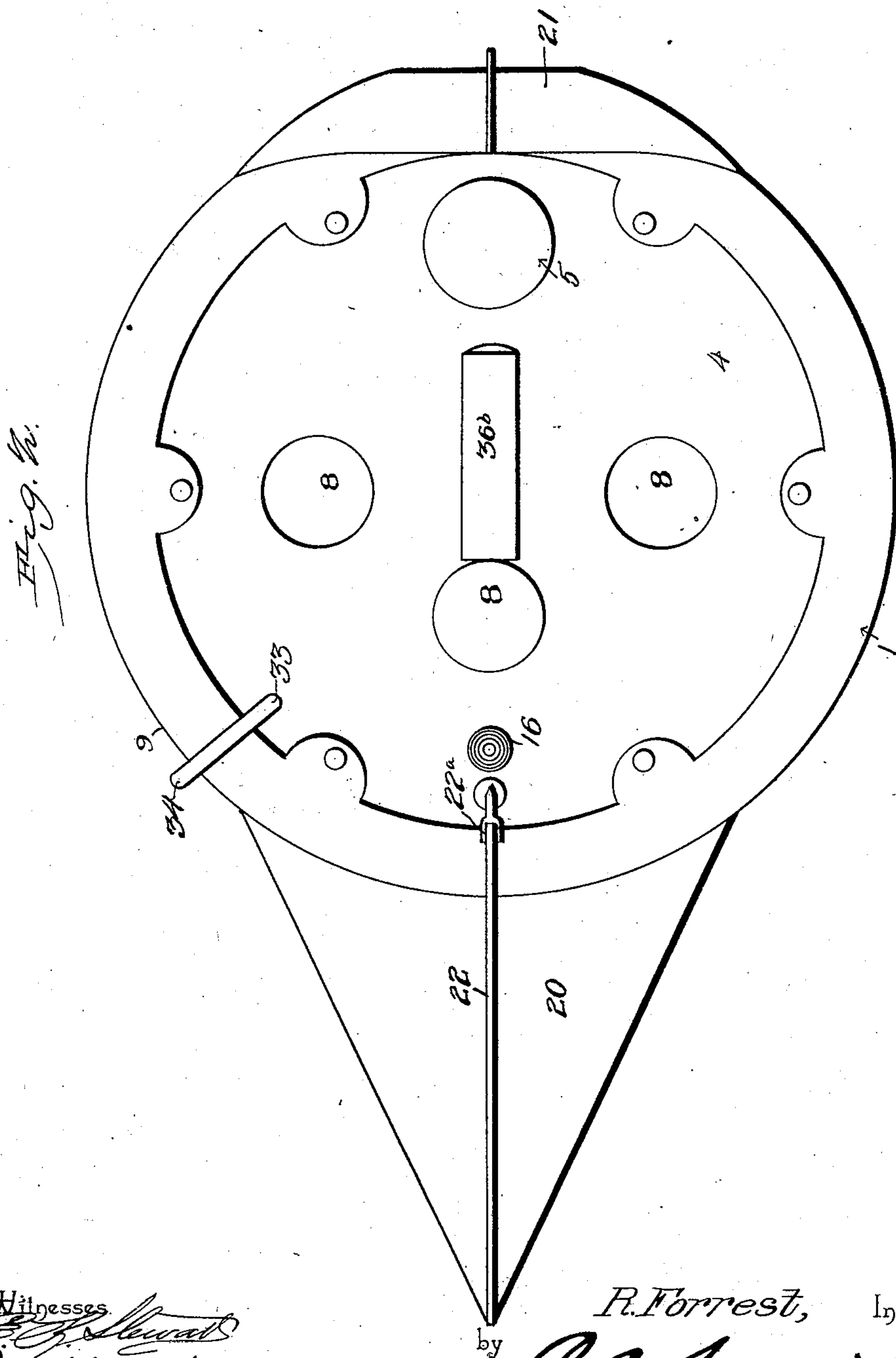
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3 SHEETS—SHEET 2.



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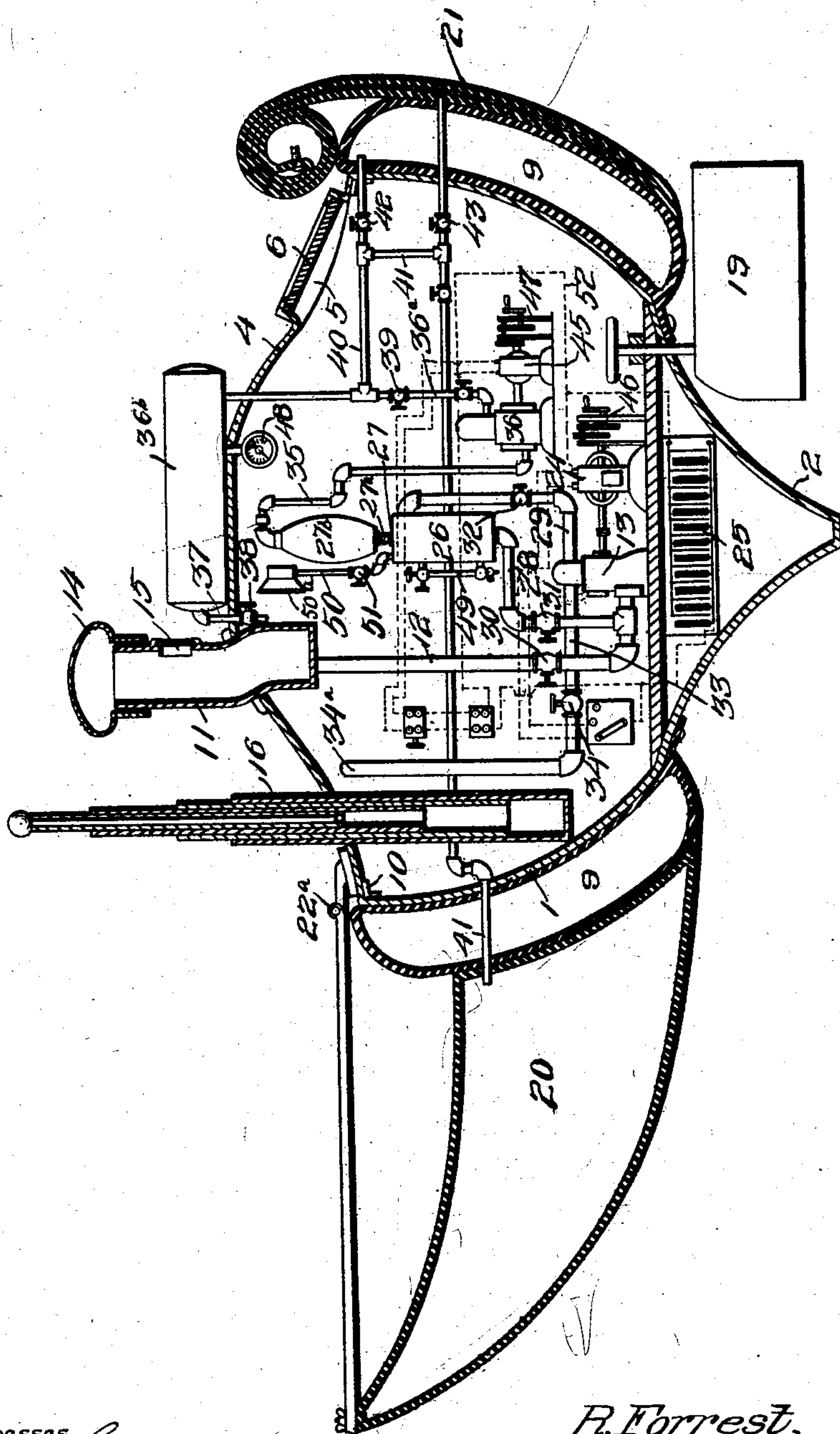
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3 SHEETS—SHEET 3.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

ROLLAND FORREST, OF PHILADELPHIA, PENNSYLVANIA.

## LIFE-BOAT.

SPECIFICATION forming part of Letters Patent No. 721,690, dated March 3, 1903.

Application filed March 1, 1902. Serial No. 96,286. (No model.)

*To all whom it may concern:*

Be it known that I, ROLLAND FORREST, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Life-Boat, of which the following is a specification.

This invention relates to life-saving apparatus, and has for its object the production of an apparatus wherein shipwrecked persons may be securely protected from the sea and storm, while being at the same time supplied with the necessary pure air.

Another object of the invention is the production of an apparatus wherein provision is made for guiding the apparatus in favorable weather and also placing it in condition to resist the action of the sea during stormy weather.

The invention further consists in certain novel features of construction, all as hereinafter shown and described and then specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of the apparatus complete, and Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal sectional view.

In this apparatus is comprised a closed vessel 1, preferably of light metal, such as aluminium, properly braced and supported and of any approved form, although preferably approximately hemispherical, and with the lower part 2 depending below the hemispherical portion to provide for the storage of ballast to insure the proper steadiness of the vessel and its maintenance in its upright position in the water. The vessel is closed by a deck 4, preferably curving upward to insure an arching construction to offer the necessary resistance to the action of the sea. The walls of the vessel will preferably be of sheet metal as light as is consistent with the requisite strength and properly braced and stayed. The metal employed will preferably be aluminium, although I do not wish to be limited to any particular material or to any specific form of construction or contour of the vessel. A suitably-constructed hatchway 5 will be formed in the deck 4 and provided with a cover 6, which will be secured with water-tight joints by any suitable or approved means, the hatchway providing for the ingress and egress

of the passengers. The cover of the hatchway will be arranged to be opened and closed from the interior, so that it may be under the control of the passengers within the vessel. A suitable number of properly-protected water-tight "bull's-eyes" or windows 8 will be arranged in the deck 4 to afford the necessary light to the interior of the vessel.

Surrounding the upper portion of the vessel 1 is a flexible envelop 9, formed of rubber, canvas, or other suitable material or combinations of material and properly secured to the vessel at suitable intervals, as by clips or clamps 10, and adapted to be inflated to provide a buoyant elastic cushion entirely around the vessel, which not only greatly increases the buoyancy of the vessel, but also serves as an efficient protection to the vessel against concussions from the waves or rocks or other hard substances. The envelop 9 may be of any suitable material, such as rubber, canvas, leather, or a combination of rubber and canvas or leather or other suitable material by which the desired objects may be attained and which will properly resist the strains and hard usage to which it is liable to be subjected. The envelop 9 may be further protected by a steel or other wire netting, if preferred.

Rising through the deck 4 at one or more points are air-shafts 11, projecting a short distance above the deck and also projecting for some distance downward into the interior of the vessel, as shown, and each connected by a pipe 12 to the inlet of a pump 13, the object to be hereinafter explained. Each of the air-shafts is provided with a hood 14 on its upper end, which is so arranged that any weight or other force exerted upon it from the outside will cause it to close the inlet to the air-shaft. By this means any waves breaking over the vessel will close the hood 14 and prevent the air-shaft being flooded. Some water will, however, necessarily enter the air-shaft, and the portion of the air-shaft depending below the deck 4 provides for the reception of this water. Means must therefore be provided during stormy weather whereby air may be taken in through the air-shaft without admitting water, and such means are provided as hereinafter explained. Each air-shaft will likewise be provided with



a door 15, adapted to be closed air-tight when required and through which the air may be received in calm weather.

Rising from the deck 4 at one side is a short  
5 tube 16, in which a mast may be stepped, the  
mast being preferably tubular and formed in  
a series of concentric telescopic tubular sec-  
tions adapted to be "nested" down into the  
interior of the vessel when not in use, as shown  
10 in Fig. 3, or distended and held in place by  
a set-screw 18 and adapted to support a sail  
when the weather will permit to assist in  
guiding the vessel and enabling the passen-  
15 gers to cause the vessel to move through the  
water. To insure the proper control of the  
apparatus when the mast and sail are in use,  
a properly-constructed rudder 19 will also be  
provided at the side of the vessel opposite to  
the mast, as shown.

20 Attached to the sides of the vessel at two  
diametrically opposite points in alinement  
with the mast and rudder are triangular-  
shaped bags 20 21, of rubber or canvas or  
other suitable materials or compounds of ma-  
25 terials, suitably supported by braces 22 23  
and adapted to be inflated with air. By this  
means the length of the apparatus may be  
materially increased and transformed into a  
more boat-like form, whereby its buoyancy  
30 may not only be very materially increased,  
but its steering qualities greatly improved.  
The braces 22 23 are connected by hinged and  
detachable joints 22<sup>a</sup> 23<sup>a</sup> to the vessel, so that  
they can be folded over upon the deck 4 when  
35 the end projections 20 21 are collapsed and  
not in use, as indicated at the left of Fig. 3,  
wherein one of the bags is shown collapsed  
and rolled up. When the seas are too violent  
to permit the hatch 5 to be opened or the mast  
40 and sail to be employed, the ends 20 21 will  
be collapsed and folded over upon the deck  
4 and the braces 22 23 properly secured, so  
that the surface presented to the seas will be  
decreased and the tendency of the vessel to  
45 roll thereby correspondingly decreased; also,  
when the seas are too violent to permit the  
hatchway 5 to be opened some provision must  
be made to furnish fresh air to the passen-  
gers, and suitable means are provided for this  
50 purpose, which are clearly shown in Fig. 3.

Within the vessel, or what may be denomi-  
nated the "hold," is arranged an apparatus  
by which the passengers may not only be sup-  
plied with the necessary pure air when the  
55 seas are too rough to permit the hatchways  
and air-shafts to be open, but also arranged  
to discharge the foul air from the interior of  
the vessel. This apparatus consists in a wa-  
ter-pump 13, preferably adapted to be driven  
60 by an electric motor 24, suitably coupled  
thereto, the motor in turn adapted to be  
driven by a storage battery 25, located in the  
lowermost part of the vessel 1, and thereby  
not only serving as an adequate source of  
65 power for operating the motor and pump, but  
also as ballast to insure the proper steadiness  
of the vessel and its proper vertical position

in the water. The pump and motor will be  
located centrally of the vessel and at the low-  
est possible point for the same purpose. The  
70 intake 12 of the pump, as before stated, is  
connected into the bottom of the air-shaft 11,  
and if more than one air-shaft is employed  
all the air-shafts will be coupled into one pipe,  
so that the contents of all the air-shafts will  
75 lead to the one intake of the pump 13.

Located, preferably, above the pump 13  
and as near centrally of the vessel as possi-  
ble is a tank 26, preferably of sheet metal as  
light as possible, and above this tank and con-  
80 nected with it by a pipe 27, having a check-  
valve 27<sup>a</sup>, is an air-chamber 27<sup>b</sup>, the bottom  
of the tank 26 being coupled by pipe 28 to  
the intake 12 of the pump 13, while the upper  
part of the tank is coupled by pipe 29 to the  
85 outlet of the pump 13, as shown. The pipes  
12, 28, and 29 will be supplied with shut-off  
valves 30, 31, and 32, respectively, as shown,  
to control the passage of the air and water  
therethrough, as hereinafter shown. Lead-  
90 ing from the outlet of the pump 13 is another  
outlet-pipe 33, provided with a shut-off valve  
34 and conducted to the outer air as near the  
water-line as possible, as shown at 34<sup>a</sup>.

Leading from the top of the air-chamber 27  
95 is a pipe 35, and conducted to an air-pump 36  
and thence by a pipe 36<sup>a</sup> to an air-receiver 36<sup>b</sup>,  
preferably located on the deck 4, and leading  
from this receiver 36<sup>b</sup> into the interior of the  
vessel, is a pipe 37, provided with a control-  
100 ling-valve 38 and adapted to supply the air  
in proper quantities to the interior of the  
vessel as required. A check-valve 39 will  
be connected into the pipe 37 to prevent the  
air passing backward into the air-chamber 27  
105 as well as to insure the proper maintenance of  
the air-supply in the receiver 36<sup>b</sup>.

Leading from the pipe 35, between the  
check-valve 39 and the receiver 36<sup>b</sup>, is a pipe  
40 with suitable branches 41 and valve 42 43  
110 and adapted to supply the air necessary to  
inflate the end portions 20 21 and the envelop  
9. Each of the ends 20 21 and the envelop  
9 are thus supplied with independent means  
of inflation, so that any one of them may be  
115 inflated or collapsed without in any manner  
affecting the other.

The pump 36 is connected to be operated  
by a small electric motor 45, adapted to be  
actuated from the battery 25. Each of the  
120 pumps will be provided with means for actu-  
ating it by hand, as at 46 47, in event of the  
failure or exhaustion of the battery 25 or other  
source of electric energy.

The receiver 36<sup>b</sup> will be provided with a  
125 pressure-gage, as indicated at 48, while the  
tank 26 will be supplied with a glass water-  
gage 49, whereby the condition of these parts  
may at all times be ascertained.

The tank 26 will be provided with a pipe 50,  
130 rising to the upper part of the interior of the  
vessel near the deck 4 and preferably provided  
with an outwardly-flaring funnel-shaped  
outlet end 50<sup>a</sup> and also with a controlling-



valve 51 and adapted to exhaust the foul air from the interior of the vessel and discharge it through the tank 26, as shown.

The wiring between the battery 25 and the motors 24 45 is indicated by dotted lines 52 and will be of the ordinary arrangement, but as it forms no part of the present invention is not further described.

In operating the apparatus when the sea is too rough to permit the hatch or air-shafts to be opened the valve 30 will be opened and valve 31 will be closed and the pump 13 actuated by the motor 24, when the pump will take air and water from the ventilator 11 and force it into the tank 26 through the pipe 29. This should be continued until the gage 49 shows that the tank 26 is about three-fourths full of water. The air will be compressed in the upper part of the tank 26 and flow into the air-chamber 27<sup>b</sup> through the check-valve 27<sup>a</sup>. The air-pump 36 will then be operated to fill the receiver 36<sup>b</sup> with air. When the tank 26 has its supply of water and the air-chamber 36<sup>b</sup> has its supply of air, the air-pump 36 is stopped, the valve 30 closed, and the valves 34 and 51 opened. The water in the tank will then be exhausted and forced out through the outlet 34<sup>a</sup>, carrying the foul air drawn through the funnel 50<sup>a</sup> and pipe 50 with it. The requisite fresh air from the air-chamber 36<sup>b</sup> will then be supplied through the valve 38 as required, and when the supply is exhausted from the air-chamber, which will be indicated by the pressure-gage 48, the operation will be repeated, and so on as often as required. By this simple means the supply of fresh air can be maintained continuously and the foul air exhausted at the same time as fast as it is generated and without opening any of the hatchways or other inlets. This is a very important consideration and renders the apparatus available under all circumstances and in all kinds of weather.

Suitable electric-light connections operated from the battery 25 may be arranged to supply light to the interior of the vessel or signal lights to the exterior.

Having thus described my invention, I claim—

1. A vessel having a body portion, and a collapsible, inflatable extension adapted to in-

crease its length over all without increasing its beam.

2. In a life-saving apparatus, an inclosed vessel, an inflatable envelop disposed exteriorly of said vessel, inflatable extensions disposed on diametrically opposite sides of said vessel extending it longitudinally, substantially as described.

3. In a life-saving apparatus, an inclosed vessel, an inflatable envelop disposed exteriorly in said vessel, inflatable extensions disposed on diametrically opposite sides of said vessel and adapted to extend it longitudinally, and means operable from within the vessel for inflating said envelop and extensions, substantially as described.

4. In a life-saving apparatus, an inclosed vessel, an inflatable envelop disposed exteriorly of said vessel, inflatable extensions disposed on diametrically opposite sides of said vessel and adapted to extend said vessel longitudinally and means for independently inflating said envelop and extensions, substantially as described.

5. A vessel having a collapsible, inflatable envelop, collapsible, inflatable longitudinal extensions, and means to inflate said envelop and extensions independently of each other, substantially as described.

6. In a life-saving apparatus, a buoyant vessel, an air-receiver, inflatable extensions disposed upon said vessel and adapted to extend it longitudinally, and means for independently supplying air to said extensions from said receiver, substantially as described.

7. In a life-saving apparatus, a buoyant vessel, an inflatable envelop disposed exteriorly of said vessel, inflatable extensions disposed on diametrically opposite sides of said envelop, and adapted to extend said vessel longitudinally, and means for inflating said envelop and extensions, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROLLAND FORREST.

Witnesses:

JAMES J. MULLEN,  
FRANK GALLAN.