

No. 709,417.

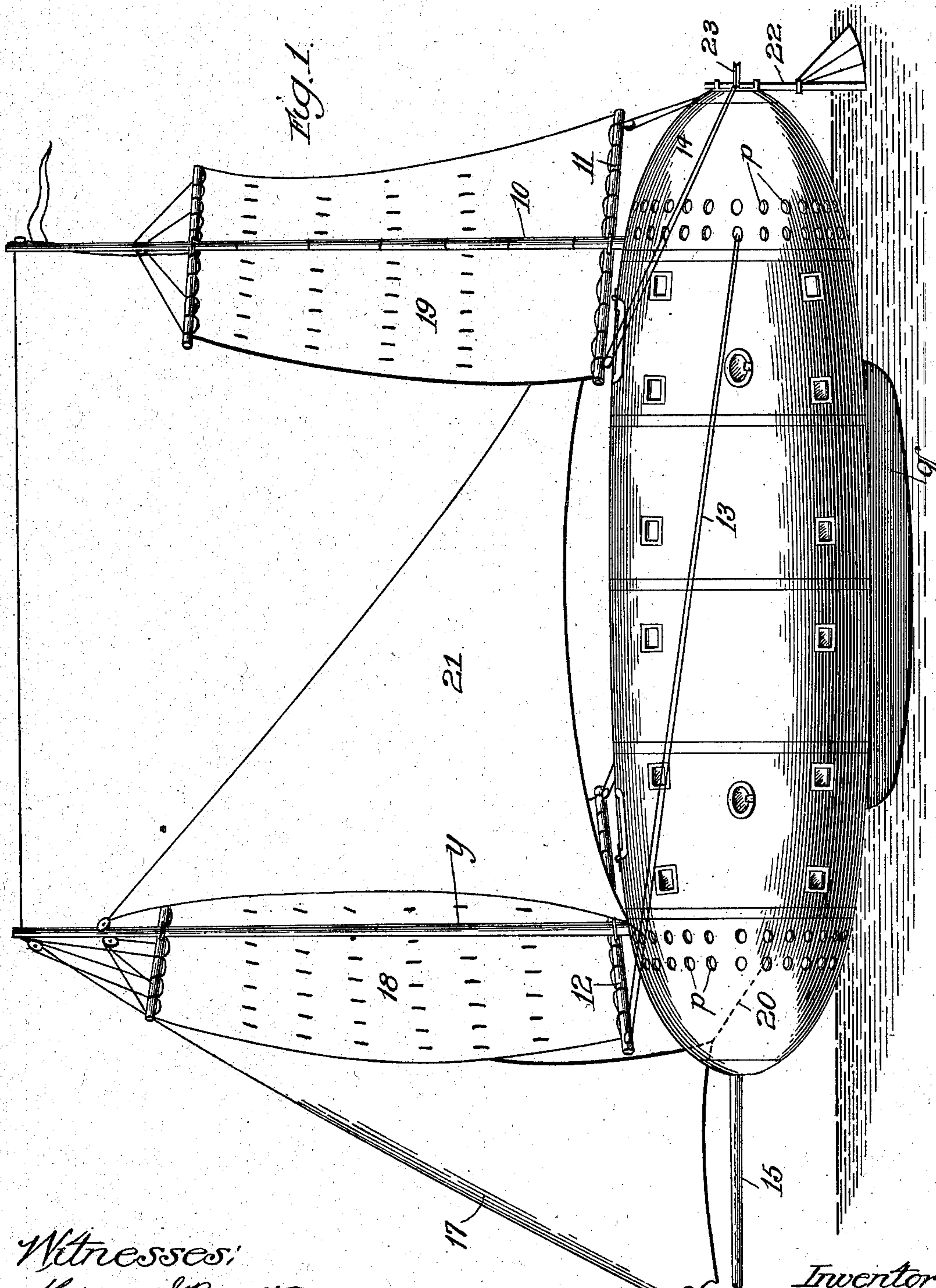
Patented Sept. 16, 1902.

R. D. MAYO.  
LIFE BOAT.

(Application filed Mar. 25, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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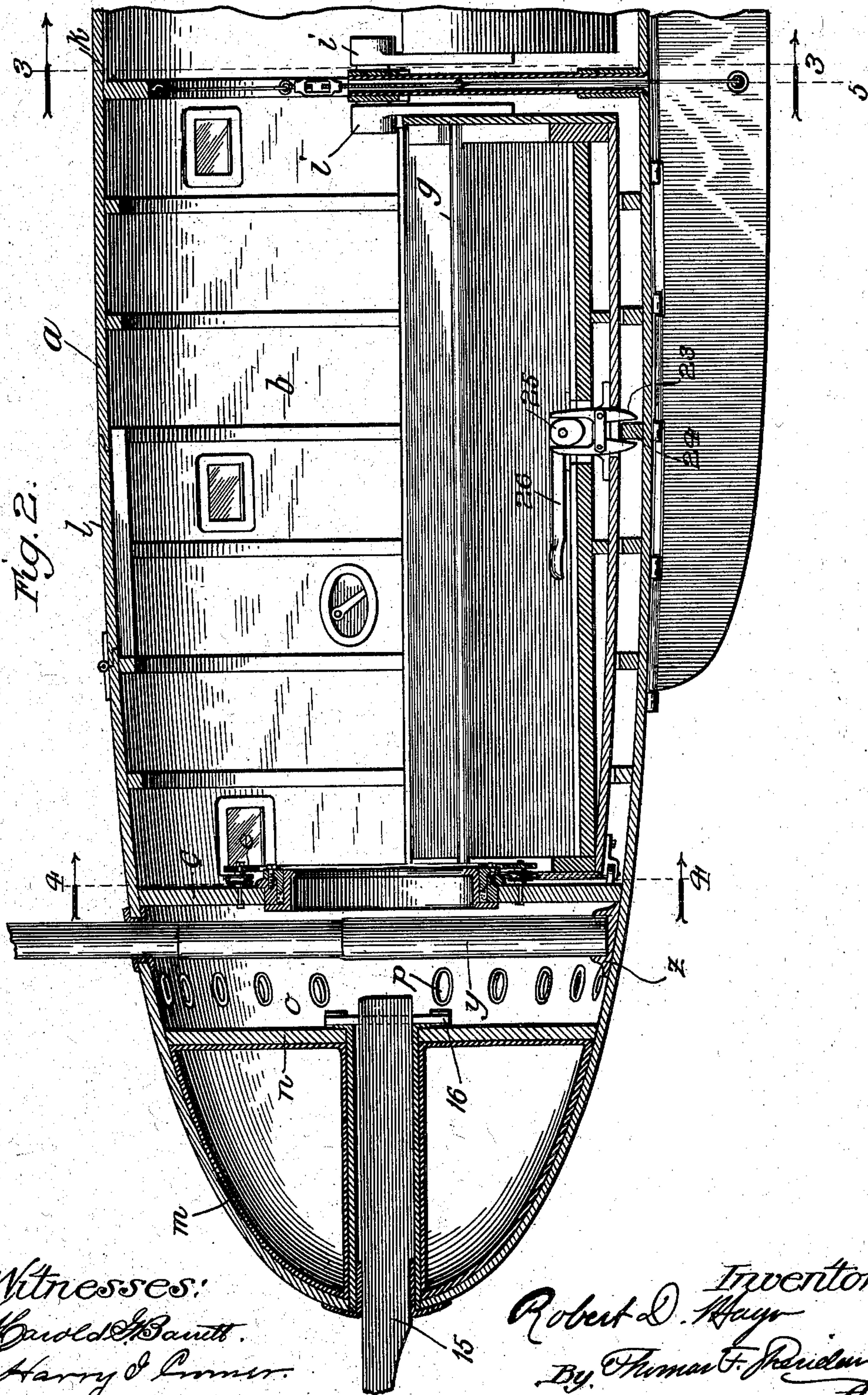
**R. D. MAYO.**

## LIFE BOAT.

(Application filed Mar. 25, 1901.)

(No Model.)

**3 Sheets—Sheet 2.**



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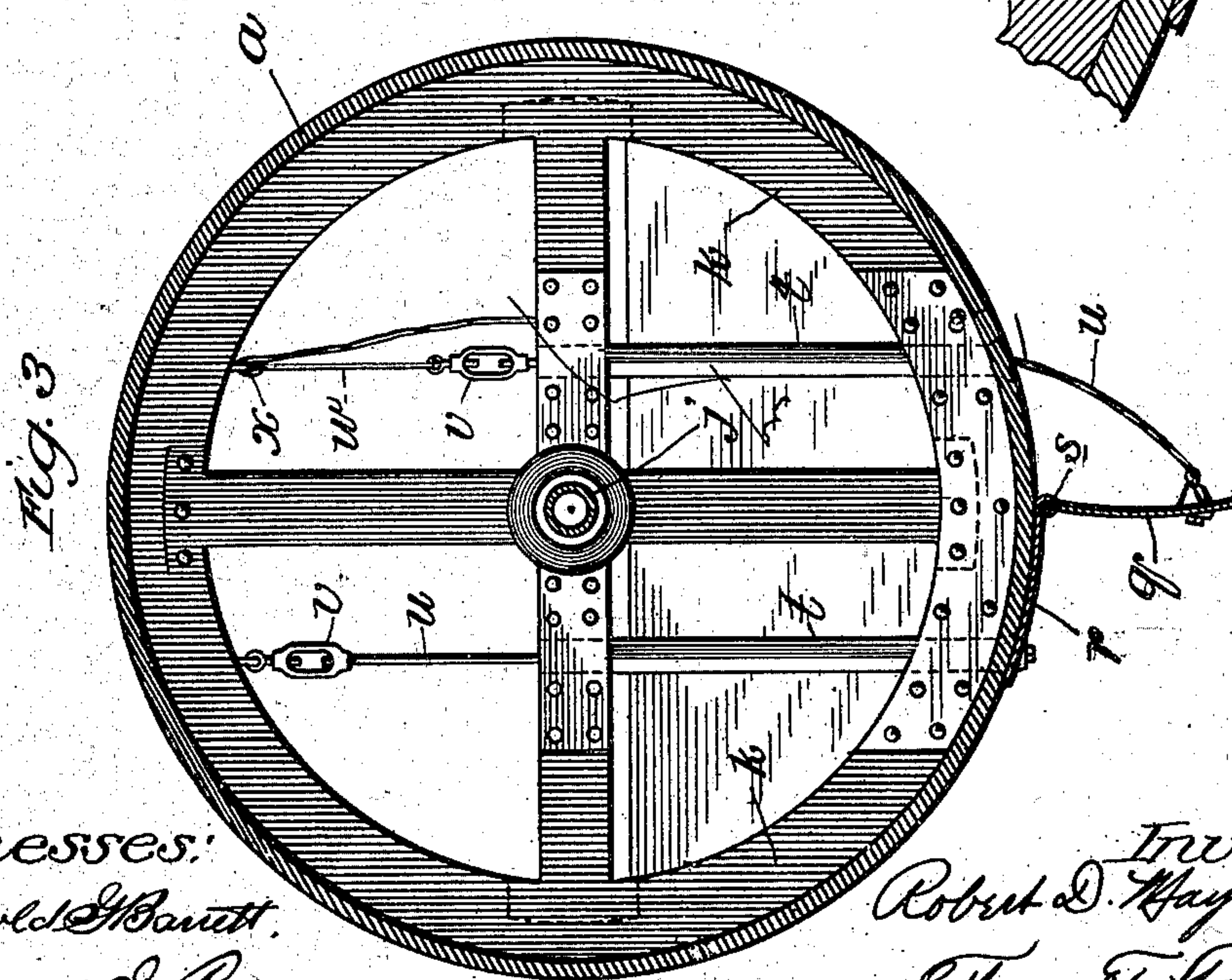
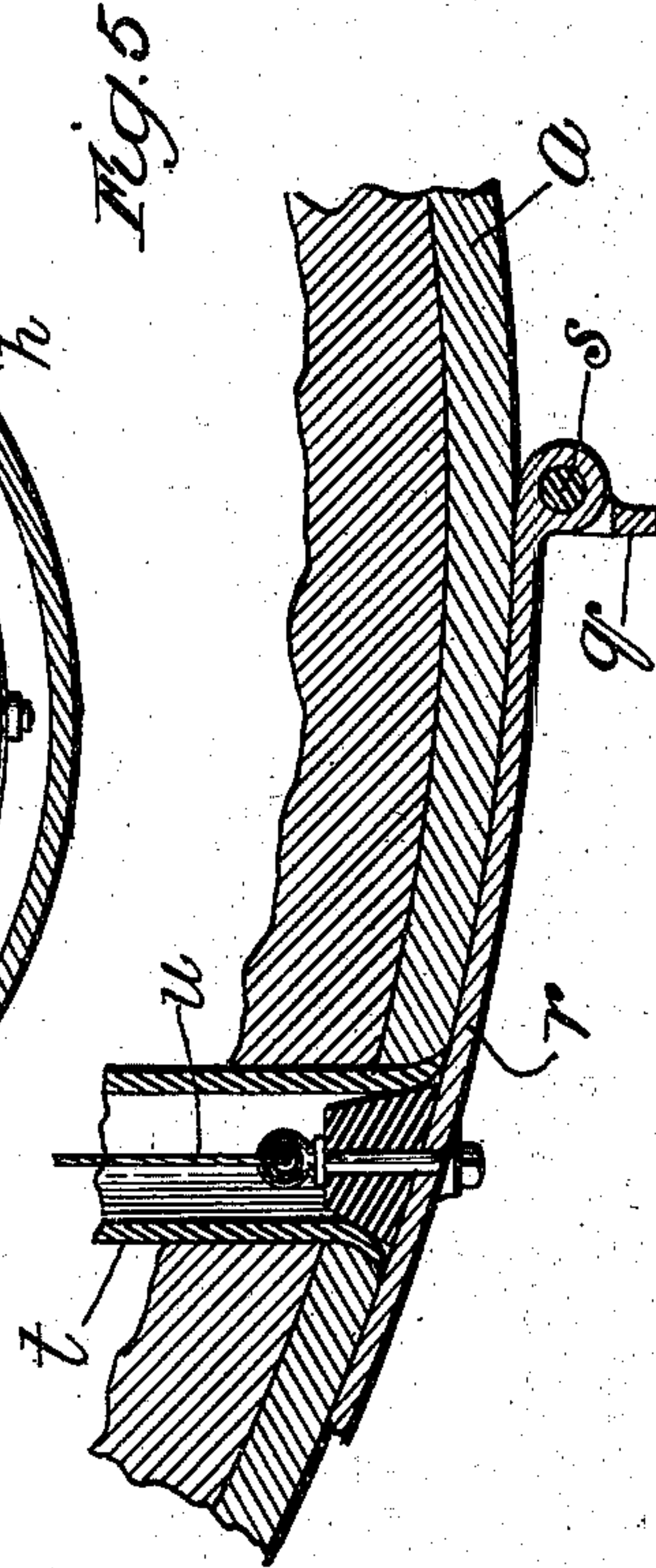
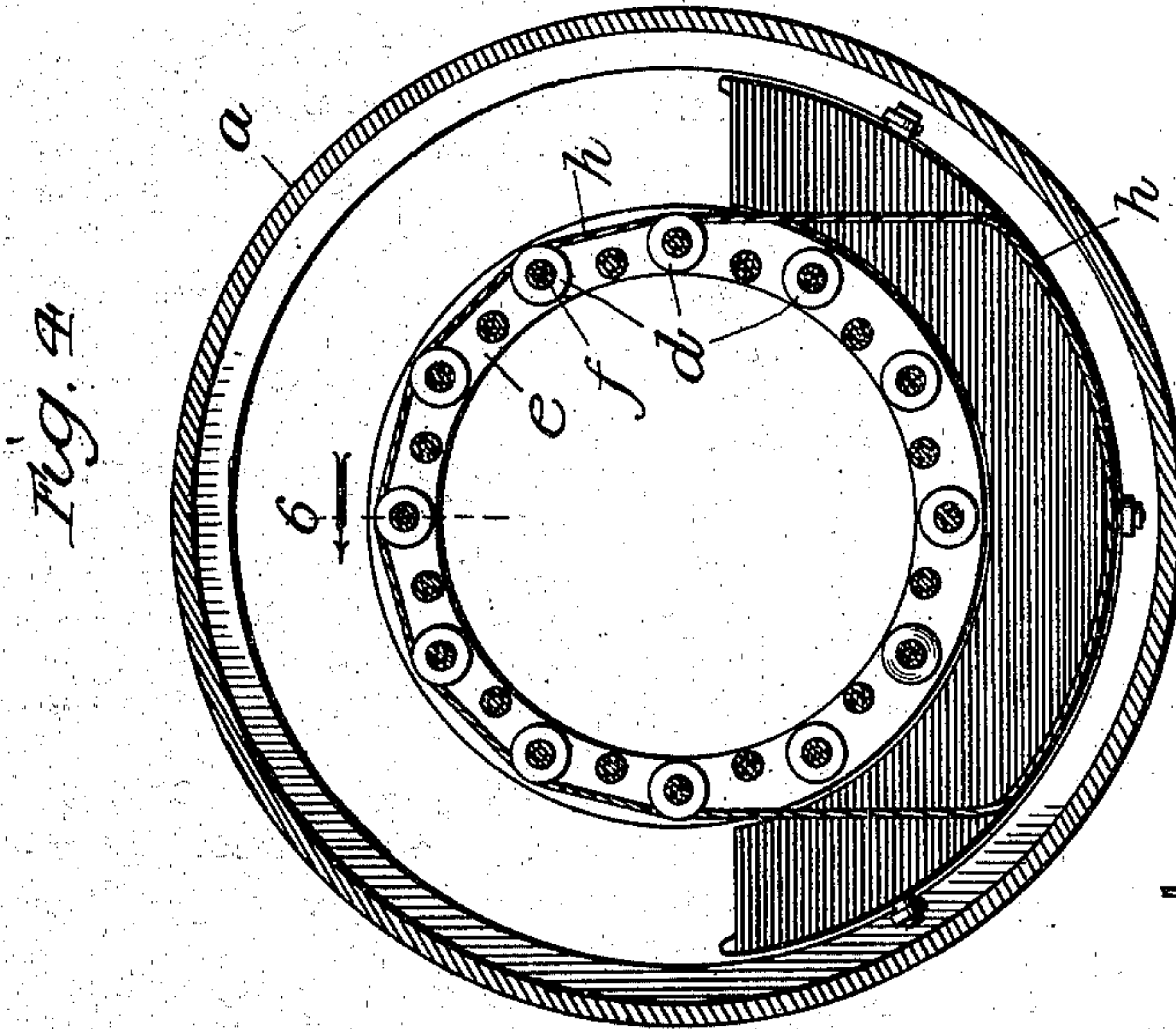
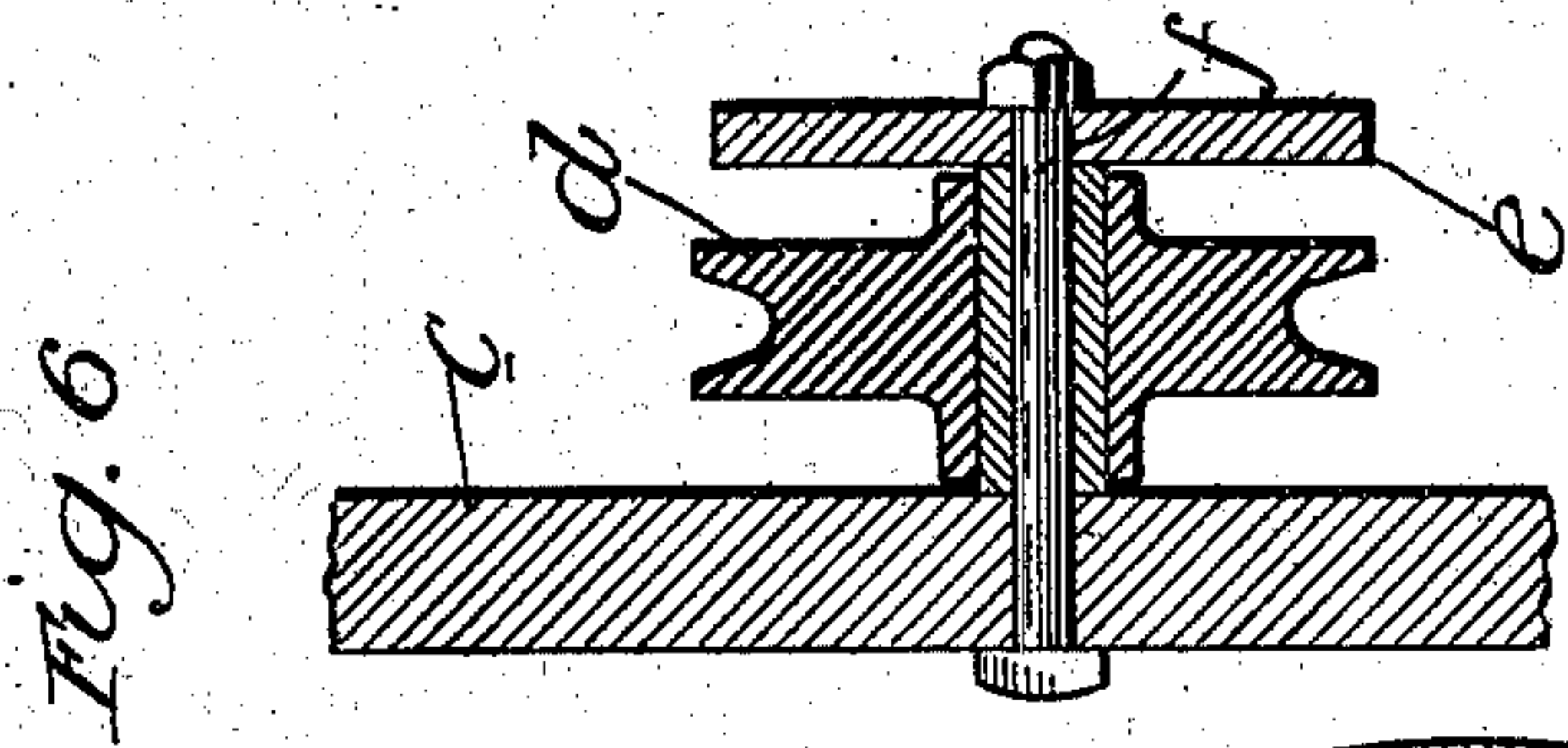
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R. D. MAYO.  
LIFE BOAT.

(Application filed Mar. 25, 1901.)

(No Model.)

3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

ROBERT DIMOND MAYO, OF FRANKFORT, MICHIGAN.

## LIFE-BOAT.

SPECIFICATION forming part of Letters Patent No. 709,417, dated September 16, 1902.

Application filed March 25, 1901. Serial No. 52,760. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT DIMOND MAYO, a citizen of the United States, residing at Frankfort, in the county of Benzie and State of Michigan, have invented certain new and useful Improvements in Life-Boats, of which the following is a specification.

My invention relates to that class of life-boat which is preferably cigar-shaped in contour when viewed longitudinally and circular when viewed in cross-section and which is provided with an outer rotatable shell and an inner pendulous carriage, and particularly to the means by which such boat may be provided with self-propelling means, and to its details of construction, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient life-boat having an outer rotatable shell and inner pendulous carriage, with means for propelling the same.

Further objects of the invention will appear from an inspection of the drawings and the following description and claims.

The invention consists principally in a life-boat provided with an outer rotatable shell, an inner pendulous carriage, and a center-board foldably secured to such shell.

The invention consists, further, in a life-boat provided with an outer rotatable shell, an inner pendulous carriage, and a double centerboard pivotally secured to the shell substantially in line with its longitudinal axes and means for folding the centerboard against the shell.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a life-boat constructed in accordance with these improvements; Fig. 2, an enlarged longitudinal sectional elevation of a portion of the boat from one end to substantially the center thereof; Fig. 3, a cross-sectional view taken on line 3 of Fig. 2 looking in the direction of the arrow and showing one of the foldable centerboards tight against the shell of the boat and the other in open operating position; Fig. 4, a cross-sectional view taken on line 4 of Fig. 2 looking in the

direction of the arrow; Fig. 5, an enlarged cross-sectional detail showing a portion of the outer rotatable shell and one of the foldable centerboards held tight in position against the same, taken at about line 5 of Fig. 2; and Fig. 6, an enlarged sectional detail taken on line 6 of Fig. 4, showing one of the sheave-pulleys on which the pendulous carriage is supported.

In the art to which this invention relates it is well known that this class of life-boat is one that seems to remove the greatest amount of objections and at the same time provide for the greatest comfort and safety of the passengers; but it is also well known that it is desirable to have this kind of a life-boat provided with some means by which it may in ordinary weather be self-propelled, and it is with this idea that the present invention is designed.

In constructing a boat in accordance with my improvements I make an outer inclosing shell *a*, which is preferably cigar-shaped when looked at in side elevation and circular when looked at in cross-section—in other words, resembles a cigar. This outer inclosing shell, unless provided with obstructing means, is what might be termed a “rotatable” shell, in that it is free to rotate or roll upon the water. In order to provide for the safety of passengers, a living-chamber *b* is provided, formed by and between a pair of inner bulkheads *c*, one located at or near each end of the boat and which form the end walls of this living-chamber. The inside of these partitions or bulkheads is provided with a multiplicity of rotatable sheaves or groove-pulleys *d*, mounted thereon and upon a connecting-ring *e*, so as to rotate upon shafts *f*. The living-chamber is further provided with a pendulous carriage *g*, upon which the passengers of the boat may rest and be kept comparatively free from the objectionable rolling or side-lurching of the boat. These pendulous carriages are provided at one end, preferably, with a cable, cord, or similar element *h*, which is passed around the upper sheave-pulleys and down through and around the under side of the carriage, thus acting to support the same in an efficient and pendulous manner upon the pulleys, no matter what the position of the boat may be. The



inner ends of these pendulous carriages are preferably supported by means of the arms  $i$  upon a hollow tube  $j$ , passed through a central partition or bulkhead  $k$ , which extends transversely across the boat. While I prefer for many reasons to use this central hollow tube  $j$  to support the inner ends of the pendulous carriages, I do not desire to be limited thereto, as it will be seen that this central transverse bulkhead may be provided with a set of sheave-pulleys similar to that shown at the other end of the carriage. To provide for entrance into the living-chamber, the upper part—and I speak here relatively—of the outer inclosing shell is provided with two or more hatch-doors  $l$ , which are arranged to be opened or closed whenever desirable or necessary and through which the passengers may have ingress or egress.

In order to provide for the buoyancy of the boat, as well as for the safety of the occupants, each end is provided with an annular air-tight compartment  $m$ , formed by the end of the shell and the transverse bulkheads  $n$ . Between these transverse bulkheads  $n$  and the bulkheads  $c$  an air and water space  $o$  is provided near each end of the boat, the shell opposite said space having a multiplicity of ports or openings  $p$ , through which air and water may have ingress and egress.

It is desirable to provide means by which the boat may be during proper weather self-propelling. To accomplish this, it is first necessary to provide some means by which the outer inclosing shell may be prevented from rotating to any appreciable extent—in other words, that the shell may be permitted to rotate in rough weather or when discharging it from a steamer, but which can be made non-rotatable at any time it may be desirable or necessary. To accomplish this, a centerboard is provided, made in two parts  $q$  and  $r$ , pivoted to the boat at  $s$  longitudinal thereof and substantially in line with its axial center. Both of these parts, as above suggested, are pivoted to the boat along this line, one arranged to fold to the right and the other to the left against and to conform with the outer surface of the annular shell, so as to permit it to roll or rotate as freely as possible whenever desired, and it can be lowered, as shown in Figs. 1, 2, and 3, to form a centerboard, and thus counterbalance the wind-pressure upon the sails, as hereinafter described. In order to raise and lower these centerboards, or, in other words, to fold or unfold them, the central transverse bulkhead or partition  $k$  is provided with tubular portions  $t$ , arranged parallel with a diametrical line and extending up to or slightly above the center of the boat, through which cords, cables, or similar elements may be passed, one end of which is secured to the free lateral edge of the centerboard and the other to a turnbuckle  $v$ . From this turnbuckle a cord  $u$  is passed over a hook or pulley  $x$ , by which any one of the occupants or passengers of the boat may raise or

lower the centerboard, the turnbuckle being used to tighten it as much as may seem desirable or necessary. From this description of construction it will be seen that when the wind-pressure on the upper side of the shell is toward the left or port the foldable board  $q$  should be lowered in order to counterbalance or resist the same, and when the wind-pressure changes so that it is toward the right or starboard such centerboard should be raised and the centerboard  $r$  lowered to resist the same, the cords or cables  $u$  being used to hold the centerboard in the desired position. To provide means for self-propulsion, either one or both of the air and water spaces may be provided with telescopic masts  $y$  and  $10$ , formed, preferably, of tubular metal portions arranged to be telescoped, so as to fold within such space, and which may be passed out through one of the port-holes  $p$ , being anchored in a socket  $z$  at the lower side of the shell, as shown in Fig. 2. Both of these masts are provided with square sails  $18$  and  $19$ , respectively, which can be raised and lowered as may seem desirable or necessary to propel the boat, and yards  $11$  and  $12$ , which are provided with fore and main yard sheets  $13$  and  $14$ , respectively, passed through bulkheads or axial openings in the outer shell into the exterior, where they may be manipulated by the passengers or seamen. A jib-boom  $15$  is also provided and passed through an axial opening in the bow of the boat and anchored therein by means of the key  $16$ . A stay or jib sail  $17$  is provided, secured to such jib-boom and foremast, having a sheet  $20$  fastened at the lower end thereof and passed back through one of the port-holes  $q$ . A sail  $21$  is also provided, fastened to the foremast and provided with a sheet which may be either secured to the mainmast or passed back through one of the after port-holes and also with a second sheet passed through one of the port-holes at the forward end of the boat.

A rudder  $22$  is provided and removably secured to the stern of the boat, in line with the axial opening therein, (shown in Fig. 2,) the stem of which is provided with a sheave-pulley  $23$ , adapted to be operated from within the boat, and thus control the movements thereof.

The boat is particularly built for the purpose of using sails as a self-propelling medium or means, for the reason that the pendulous carriage may be swung to one side or the other to compensate for the "list" of the vessel, and thus act as a counterbalance or ballast for the wind-pressure on the sails. To provide means for holding the pendulous carriage at one side or the other of the shell, as may seem necessary, and thus counterbalance the list, I prefer to provide a pair of clamping-jaws  $23$ , pivoted to the pendulous carriage and arranged opposite one of the circular strengthening-ribs  $24$  of the vessel. Between the upper end of these clamping-jaws and also pivotally secured to the pen-



dulous carriage is the cam portion 25 of a pivoted lever 26, which may be rocked to close such jaws, and thus lock the pendulous carriage and outer inclosing shell together at any desired position. Of course it will be seen that this peculiar clamping mechanism may be dispensed with and an annular rack secured to the shell engaging with a pinion in the carriage to rotate one or the other of the parts to the desired position without departing from the spirit of the invention, all of which can be accomplished by mechanical skill. The pinion of course should be arranged to be thrown into and out of mesh and locked in either position.

In operation when the life-boat has been launched, we will say from a sinking vessel in a storm, the occupants can wait until the storm subsides and then the outer shell be rotated, so that the foldable centerboard will come on the bottom and the hatch-doors on top. One of the seamen, if there be such on board, can pass out through the hatch and the folded sails be then handed out to him, the masts extended, and the sails raised into position as shown in the drawings, the sheets being passed back into the living-compartment. It is understood, of course, that the centerboard is first unfolded into position to resist the listing of the shell in any undue manner. The rudder is then placed in position, and should there be any wind the boat can easily be placed in position to take advantage of it.

I claim—

1. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable centerboard pivotally attached thereto, means for folding the centerboard against the side of the shell and permitting it to swing into operative position, an inner pendulous carriage rotatably mounted in the shell, and means for locking the pendulous carriage to the shell in any desired position with relation to the centerboard, substantially as described.

2. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable centerboard pivotally secured thereto, means for swinging the centerboard into and out of operative position, a pair of trans-

verse bulkheads arranged at each end of the shell forming an inner compartment between them, a pendulous carriage in such inner compartment movably mounted upon the bulkheads, and means for locking the pendulous carriage to the rotatable shell in any desired position with relation to the centerboard, substantially as described.

3. In a life-boat of the class described, the combination of an outer rotatable shell, an inner pendulous carriage, a foldable centerboard secured longitudinally to the outer rotatable shell to be opened or closed, means for locking the pendulous carriage to the shell in any desired position with relation to the centerboard when the centerboard is in its open position, a transverse partition in the shell provided with openings extending there-through, and means passed down through such openings and connected with the foldable centerboard by which such board may be opened and closed, substantially as described.

4. In a life-boat of the class described, the combination of an outer rotatable shell provided with two or more transverse partitions forming a living-compartment therein, a multiplicity of sheave-pulleys on the inner side of such bulkheads or partitions, a pendulous carriage, and a cable, cord, or similar element secured to the pendulous carriage and passed over a plurality of such sheave-pulleys to swingingly hold such carriage in the desired position, substantially as described.

5. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable centerboard pivotally secured longitudinally thereto and arranged to be folded against the shell or opened into operative position, a pendulous carriage, means for locking the pendulous carriage and the rotatable shell together to form a balance or compensation for the list of the boat, masts arranged to be secured to the annular shell, and sails for such masts substantially as described.

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