No. 690,685. Patented Jan. 7, 1902.

A. ANREP.

LIFE BOAT.

(Application filed May 25, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

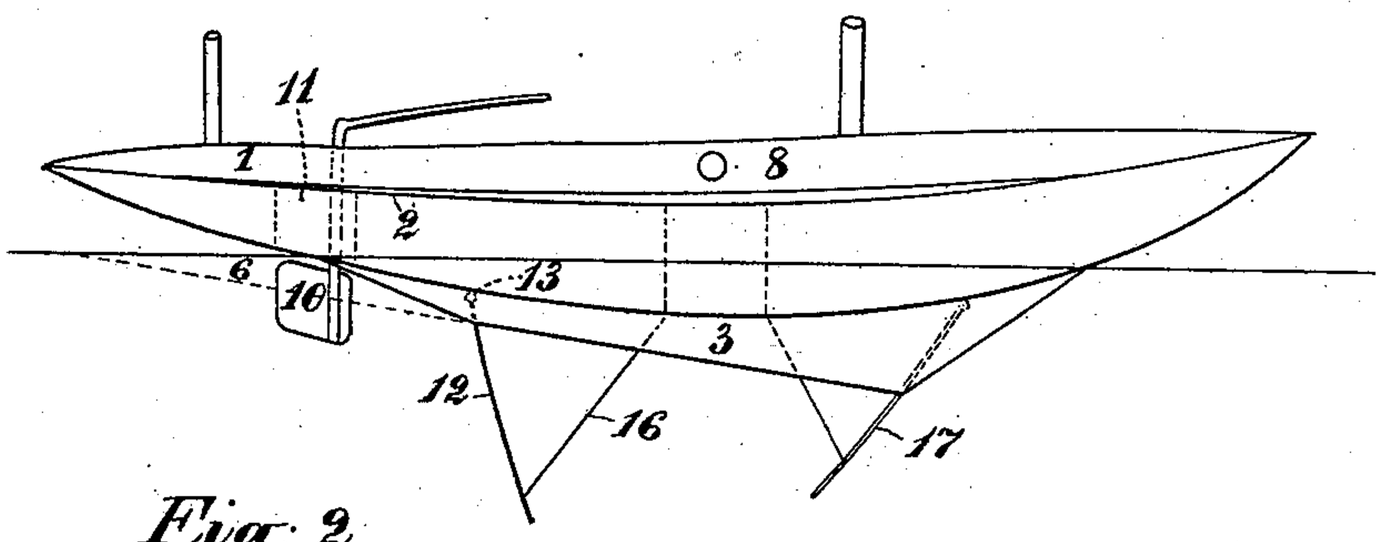

Fig. 2.

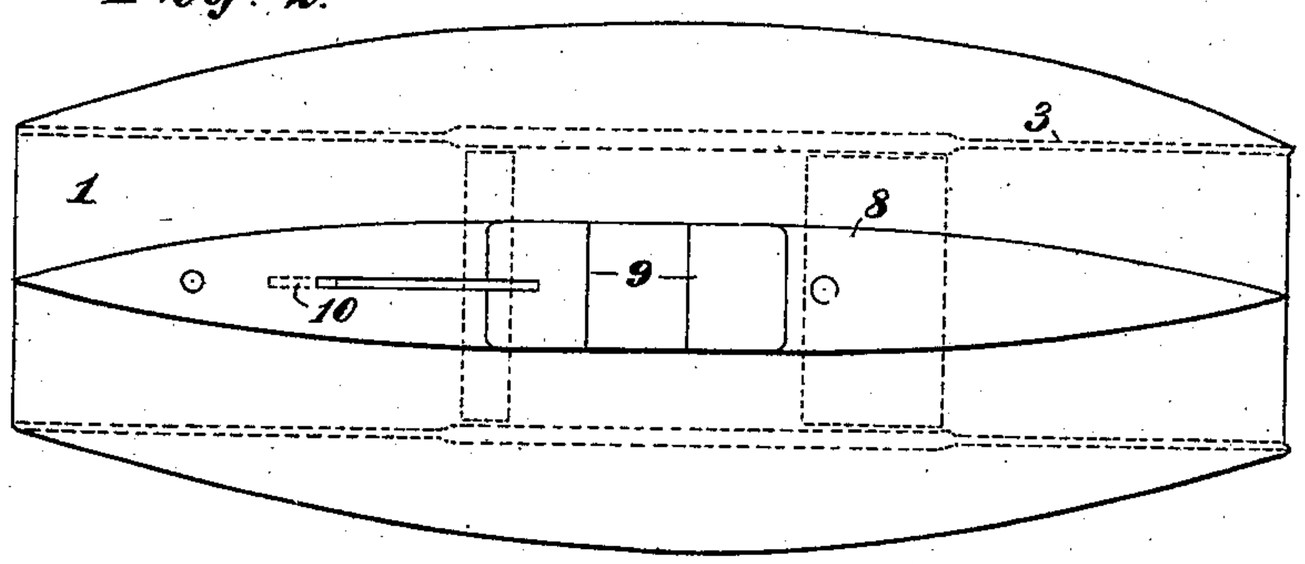

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Fig: 3.

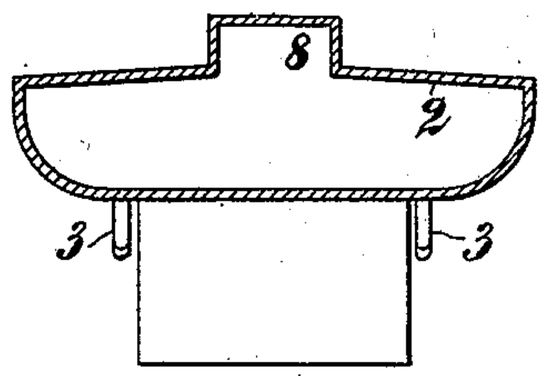


Fig: 4.

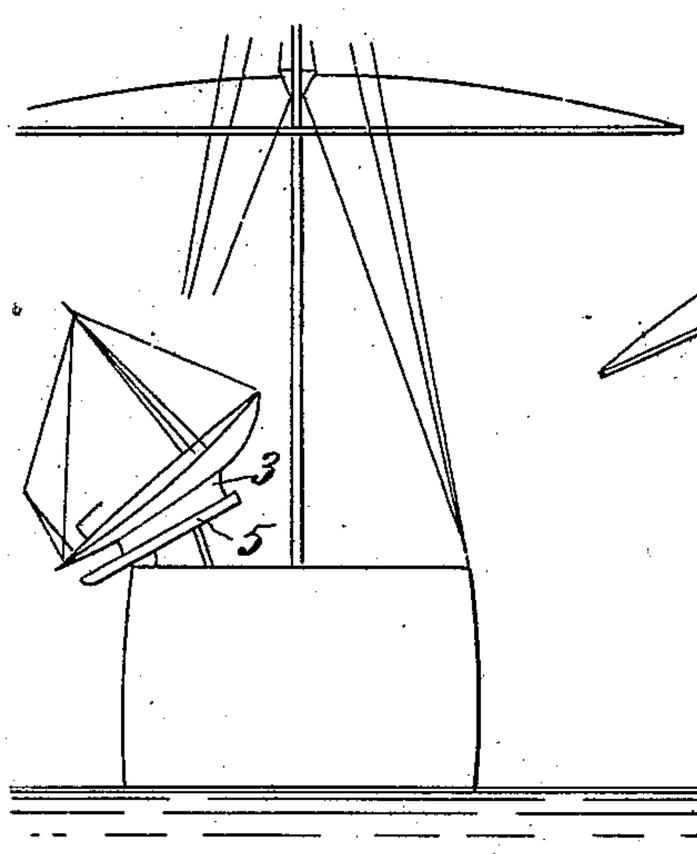


Fig: 5.

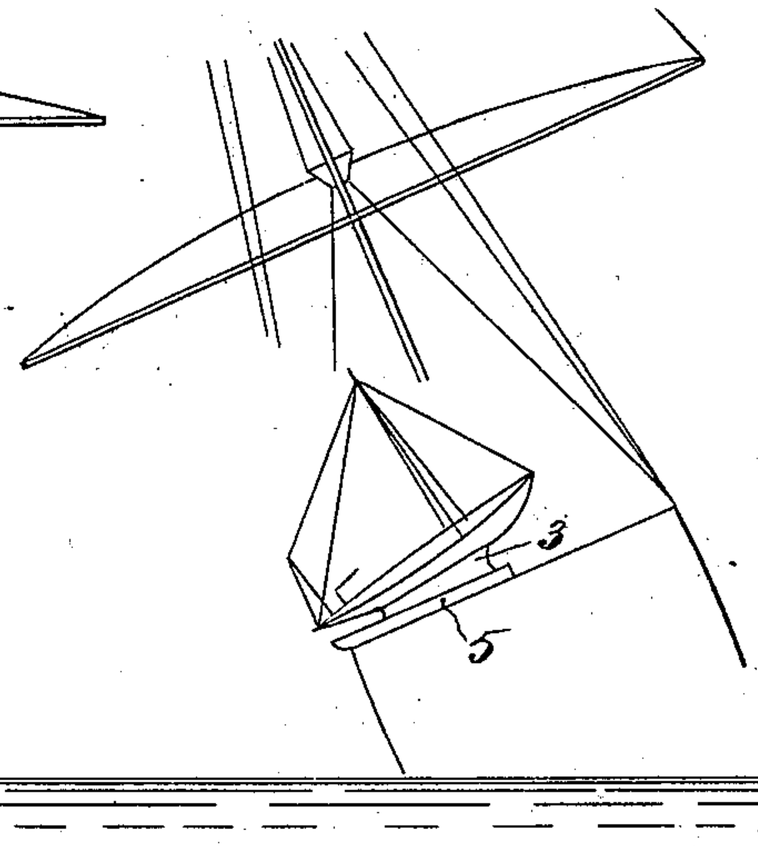
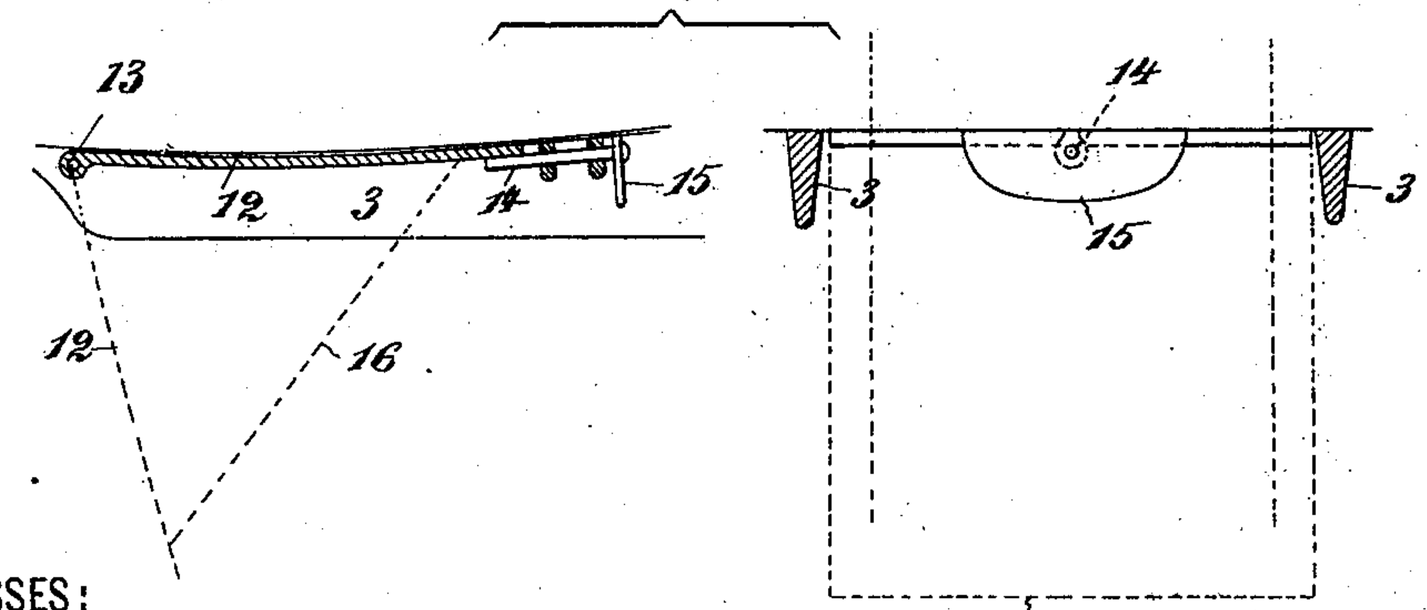


Fig: 6.



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(No Model.) 4 Sheets—Sheet 3.

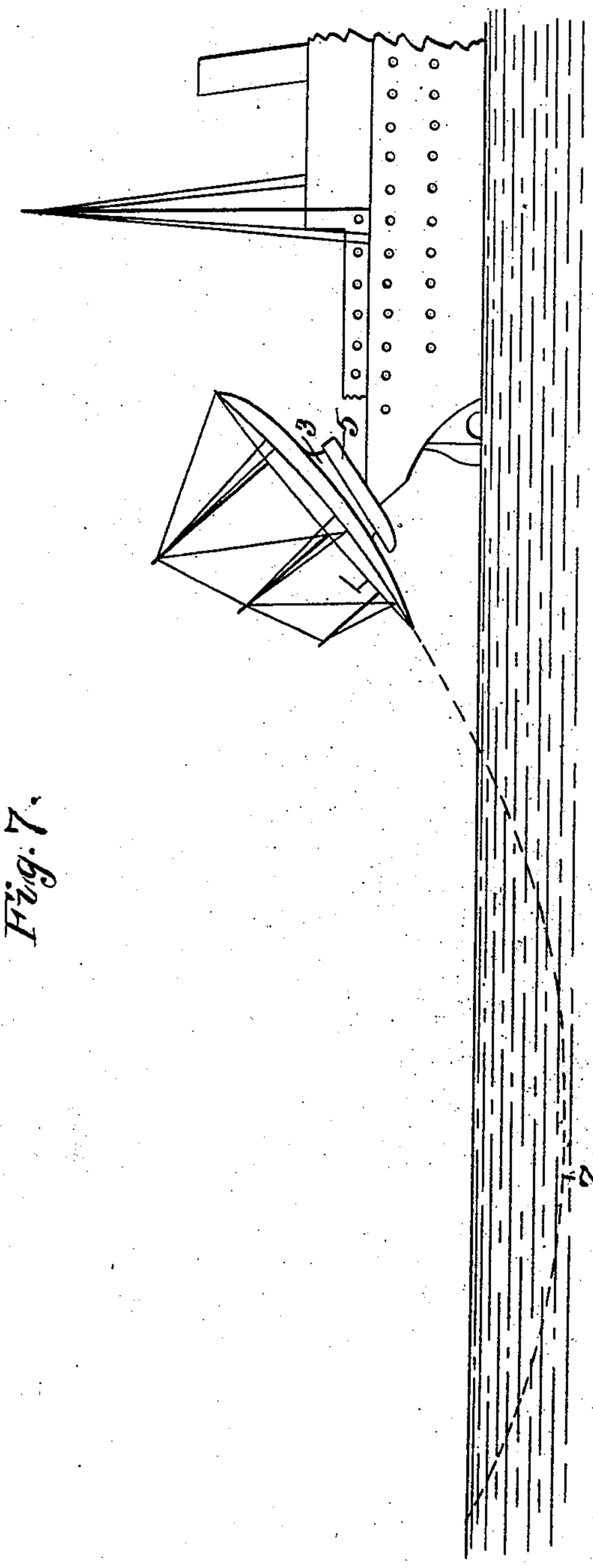

Fig. 7.

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(No Model.) 4 Sheets—Sheet 4.

Fig. 8.

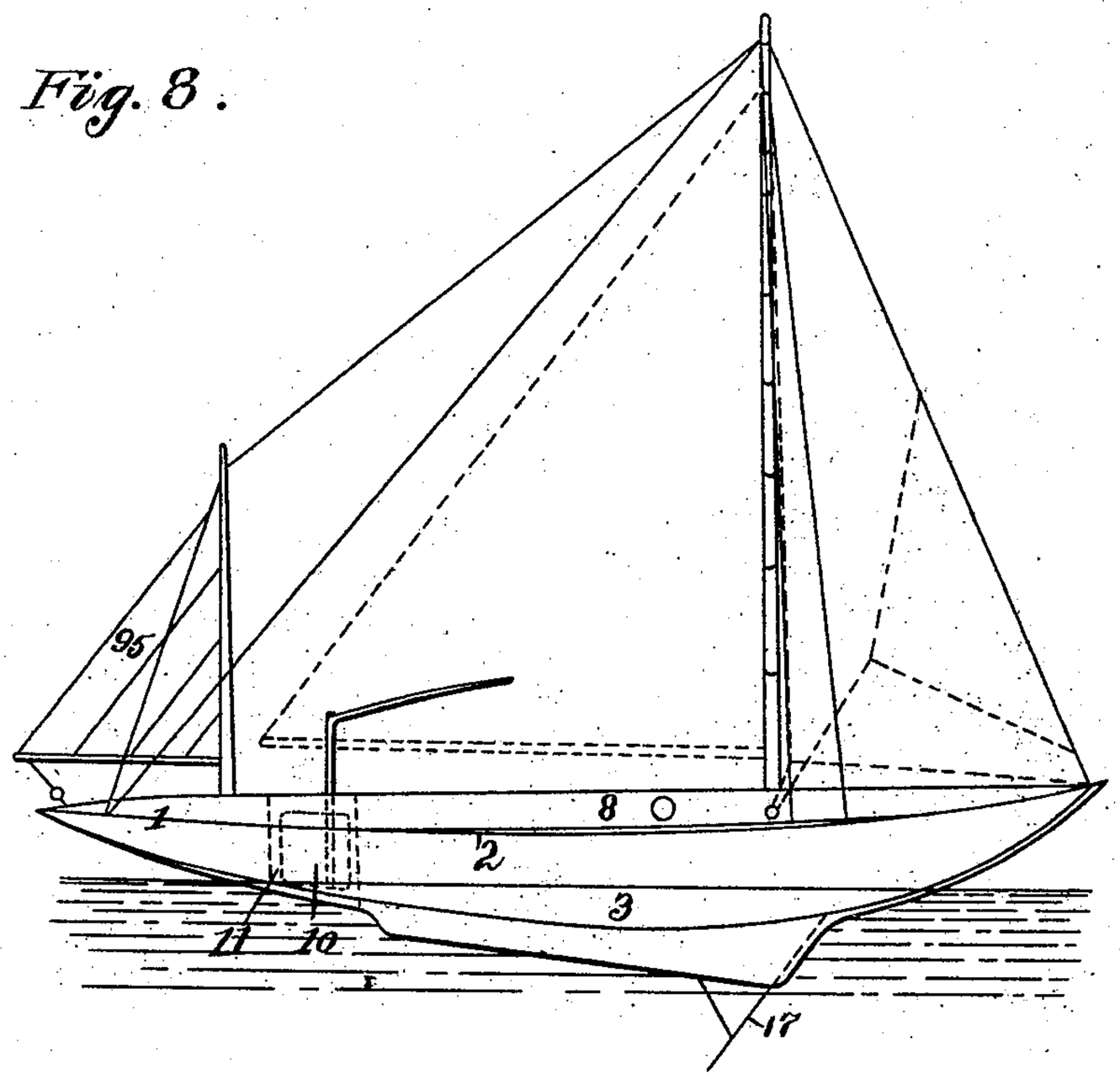
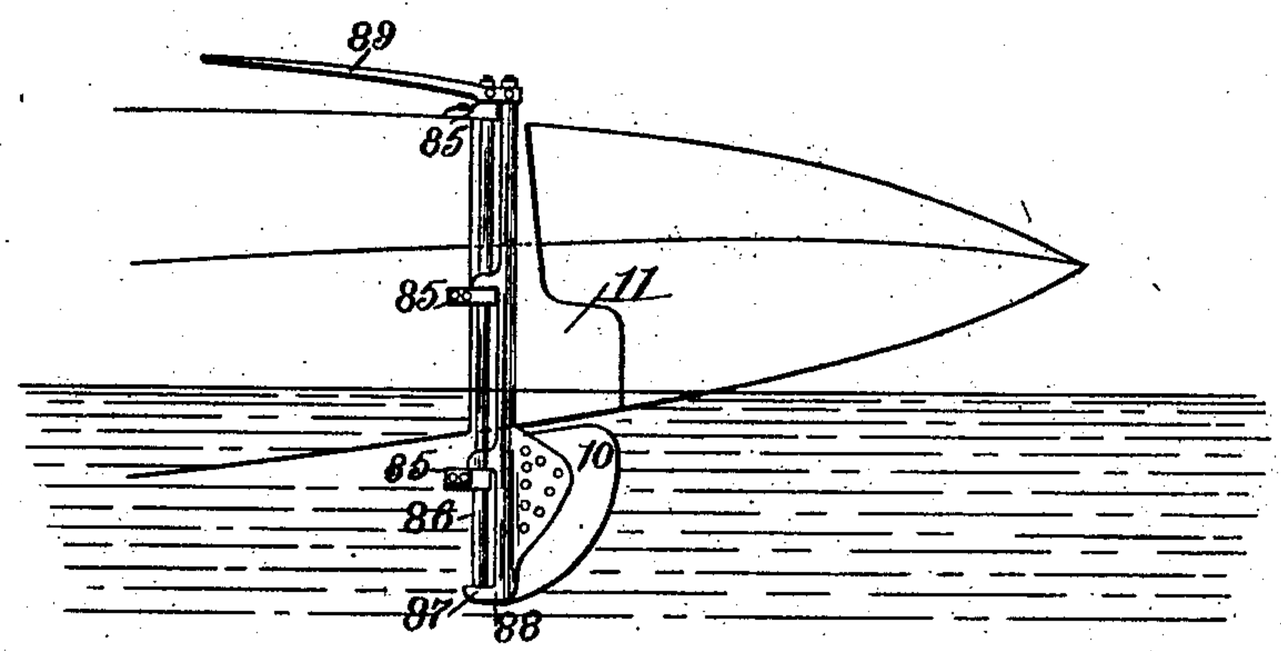


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALEPH ANREP, OF MOSCOW, RUSSIA.

LIFE-BOAT.

SPECIFICATION forming part of Letters Patent No. 690,685, dated January 7, 1902.

Application filed May 25, 1900. Serial No. 17,907. (No model.)

To all whom it may concern:

Be it known that I, ALEPH ANREP, a subject of the King of Sweden and Norway, and a resident of Moscow, in the Empire of Russia, have invented certain new and useful Improvements in Life-Boats, of which the following is a specification.

This invention relates to a life-boat or ship's boat, which can be launched by the aid of a slip or other suitable bed or support, the launching being accomplished with great precision even in the roughest sea by allowing the boat to slide directly from the deck of a vessel, bow or stern first, down into the water and dive through the latter. A slip is the most convenient appliance employed for giving the descending boat a suitable direction or diving angle to the water. The boat has such shape that it will dive in an arc below the surface and that its buoyancy, provided that the momentum acquired in launching is sufficient to propel the boat to or past the lowest point of the diving-arc, will carry or assist in carrying the boat through the remainder of the arc, so as to bring it to a great distance from the vessel. Should the boat fail to reach the said point of the diving-arc and, owing to its oblique position or for some other reason, strive to return toward the vessel from which it was launched, such motion is prevented by one or more folding plates or keels, hinged transversely at the bottom of the boat, so that the boat will in any case stop in its motion at some distance away from the vessel. The boat is moreover provided with a device for enabling it to readily ride out a gale in the open sea.

In the accompanying drawings, which illustrate an embodiment of the invention and a suitable launching device therefor, Figure 1 is a side elevation of the boat with the rigging omitted. Fig. 2 is a plan of the same. Fig. 3 is a transverse section at the broadest part. Figs. 4 and 5 are views illustrating, respectively, the launching of the boat from the side of a vessel on an even keel and from a rolling vessel. Fig. 6 includes two views illustrating in detail the folding plate on the bottom of the boat and the device for releasing it. Hereinafter this plate is called the "sag-keel." Fig. 7 illustrates the launching of the boat from the stern of a vessel and shows the diving-arc or curved path of the boat. Fig. 8 shows the boat rigged for riding out a gale. Fig. 9 shows the rudder for boats of large size.

In the following description the boat is assumed to be launched stern foremost. For this reason the stern is made sharp, so as to cause the boat to cut easily down into the water. The deck 2 of the boat is about straight or but slightly curved from the stern to about midships. The boat is provided with two or more parallel keels 3, which in launching run on suitable ways 5 on the vessel. The boat and its ways are transferred to the side or stern of the vessel and brought to the proper inclination, so that when released the boat will slide into the water. Figs. 4 and 5 show the launching from the side of the vessel, and Fig. 7 from the stern thereof. The curved track of the boat through the water is seen in this figure.

The bottom edge of the keels 3 forms at that end of the boat which is ahead in launching an acute angle 6 with the water-line of the boat, and this angle determines the angle which the slip must make with the surface of the water in that the boat may dive in the most favorable manner.

In diving, the upwardly-curved portion of the bow in the present case operates as a rudder, causing the boat to move in the curve shown in Fig. 7, (the diving-curve,) a result to which the curved shape of the remainder of the boat contributes. In its downward motion the boat acquires sufficient momentum to propel it through the curve or until it reaches the surface again. When the boat shall have passed the lowest point 7 of the curve, its buoyancy will assist it to the terminal of the curve. The buoyancy tends to lift the boat straight up to the surface; but owing to the inclined position occupied by the boat on passing point 7 (in the present case with the stern higher than the bow) the boat on account of the resistance of the water to the inclined deck will ascend obliquely. The velocity of the boat consequently increases when the boat shall have passed the lowest point of the curve. Should the boat be carried no farther by its momentum than barely past the lowest point 7 of the curve, the buoyancy will nevertheless propel it through the re-

mainder of the arc and the boat will be in consequence carried to the same distance from the ship as in the case first described. The angle of the slip with the surface of the water may vary as much as twenty degrees. The greater the angle 6 is the less the angle of the slip to the surface of the said surface can be made, and vice versa. Ordinarily an angle of from twenty-five degrees to forty-five degrees between the slip and the surface will be preferred. If the bottom edges of the keels are parallel to the water-line of the boat, the angle of the slip to the surface of the water will be too great and the diving-curve at the widest angle, which in this case can be practically used so deep that it seems doubtful if boats of small size in their downward motion acquire sufficient momentum to pass through the curve. On the curvature of deck and bottom of the boat depends the sharpness of the curve followed by the boat in the water. Small and light boats designed for light loads, and consequently acquiring but slight momentum in descending in proportion to their largest rib area, should move in a sharp curve, and for this reason they are made sharply curved.

In Figs. 1, 2, and 3, 8 shows a longitudinal elevated part on deck, narrowing toward both bow and stern and serving to strengthen the broad and flat boat, contribute toward the steady steering of the boat through the diving-curve, and in small-sized boats, which are provided with an opening 9 amidships, to protect said opening from seas breaking over the boat. In larger boats the elevation 8 forms a deck-cabin, from the roof of which the boat is navigated.

10 is a rudder. This rudder is in launching kept elevated in a water-tight chamber or box 11. For small boats a steering-oar may be employed in place of the rudder.

12 in Figs. 1 and 6 is a plate or keel hinged on a transverse shaft 13 underneath the boat and pointing toward the bow for a purpose stated below. In launching, the plate 12 is held elevated and hugs the bottom of the boat, Fig. 6, being retained by a sliding bolt or latch 14, operating in the longitudinal direction of the boat. This bolt is provided with a transverse plate 15, which is acted on by the water in such a manner as the boat dives into the latter as to pull the latch and release the plate 12. The plate 15 might alternatively be hinged to the bottom of the boat and jointed to the bolt 14 by means of a link or the like. With this arrangement the plate in diving would be folded up toward the bottom of the boat, so as not to form any impediment whatever or reduce the speed of the boat through the water. The plate 12 swings downward under the circumstances stated below, and on being in operation can be returned to the position shown by full-drawn lines in Fig. 6 by means of one or more chains or the like 16 passing through hawse-holes located in the bottom and deck and joined by a pipe or carried over rollers to the deck. 17, Fig. 1, is a similar plate pointing to the other end (stern) of the boat and operated by means of one or more chains or the like, its object being explained below.

Small-sized life-boats, chiefly intended for the crew, are brought by hand-power, together with the slip, to the rail of the ship, Figs. 4 and 5, or to the stern. If the vessel is on an even or nearly-even keel, Fig. 4, the slip is brought into suitable inclination by hand. If the vesel is inclined, Fig. 5, the launching can take place without the need of raising the inner end of the slip.

These life-boats can be launched from the roof of a deck-cabin or from some special superstructure, for instance, such as are used in large ships, the arrangement then being so contrived that the slip when brought into its inclined position will bear with its outer end on the rail of the ship. Alternatively a special slide-bridge may be employed. When the launch takes place, the masts should if possible be in place, in which case any braces obstructing the path of the boat when launching athwartships, Figs. 4 and 5, must be cut. In Fig. 5 the launching is done from an inclined, pitching, or rolling vessel.

Should a considerably-smaller number of people chance to accompany the boat than that for which it is intended and the momentum acquired by the boat in its descent consequently fall short of that calculated, the boat may fail to pass the bottom point of the diving-curve, being instead arrested in its downward motion, and owing to its buoyancy and inclined position caused to move back toward the vessel. The plate 12 above mentioned serves to prevent such receding motion of the boat. When the boat enters the water, the bolt 14, Fig. 6, is drawn in the manner already described, causing the plate 12, immediately on the commencement of the receding motion under influence of its gravity and the pressure of the water, to swing downward and create a powerful resistance to the motion of the boat toward the vessel and compelling the boat to float straight up to the surface. The plate 12 consequently forms what might be called a "sag or athwartships keel." If but few people accompany the boat, the weight of the latter can conveniently be gaged by pumping water into tanks located midships or in between double-bottoms midships.

In Fig. 8 a sea-rigging is shown adapted for use on life-boats of the kind here in question. In case of severe gale or rough sea the rudder 10 is kept raised after launching. A so-called "jack" 95 is set, and the plate 17, which forms a second sag or athwartships keel, is let down. By means of the jack, which when the rudder is lifted is situated at a greater distance from the center of lateral resistance than in other boats, in conjunction with the two keels 3 and the sag-keel 17, the fore part of the boat, which has power to resist shipping water, is held against the seas, the sheer-

ings are diminished, and the sag is delayed by the water, so to speak, being caught between the said three keels. The sag-keel, which is arranged so as to be tangential to a circle having the center of gravity of the system for center, does not interfere with the movements of the foreship when the bow is lifted by the waves. In this manner the heaviest gale can be ridden out in open sea. For large-sized life-boats the rudder shown in Fig. 9 is conveniently used. The rudder-blade and rudder-stock are secured to a shaft 86, rotatable in eyes 85. Said shaft enters with a pin 87 in a lug 88, projecting from the rudder-blade, and is united at the top with the rudder-stock by means of the tiller 89. The shaft 86 can be shifted in the eyes 85, so as to allow of the rudder-blade being moved up into the box 11.

The devices above described can evidently be modified in various ways without departing from the fundamental idea of the invention. Among the advantages of the life-boats here in question should be mentioned that a short and consequently light slip can be used for launching. The slip need project outboard but a short distance, but for all that it can give the proper direction to the descending and diving boat. There is consequently no danger of the slip being smashed by the seas. In sliding down into the water and diving through the same the boat is independent of the sea and the launching can take place under different diving angles and even if the ship be rolling or pitching. The boat under all circumstances stops at some distance from the ship and does not return to it. In launching from the ship's stern the rolling or pitching of the ship cannot disturb the boat on the slip, since the boat by two keels (or by means of a slide with runners) rests on the slip, which is provided with deep ways for the keels at a considerable distance apart, and the center of gravity of the boat, owing to the flat form of the latter, is situated low down. By setting the jack the boat will be held with power against the wind and the seas, and by using the sag-keel 17 the motion of the boat caused by the pressure of the wind will be considerably retarded. By this means gales can easily be ridden out with safety.

Having thus described my invention, I claim—

1. A life-boat adapted to be launched from a vessel, having the lines of the deck and bottom at that end of the boat which is ahead in launching, forming with each other an acute angle, and having the lines of the deck and bottom at the other, or following end of the boat curved upward, whereby the boat is caused to dive through the water in a downwardly-curved path, substantially as set forth.

2. A life-boat of the form described, having a plurality of supporting-keels for launching, said keels forming with their lower bearing-surfaces an acute angle with the water-line of the boat at that end which is ahead in launching, substantially as and for the purpose set forth.

3. A life-boat adapted to be launched from a vessel, having the lines of the deck and bottom at that end of the boat which is ahead in launching, forming with each other an acute angle, and having the lines of the deck and bottom at the other or following end of the boat curved upward, and said boat having one or more folding sag-keels 12, extending athwartship and hinged at their upper edge to the bottom of the boat, substantially as set forth.

4. A life-boat of the form described, having a hinged sag keel or keels 12, and sliding bolts 14, for holding the said keels folded up close against the bottom of the boat, said bolts being provided each with a plate 15 to engage the water in launching and draw the bolt, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALEPH ANREP.

Witnesses:
EDUARD VÖLKEL,
OSWALD NILSSON.