

No. 671,502.

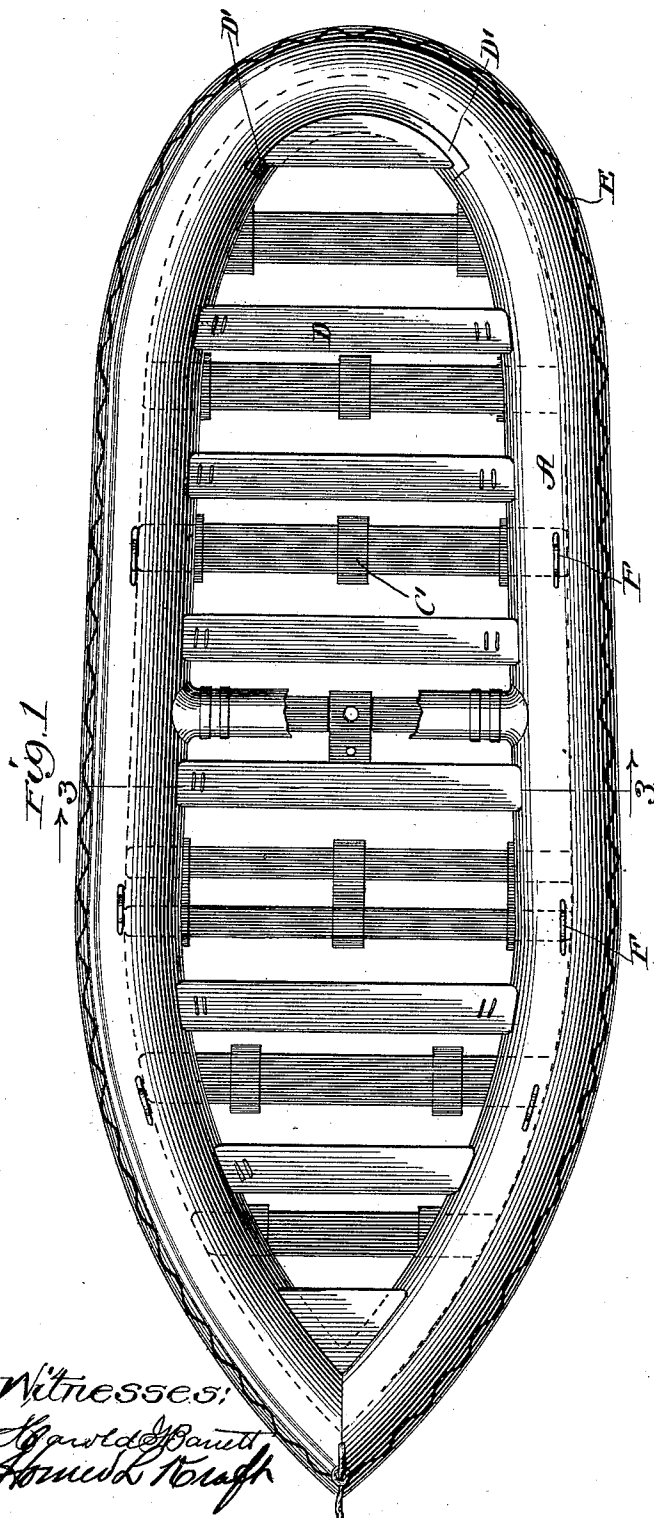
C. F. SULTEMEYER.
LIFE BOAT.

Patented Apr. 9, 1901.

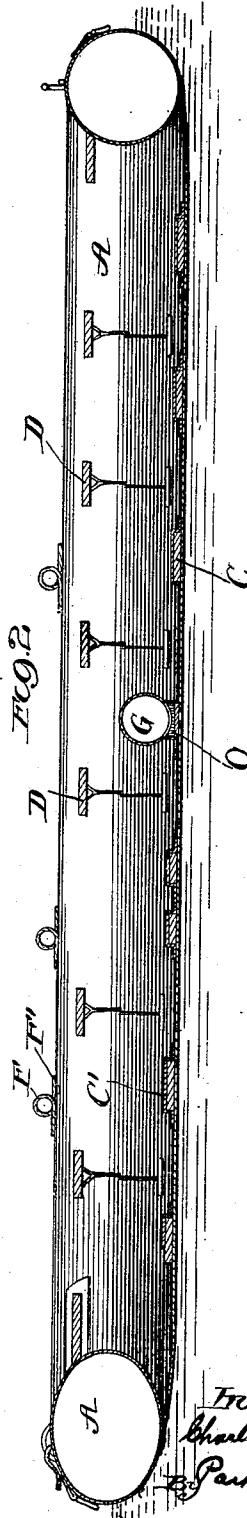
(No Model.)

(Application filed Apr. 12, 1900.)

4 Sheets—Sheet 1.



Witnesses:
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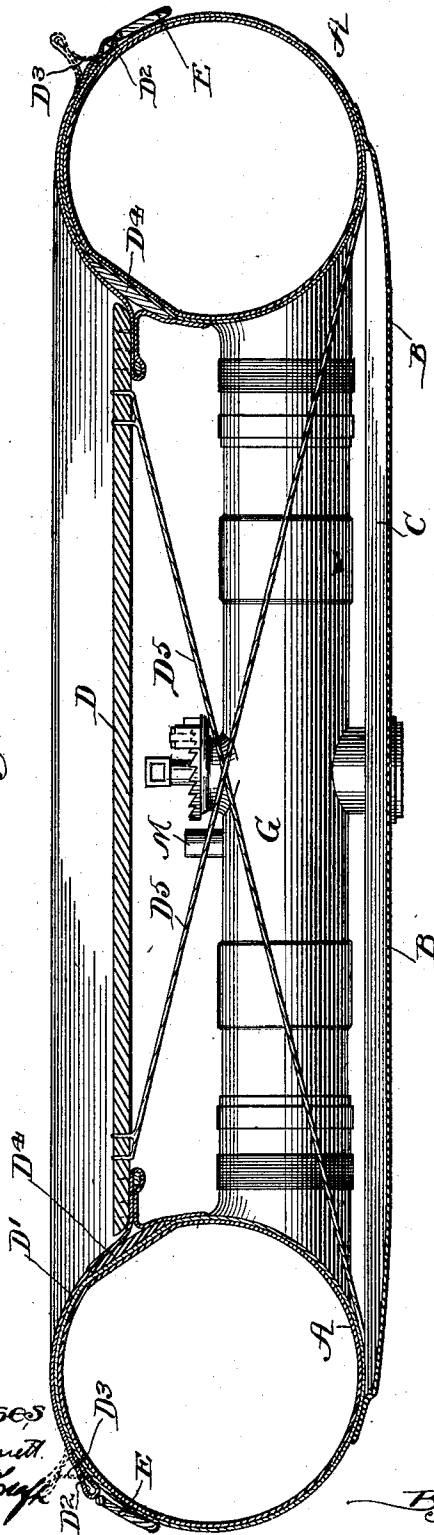
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(No Model.)

4 Sheets—Sheet 2.

Fig. 3.



Witnesses
Stanley Barnett
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Fig. 5.

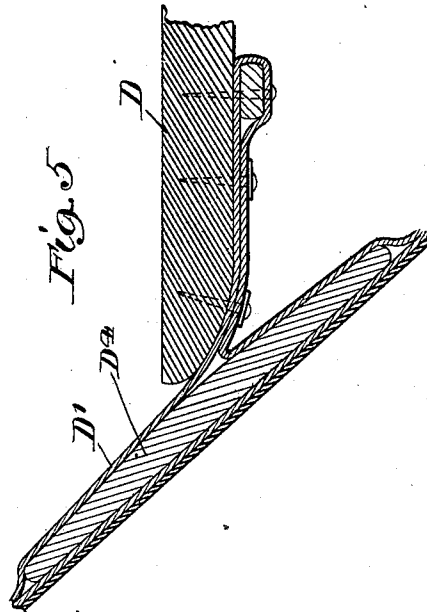
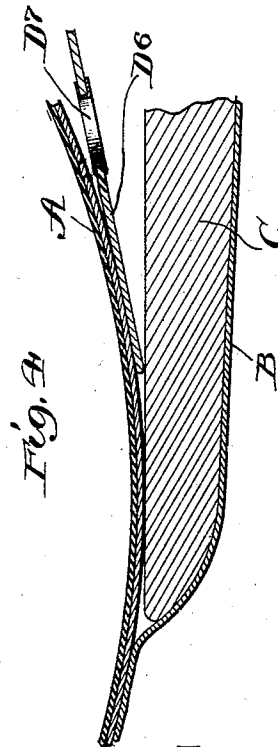


Fig. 4.



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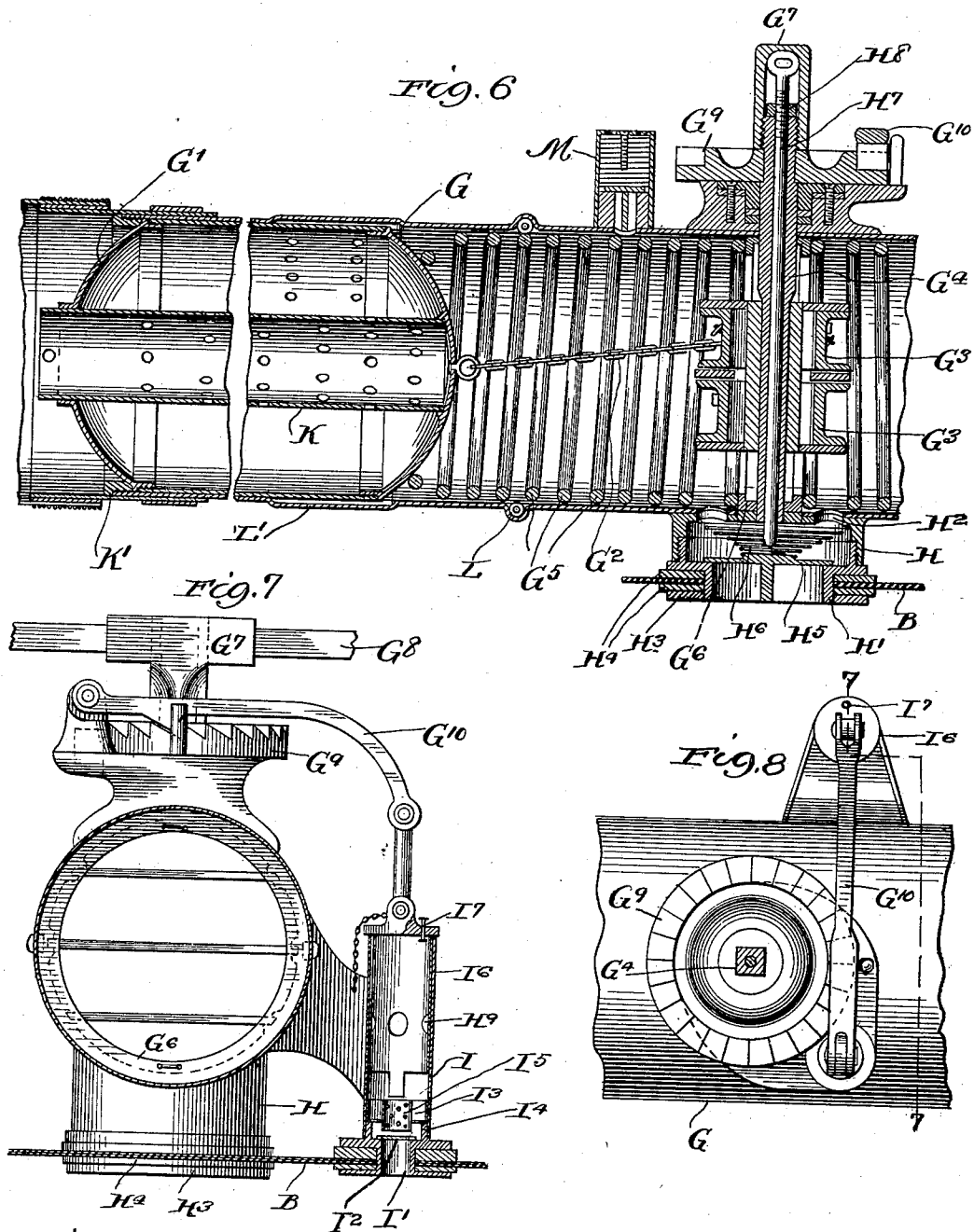
C. F. SULTEMEYER.
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(No Model.)

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4 Sheets—Sheet 3.



Witnesses:
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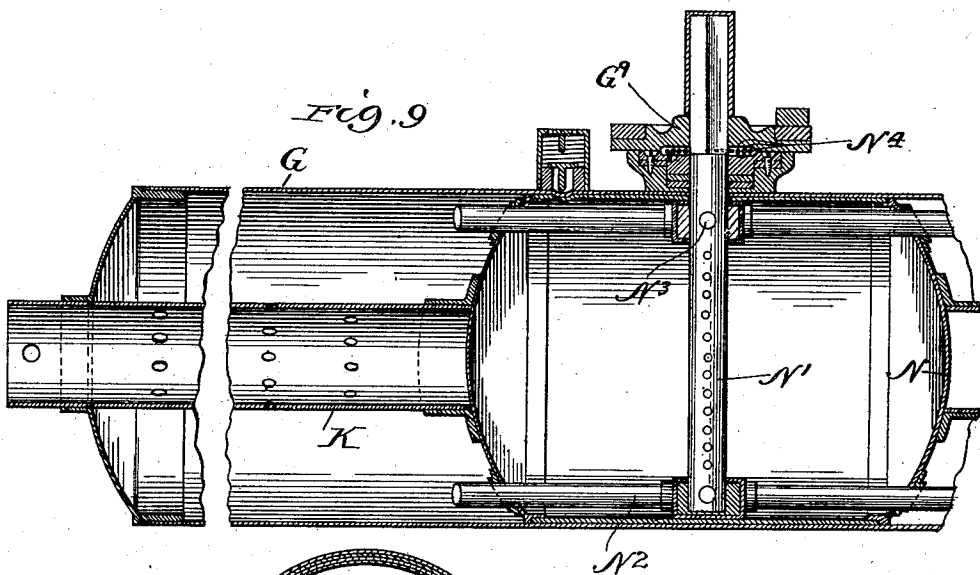
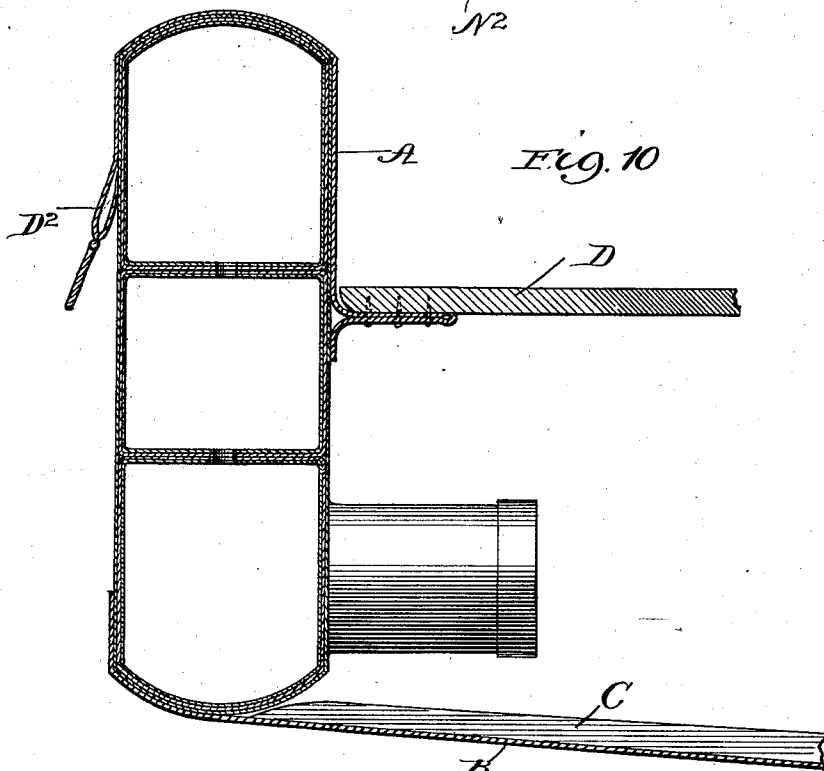
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LIFE BOAT.

(Application filed Apr. 12, 1900.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES F. SULTEMEYER, OF CHICAGO, ILLINOIS.

LIFE-BOAT.

SPECIFICATION forming part of Letters Patent No. 671,502, dated April 9, 1901.

Application filed April 12, 1900. Serial No. 12,507. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. SULTEMEYER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Boats, of which the following is a specification.

My invention relates to boats, and has for its object to provide a new and improved boat particularly adapted for use as a life-boat.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of a boat embodying my invention. Fig. 2 is a longitudinal section through the same. Fig. 3 is an enlarged sectional view on line 3 3, Fig. 1. Fig. 4 is an enlarged sectional view showing the connection of one of the bottom planks of the boat to the inflated tube. Fig. 5 is a view showing the connection of one of the seats with the inflated tube. Fig. 6 is a longitudinal section through a portion of the generating or inflating mechanism. Fig. 7 is a section on line 7 7, Fig. 8. Fig. 8 is a plan view of the holding device for the generating or inflating apparatus. Fig. 9 shows a modified form of generating or inflating mechanism. Fig. 10 shows a modified construction of inflatable tube.

Like letters refer to like parts throughout the several figures.

The ordinary life-boats as a rule occupy so much space that too few of them are used, and they are also very heavy and defective in many particulars. One of the objects of my invention is to provide a life-boat in which these defective features will be obviated.

The boat herein illustrated is made of flexible material and any suitable material may be used—such, for example, as canvas or the like. There are also provided one or more suitable flexible inflatable chambers arranged around the edges of the boat and preferably forming what may be termed the “sides” of the boat. It is of course evident that any number of inflatable chambers may be used, and they may be arranged and constructed in any desired manner. For purposes of illustration I have shown the inflatable chambers as consisting of a flexible inflatable tube A, extending entirely around the edge of the boat and forming the sides thereof. The bottom of the boat B is formed of flexible material, such as can-

vas, and is fastened to the chamber or tube A in any desired manner, as by sewing or the like. There are two sets of transverse braces, one set, C, being placed at the bottom of the boat and acting as foot-rests, the other set, D, being placed near the top of the boat and acting as seats. The ends of the bottom braces C project under the edge of the tube A, as shown in Fig. 4, and are held in place by the bottom B of the boat. The bottom braces C are attached to the bottom of the boat by means of flexible or canvas straps C'. The upper braces or seats D are fastened to the flexible piece D', attached to the tube A. This flexible piece is preferably looped, as shown in Fig. 5, and the upper part is preferably passed over the top of the tube, the outer end being free, so as to form a flap D², adapted to move upwardly to the position shown in dotted lines in Fig. 3 when a wave strikes the boat. Suitable holding-straps D³ are connected with the flap or flaps D² and with the tube, so as to prevent the flap from falling over when it is moved upwardly. I may also attach to the flap a life-line E, which extends part or all of the way around the boat, the line being connected at intervals with the flap or the tube. I prefer to have the piece D' continuous, so that there will be a continuous flap D². It will be seen that this flap tends to heighten the boat whenever the waves wash up against it. I prefer to provide the seats with suitable pressure-plates D⁴, which are interposed between the flexible piece D⁵ and the tube A. These pressure-plates take up the pressure of the seats and give a larger surface, so as to prevent the seats from injuring the tube A. I also prefer to provide a series of cross-braces D⁵, as shown in Fig. 3, one end being connected with the seat and the other end with the bottom of the tube. This connection to the bottom of the tube may be made in any desired manner, as by providing a suitable flexible strap D⁶, as shown in Fig. 4, sewed or otherwise attached to the tube A, said strap being provided with an eyelet D⁷, through which a rope may be passed, the rope acting as a transverse brace.

When the tube A is deflated, it of course is flexible and may be rolled up; but when it is inflated said tube while yet flexible acts as a longitudinal brace to keep the boat in shape.

Suitable oar-locks F may be provided at intervals. These oar-locks may be constructed in any desired manner, and as herein shown consist of loops of rope attached to the oar-lock plates F'. As the boat is flexible these oar-locks should be placed well forward—that is, at least one or two pair of them—as, since the boat is flexible and has no rigid longitudinal braces, better results are obtained if the front part is pulled instead of being pushed.

Some suitable means is provided for inflating the tube A. It is of course evident that any desired means for this purpose may be utilized. I may, for example, provide a suitable air-pump, which can be attached to the tube, so that it can be inflated by air, it only being necessary for some one to operate the pump. I prefer, however, to provide some automatic means of inflating this tube, so that it will normally be deflated when on the vessel, but will automatically become inflated when the boat is thrown into the water. It is of course evident that various constructions may be used for this purpose, and I will not attempt to show all such constructions. I have, however, illustrated some effective devices which may be used for this purpose.

Referring now to Figs. 1 and 6, I have shown a suitable gas-generator adapted to be set in action so as to generate a gas when it is desired to inflate the tube. This generator may be constructed in any desired manner and, as herein shown, consists of a cylinder G, connected at each end with the tube, as shown in Fig. 1. This cylinder contains a duplicate set of parts, and I have illustrated it in detail in Fig. 6, showing only one end of the cylinder. It will be understood, of course, that the cylinder projects on the right of Fig. 6 and contains a similar mechanism to that shown on the left of the center in said figure. This cylinder G contains two movable boxes G', containing some suitable material adapted to be converted into a gas. For purposes of illustration I have described this material as "calcium carbid." Each box is provided with a central chamber K, having suitable perforations, said chamber being open at the end nearest the tube A, so that the gas generated in the box may escape and pass into said tube. Each box is also connected with a suitable flexible connecting-piece G², with a drum or pulley G³, carried by the shaft G⁴, suitably mounted, and having the ends projecting through the cylinder. A spring G⁵ is interposed between each box and a suitable stop G⁶ near the middle of the cylinder. This stop, as herein shown, consists of a ring having a flange at each end thereof, and the shaft G⁴ passes therethrough, as shown, so as to hold the stop in place. A suitable stop K' is provided near the outer end of the cylinder to engage the boxes G' and limit their movement away from the center.

Some suitable means is provided for rotating the shaft G⁴ and winding up the flexible

connecting-pieces G² and thus drawing the boxes G' toward each other and toward the shaft. As herein shown, the shaft is provided with a suitable cap-piece G⁷, which is screwed onto the end thereof and which is provided with suitable openings for one or more levers G⁸. A ratchet-wheel G⁹ is connected with said shaft, and a holding-lever G¹⁰ is associated therewith and provided with a tooth which engages the teeth of the ratchet-wheel. This holding-lever holds said ratchet-wheel in any desired position.

The cylinder G is provided at its bottom with a projecting ring H, which is in turn provided with a part H', having a hole therethrough and extending through an opening in the bottom B of the boat. Suitable openings H² are made in the cylinder G, so that water may be admitted to the cylinder. A holding-nut or the like H³ is connected with the part H', and suitable protecting-washers H⁴ are interposed between said nut and the flange on the said part H'. A check-valve H⁵ is located between the cylinder G and the part H', and bears on the inner face of said part. (See Fig. 6.) A spring H⁶ is interposed between the check-valve and the cylinder, so as to normally hold the check-valve against its seat. The shaft G⁴ is preferably hollow and is provided with a rod H⁷. This rod is screw-threaded at its upper end and engages a screw-threaded part on the shaft. It will be seen that by screwing this rod downwardly it will engage the check-valve and hold it firmly against its seat, so as to seal the opening in the part H'. This rod H⁷ can be used to close the valve in the event it becomes desirable to do this. When the boat has been inflated and is filled with people, the pressure might in some instances and under some conditions have a tendency to open this valve, and as the function of the valve has been performed this tendency can be prevented by screwing down the rod. The upper end of the rod is inclosed by the cap-piece G⁷. A suitable lock-nut H⁸ is associated with the rod.

Some suitable means or starting device is provided for setting the generating apparatus in operation. As herein shown, this starting device consists of a two-part cylinder H⁹, made up of the two parts I and I⁶, one being inserted in the other, the two parts forming a telescopic device. The part I is connected with a flanged bottom piece I', having a hole therethrough and firmly connected with the bottom of the boat. (See Fig. 7.) A suitable check-valve I² is provided, said check-valve normally closing the opening in the flanged piece I'. A suitable box I³ is contained within the part I and rests upon the support I⁴. This box contains some suitable gas-generating material, such as calcium carbid, and is provided with suitable perforations I⁵, so as to admit the water. The part I⁶ of the cylinder H⁹ is connected with the holding-lever G¹⁰, so that when it is lifted upwardly said holding-lever will be lifted to release the ratchet-

wheel G⁹, and hence the shaft G⁴. A suitable
 opening is provided in the part I⁶ to permit
 the air to escape, and a valve consisting of a
 pin I⁷, provided with enlarged or flattened
 5 ends, is placed in this opening. When the
 water enters the part I of the cylinder, it will
 come in contact with the carbid, the opening
 at the top of the cylinder permitting the air
 to escape as the water enters. This water
 10 coming in contact with the carbid causes a
 gas to be generated, which lifts the upper
 part—that is, the part I⁶ of the cylinder—and
 releases the ratchet-wheel G⁹. When the
 boxes G⁷ are drawn up toward the shaft G⁴,
 15 they engage the rubber washers or rings L,
 and when they are released and take the po-
 sition shown in full lines in Fig. 6 they en-
 gage the inner face of the cylinder, so as to
 form a tight joint and prevent the water from
 20 passing into the tube A. I prefer to provide
 a suitable safety-valve M, which may be of
 any of the ordinary constructions and which
 operates to permit the gas to escape when
 the pressure reaches a predetermined point.
 25 This safety-valve prevents the tube A from
 being injured by an excess of pressure.

Instead of having an opening in the cylin-
 der G so as to admit the water when it is de-
 sired to generate gas in the generator I may
 30 store up the water and provide some means
 for releasing this water when it is desired to
 inflate the boat. I have shown such a con-
 struction in Fig. 9. In this construction the
 cylinder G acts as the box to hold the carbid
 and contains the perforated chamber K. At
 35 the middle of this cylinder is a water-reser-
 voir N in which the water is stored. A ro-
 tatable tube N' is located in the reservoir
 and is provided with a series of perforations,
 40 so as to permit the water to enter said tube.
 One or more pipes N² lead to the cylinder
 holding the carbid, and these pipes are nor-
 mally closed by the rotatable tube N'. Suit-
 able openings N³ are provided in the tube N',
 45 so that when it is rotated a proper amount
 these openings will connect with the pipes N²
 and permit the water to pass from the reser-
 voir and come into contact with the calcium
 carbid. This rotatable tube may be rotated
 50 in any desired manner, as by being provided
 with a non-circular end to receive a wrench,
 or it may be automatically rotated by means
 of the starting device illustrated in Fig. 7.
 In this event a suitable spring N⁴ is pro-
 55 vided, one end being connected with a sta-
 tionary part and the other with the ratchet-
 wheel G⁹ or the tube N'. It will thus be seen
 that when the starting device is operated so
 as to lift the holding-lever G¹⁰ the ratchet-
 60 wheel will be released and the spring N⁴ will
 rotate the tube N', so as to connect the open-
 ings N³ with the pipes N² and permit the
 escape of the water. It is of course evi-
 dent that any other means may be used to
 65 rotate this tube N' and that it may be directly
 connected with the starting device, but all
 such constructions will readily occur to those

versed in the art and I have not attempted to describe them in detail.

I prefer to provide the cylinder G with some
 70 suitable supporting device, which is inter-
 posed between it and the bottom of the boat.
 I also prefer to have this supporting device
 of material which will act as a cushion. In
 the drawings I have shown this supporting
 75 device as consisting of an oakum sack O; but
 it is of course evident that any other suitable
 cushion device may be used.

I have shown and described one construc-
 tion embodying my invention for the purpose
 80 of making the invention clear; but it is of
 course evident that the various parts may be
 changed in form, construction, and arrange-
 ment and that some of the parts may be omit-
 ted and others used with parts not herein
 85 shown and my invention still be realized. I
 therefore do not limit myself to the construc-
 tion shown.

I may use any desired agency in forming
 the different parts of the boat and holding
 90 them in the proper position while they are
 being fastened together. One means I have
 used is to form a frame having the shape of
 the tube and the boat, the canvas or other
 flexible material being stretched over this
 95 frame and then cut to the proper size and
 shape. The several pieces are then sewed
 together in any desired manner, the seams
 being double and the cloth placed face to
 100 face. The edges are preferably turned in
 and carefully finished, so as to secure great
 strength and accuracy. After the flexible
 material is sewed together and finished the
 cross-braces are inserted.

A portion of the cylinder G is bent out-
 105 wardly, as shown at L', so as to form a space
 between the cylinder and the box, thus per-
 mitting the water to pass into the box through
 the perforations when said box is in the po-
 sition shown in full lines in Fig. 6.

I have shown in Fig. 10 a modified construc-
 tion of inflatable chamber or tube. In this
 construction the inflatable chamber is di-
 110 vided into parts, so as to form two or more
 chambers or tubes. Various other modifica-
 tions will readily suggest themselves. I have
 used the word "tube," but I wish it to be
 understood that I mean by this any chamber
 suitable for the purpose.

The use and operation of my invention are
 120 as follows: When the boat is not in use, the
 two ends are rolled up toward the middle, so
 that the boat occupies a very small space and
 the rolls completely cover and protect the
 generator. The boat may be held in this po-
 125 sition by a rope passing therearound or in
 any other desired manner. When it becomes
 necessary to use the boat, it does not need to
 be lowered carefully, as it may be thrown
 into the water, it only being necessary to have
 130 a rope connected with it, so that it cannot es-
 cape. If the boat is provided with the auto-
 matic inflating mechanism shown in Fig. 6,
 the water enters the starting device or cylin-

der H⁹ as soon as the boat is thrown into the water. A gas is then generated in this cylinder and the holding-lever moved so as to release the shaft G⁴. The springs G⁵ then
 5 force the boxes G' away from each other and produce a partial vacuum. The pressure on the outside then lifts the check-valve H⁵ and the water rushes into the cylinder G. This water comes into contact with the calcium
 10 carbid in the boxes G' and a gas is immediately generated, which passes through the perforations K' and then out through the tube A, so as to inflate the same. I prefer to place just enough calcium carbid in the gen-
 15 erator to properly inflate the tube A. If too much is used, the safety-valve M operates so as to release the pressure. The boxes G' upon being released take the position shown in full lines in Fig. 6, and by engagement
 20 with the inner face of the cylinder form a tight joint, so as to prevent the water from entering the tube A. The boat, now being inflated, takes the position shown in Figs. 1, 2, and 3 and is ready to be used. When the
 25 tube or inflatable chamber is deflated, there are no longitudinal braces, and the boat of course can be rolled up from the ends toward the middle. If now the boat is thrown into the water in its rolled or folded position, it
 30 will be unrolled by the entrance of the gas into the tube, and hence will automatically shape itself so as to be ready for use. When the device shown in Fig. 9 is used, the start-
 35 ing device simply turns the tube N', so as to let the water enter the cylinder G and come into contact with the calcium carbid. Gas is then generated and the tube inflated.

It will be seen that this boat is flexible and foldable, that it can be rolled up so as to oc-
 40 cupy very little space, that it is always ready for an emergency, and that when needed all that is necessary is to throw it into the water. It can be thrown into the water in its rolled-up position or in any other position, and when
 45 the automatic device is used will then immediately straighten out. It will further be seen that since the boat is flexible it is not injured by bumping against the side of the vessel. If, for example, the vessel should go
 50 down, the boat will rise to the surface and will not be carried to the bottom with the vessel. As this boat occupies a very small amount of space, a large number of them can be used upon a vessel in the same space now
 55 provided for life-boats. This boat is lighter in weight than the ordinary life-boat, and thus is much more easily handled.

The boat when in the water and filled with passengers can be moved by means of oars,
 60 or suitable sails may be provided. All of these details will of course depend upon the circumstances and can be arranged to meet the conditions as they arise.

I claim—

65 1. A folding boat, comprising a flexible bot-
 tom, a flexible inflatable part extending around the bottom so as to form the sides of

the boat, two sets of rigid transverse braces, one connected with the bottom of the boat and the other with said inflatable part, and
 70 means for inflating said part when it is desired to use the boat.

2. A folding boat made of flexible material and provided with a flexible inflatable part, which acts when inflated as the sides of the
 75 boat, two sets of transverse braces, one attached to the bottom of the boat and the other attached to said inflatable part, said sets of braces adapted to be brought close to each
 80 other when the inflatable part is deflated, the upper braces being moved upwardly when said part is inflated so as to form seats for the boat.

3. A folding boat, comprising a flexible bot-
 85 tom having a series of rigid transverse braces connected therewith, a flexible inflatable tube extending around the edge of the bottom so as to form the sides of the boat, a series of transverse braces connected with said tube and extending across the boat so as to act as
 90 seats, and a series of diagonal flexible braces, substantially as described.

4. A life-boat, comprising a flexible body portion adapted to be folded and provided
 95 with an inflatable part, a gas-generator wholly within the boat and adapted to be connected with said inflatable part so as to inflate the same when it is desired to use the boat, and an automatic starting device adapted to set
 100 said generator in operation.

5. A folding boat, comprising a flexible body portion, having a series of transverse
 105 braces and provided with an inflatable part, a gas-generator connected with said inflatable part so as to inflate the same when gas is generated, a separate and independent automatic starting device for setting said gas-generator in operation and adapted to be actuated by
 110 placing the boat in the water.

6. A folding boat, comprising a flexible
 115 body portion provided with an inflatable part, a cylinder having within it one or more movable boxes for holding gas-producing material, an actuating device adapted when released to move said box or boxes so as to pro-
 120 duce a partial vacuum in said cylinder, an opening in said cylinder so that water may be admitted thereto, and a separate releasing device for releasing said actuating device when it is desired to inflate the boat.

7. A folding boat, comprising a flexible
 125 body portion provided with an inflatable part, a cylinder having within it one or more movable boxes for holding gas-producing material, an actuating device adapted when released to move said box or boxes so as to pro-
 130 duce a partial vacuum in said cylinder, an opening in said cylinder so that water may be admitted thereto, and a separate automatic releasing device adapted when the boat is placed in the water to automatically release said actuating device.

8. A folding boat, comprising a flexible body portion provided with an inflatable part,

a cylinder having one or more movable boxes for holding gas-producing material, a rotatable shaft, flexible devices connected with the boxes and the shaft so as to move the
5 boxes toward each other when the shaft is rotated, suitable retracting-springs for said boxes, and a controllable opening in the cylinder, whereby when the shaft is released and the boxes moved away from each other
10 material may be drawn through said opening into the cylinder.

9. A folding boat, comprising a flexible body portion provided with an inflatable part, a cylinder having one or more movable boxes
15 for holding gas-producing material, a rotatable shaft, flexible devices connected with the boxes and the shaft so as to move the boxes toward each other when the shaft is rotated, suitable retracting-springs for said
20 boxes, a controllable opening in the cylinder, a locking device for said shaft and an auto-

matic releasing device adapted to release the shaft when the boat is thrown into the water and permit the boxes to be moved to their operative position.

10. A folding life-boat comprising a flexible body portion provided with an inflatable part, a gas-generator adapted to be connected with the said inflatable part, so as to inflate the same when it is desired to use the boat,
30 a separate automatic starting device adapted to be operated by the water when the boat is thrown into the water, and to thereupon act so as to set the generator in operation, a means for supplying a sufficient quantity of
35 water to the generator to enable it to inflate the inflatable part.

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Witnesses:

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