

*J. M. Starr,*

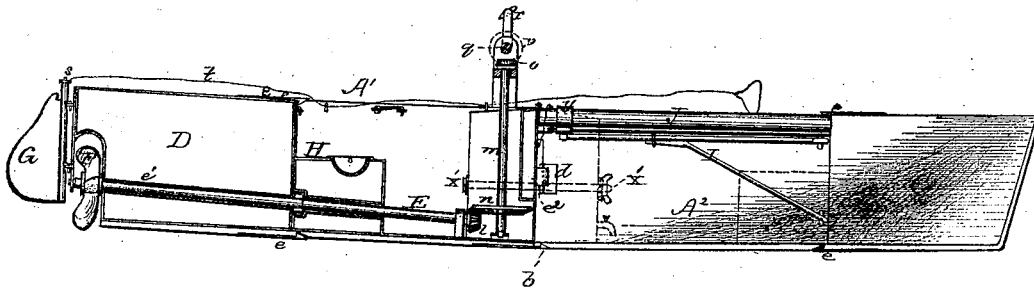
*2 Sheets, Sheet 1.*

*Life Boat.*

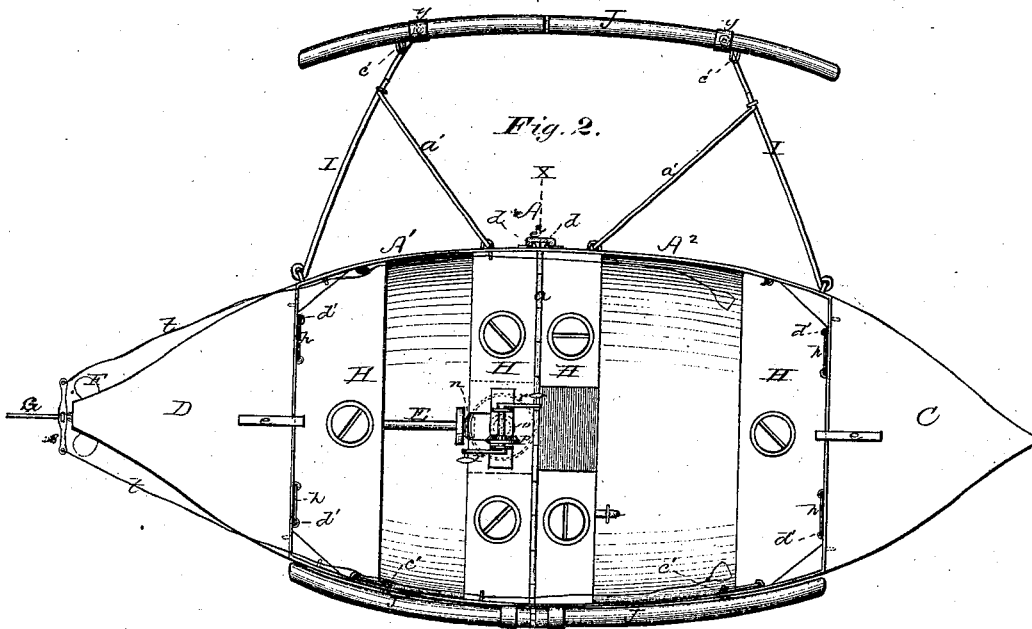
*No. 110,600.*

*Patented Dec. 27. 1870.*

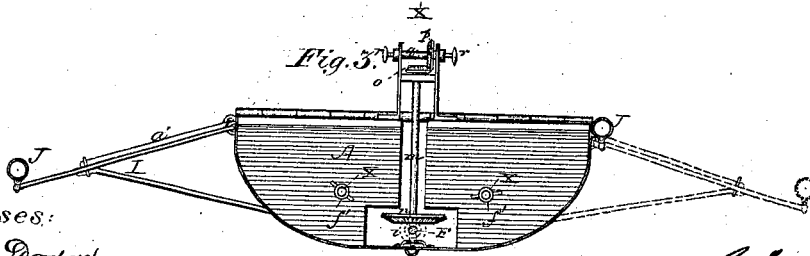
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
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*H. Miller*

Inventor  
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*by Dodge & Munn*  
*his attys.*

J. M. Starr,

2 Sheets, Sheet 2.

Life Boat.

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Fig. 4.

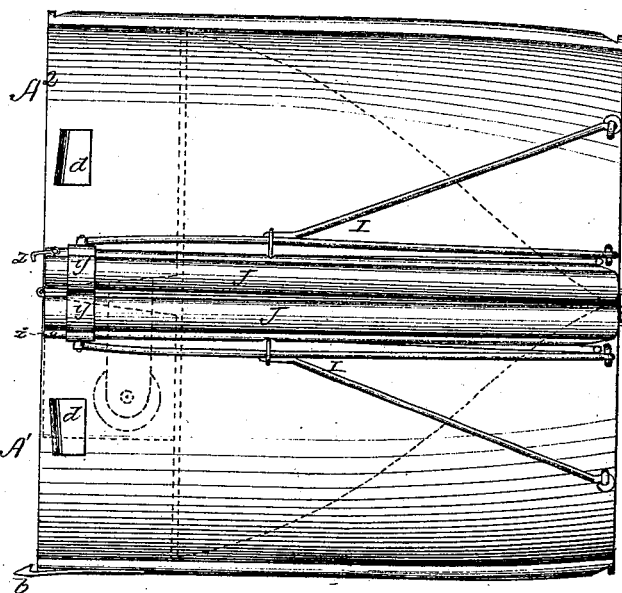
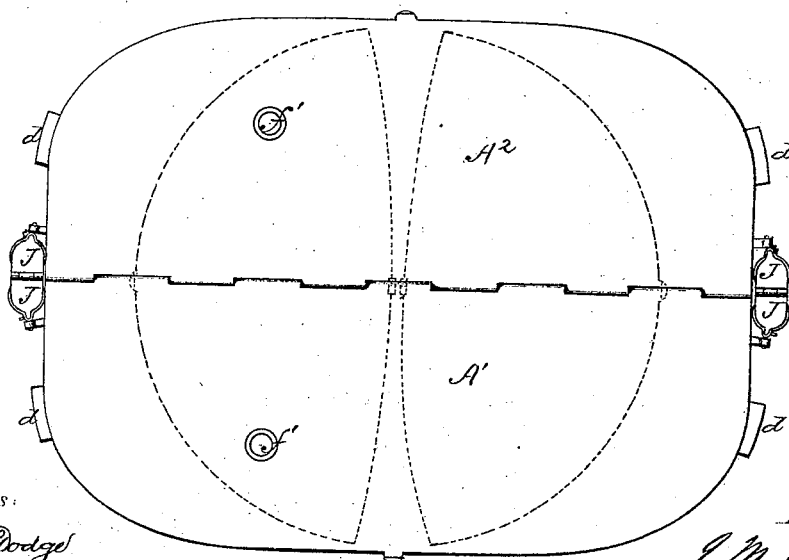


Fig. 6.



Fig. 5.



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# United States Patent Office.

JAMES M. STARR, OF FOND DU LAC, WISCONSIN.

Letters Patent No. 110,600, dated December 27, 1870.

## IMPROVEMENT IN LIFE-BOATS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, JAMES M. STARR, of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain Improvements in Life-Boat, of which the following is a specification, reference being had to the accompanying drawing.

My invention has for its object the production of a light and buoyant boat, provided with means for propelling and steering it, and with lockers for containing supplies, the boat to be so arranged that, when not in use, it can be folded or closed into a small space for storage or transportation.

The invention consists in a boat composed of four transverse sections, the bow and stern being detachable from the waist or body, and the body being hinged transversely in its middle, so that the bow and stern sections may be placed within it and inclosed by folding the latter up.

It also consists in a sectional shaft, provided with a propeller-wheel, and connected with gear and hand-cranks in the boat.

And it further consists in a novel arrangement of extensible folding outriggers or air-cans, and of lockers for containing supplies.

Figure 1 is a side view of my boat ready for use, the after part being taken in section through the middle.

Figure 2 is a top plan view of the boat extended, but with one outrigger closed against the side.

Figure 3 is a transverse section of the same on the line *x x* of fig. 2.

Figures 4 and 5 are, respectively, a side and an end view of the boat folded for storage or transportation; and

Figure 6 are views in plan and section of the blocks or devices for locking the sections of the boat together.

In the drawing—

A represents the body or waist of my boat, which body is divided transversely into two equal parts,  $A^1$   $A^2$ , provided with tight bulk-heads at each end, and hinged together on the upper side, as shown in figs. 1 and 2. The parts of the body thus constructed and connected can either be extended end to end, as in figs. 1 and 2, or folded upon one another, as in figs. 4 and 5.

The section  $A^1$  I provide on its under side with a spring hook or catch, *b*, which, when the two sections are straightened out, engages in a corresponding notch in  $A^2$ , and thereby serves to lock the parts or sections rigidly together.

I also attach to the adjacent ends of the sections  $A^1$   $A^2$ , on each side of the boat, lugs, *d d*, and provide blocks, *e*, with tapering dovetailed grooves in their faces, and clasp one of them over each pair of lugs, as shown in figs. 1 and 2, as an additional lock for holding the parts together.

C and D represent, respectively, the bow and stern, which are made separate from the body, hollow, and air-tight. They are each provided with two spring-catches, *c*, one on the upper and the other on the lower side, whereby they may be secured to their respective ends of the body, as shown in figs. 1 and 2, and they are also provided each with two eyes or staples, *d'*, which protrude through the ends of the body, and are fastened by hooks, *h*, in the latter, as shown.

If desired, the bow and stern sections and the ends of the body may be provided with lugs, so that the parts may be locked together by grooved blocks similar to those described for securing the two parts of the body together.

In the bottom of the boat I mount a longitudinal shaft, E, which extends out through the stern, and has a propeller, F, attached to it, this shaft being severed and provided with a suitable coupling at the point where the stern D and the body separate, as shown in fig. 1.

The portion of the shaft which passes through the stern section is mounted in a tube, *e'*, which extends through the same, and is secured thereto at each end in a water-tight manner, as shown in fig. 1. In this manner the necessity of a stuffing-box at each end is avoided, and the leakage of water into the hollow air-space of the stern prevented.

The shaft, where it passes through the end of the body, is provided with a stuffing-box or other device to prevent leakage.

To the inner end of the propeller-shaft E, I attach a bevel-pinion, *l*, and opposite the end of the shaft E I mount a vertical shaft, *m*, having on its lower end a bevel-wheel, *n*, which meshes into the pinion *l*, as shown.

On the upper end of the shaft *m* I secure the bevel-pinion, *o*, which meshes into a bevel-wheel, *p*, mounted on a horizontal shaft, *q*, which I mount above shaft *m*, as shown in figs. 1 and 2.

To the ends of shaft *q* I attach cranks, *r*, by operating which motion is communicated to the propeller F and the boat moved forward.

To the end of the stern-section D, I secure a rudder, G, and provide it with a detachable yoke, *s*, and pass lines, *t*, from this yoke forward, through eyes on the sides of the boat, to the bow, as shown in figs. 1 and 2, so that the boat can be steered by a person sitting in the bow as a lookout.

In the two ends of each section of the body I secure air-tight vessels or lockers, H and H', and provide them with openings, and screw-caps or covers therefor, as shown in figs. 1 and 2, whereby access may be had to their interior. These vessels serve to hold food and other supplies, which are kept perfectly dry and pure thereby. One or more of these vessels are also provided with cocks, so that, when

filled with water or other fluids, the same may be drawn off through the cocks. The vessels or chambers H' are made low, so that they may also be used as seats by the occupants.

As an additional safeguard for locking the two parts of the body together, one or more bolts, X', may be passed through the adjoining ends of the sections and the tanks therein, as shown in figs. 1 and 2. When this is done, tubes f' are secured through the tanks or vessels to receive the bolts, in a manner similar to that through which the propeller-shaft passes, so as to prevent the leakage of water into the tanks.

To each side of the body A, I hinge two arms or braces, I, one at each end, and to the end of each arm I pivot or swivel a ring or band, y.

I next provide two tubes, J, of the same length as the body, and each consisting of two air-tight sections hinged together, end to end, and provided with a hook, z, and pin, z', by which they may be fastened out in line with each other, as shown in figs. 1 and 2.

I then mount one of these tubes on each side of the boat, by inserting its ends through the bands y, on the ends of arms I, as shown in figs. 1, 2, and 4. On closing the arms I inward, the bands y slide along on the tubes J, and the latter are brought inward against the side of the boat; but, upon turning the arms I outward, the tubes are carried and held at some distance out from the side of the boat, as shown in figs. 2 and 3.

To the sides of the body I attach brace-rods, a', the free ends of which may be hooked into eyes on the arms I, when the latter are extended, so as to hold them, and thereby the tubes, rigidly in position.

To the inner side of the tubes J, I attach eyes or loops, c', which, when the tubes are folded against the boat, project through holes in the latter, and are fastened by hooks on the inside, so as to secure the tubes firmly in place.

The joints in the tubes being in line with the hinge in the body, they will, when folded against the body, double up with it, as shown in figs. 3 and 4. When the tubes or outriggers are extended, and the boat careens badly to either side, the tube on that side is brought to bear upon the water, and being very buoyant, and at the end of a long arm, it offers great resistance to the capsizing of the boat.

When the boat thus constructed is required for use, the body is unfolded, when the catch b automatically engages and locks the parts in position, and then the dovetail blocks are applied to the lugs d d. The bow C is then applied so that its catches e engage with the body, and the hooks h fastened into the eyes a' of the bow. The stern is next applied in like manner, taking care to fit the two parts of the propeller-shaft to-

gether, and then the tubes J unhooked, extended, and braced by the rods, the tiller-yoke applied, and the boat is ready for use.

When the boat is to be packed for storage or transportation, the rods a' are unhooked and the arms I closed, so as to bring the tubes against the sides of the boat, and then the tubes hooked fast. The tiller-yoke is then removed and placed in the body, and the bow and stern detached and also placed side by side in the body, as shown in dotted lines in fig. 2. The fastenings that hold the body extended are then loosened, and all detached pieces placed in the body, and the latter then doubled or folded up so as to inclose all, as shown in figs. 3 and 4, and fastened shut by hooks or similar devices. When thus folded the boat occupies very little space, and, being light, can be readily transported from place to place and quickly prepared for use.

It is obvious that my boat may be made of any suitable material, as of metal, wood, or paper; and, therefore, I do not confine myself to any specific material.

Having thus described my invention,

What I claim is—

1. A life-boat, having its body A divided into two equal compartments, hinged together and arranged to be locked by the spring catches b, lugs d d, and blocks e', and also having its bow C and stern D detachable, substantially as and for the purpose set forth.

2. The arrangement of the air-tight chambers H and H' in each section of the body of the boat, substantially as and for the purpose set forth.

3. The air-tubes J, when constructed and arranged as described, for the purpose of being adjusted along the sides of the boat, or of being moved out laterally from its sides, as and for the purpose set forth.

4. In combination with the body A and the bow C and stern D, the spring catches e, staples a', and hooks h, for attaching the bow and stern compartments, as set forth.

5. In combination with the body A and detachable stern D, the tube e' and the divided and coupled shaft E, with the mechanism for operating the latter, when constructed and arranged substantially as and for the purpose set forth.

6. The combination of the hinged air-tubes J, collars y, arms I, and braces a', when constructed and arranged as described, for the purpose set forth.

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Witnesses:

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