Sheet 1. 2 Sheets

H. Berdan.

Life Boat.

No. 12,375 Patented Feb. 13, 1855.

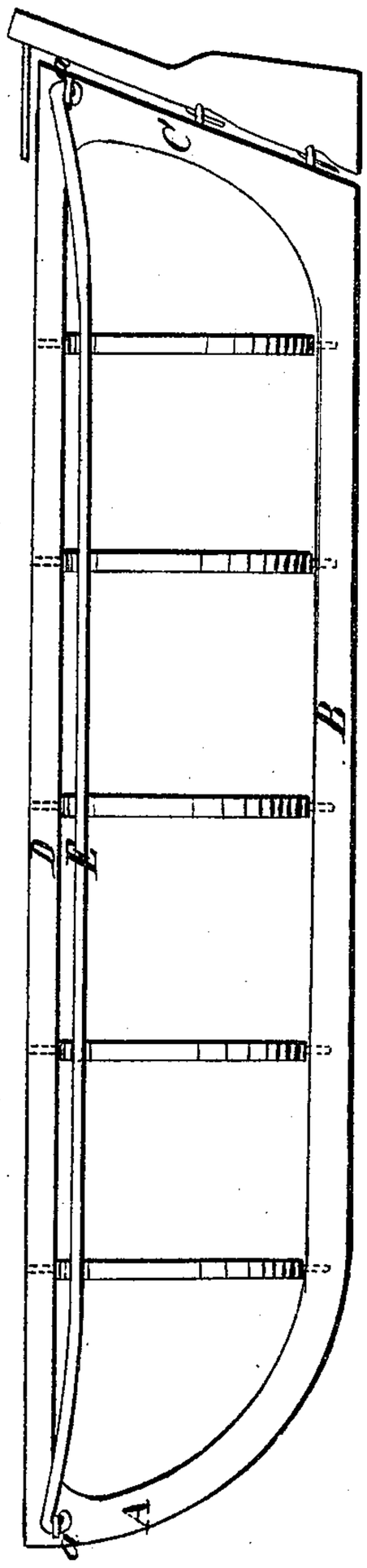

Fig: 1.

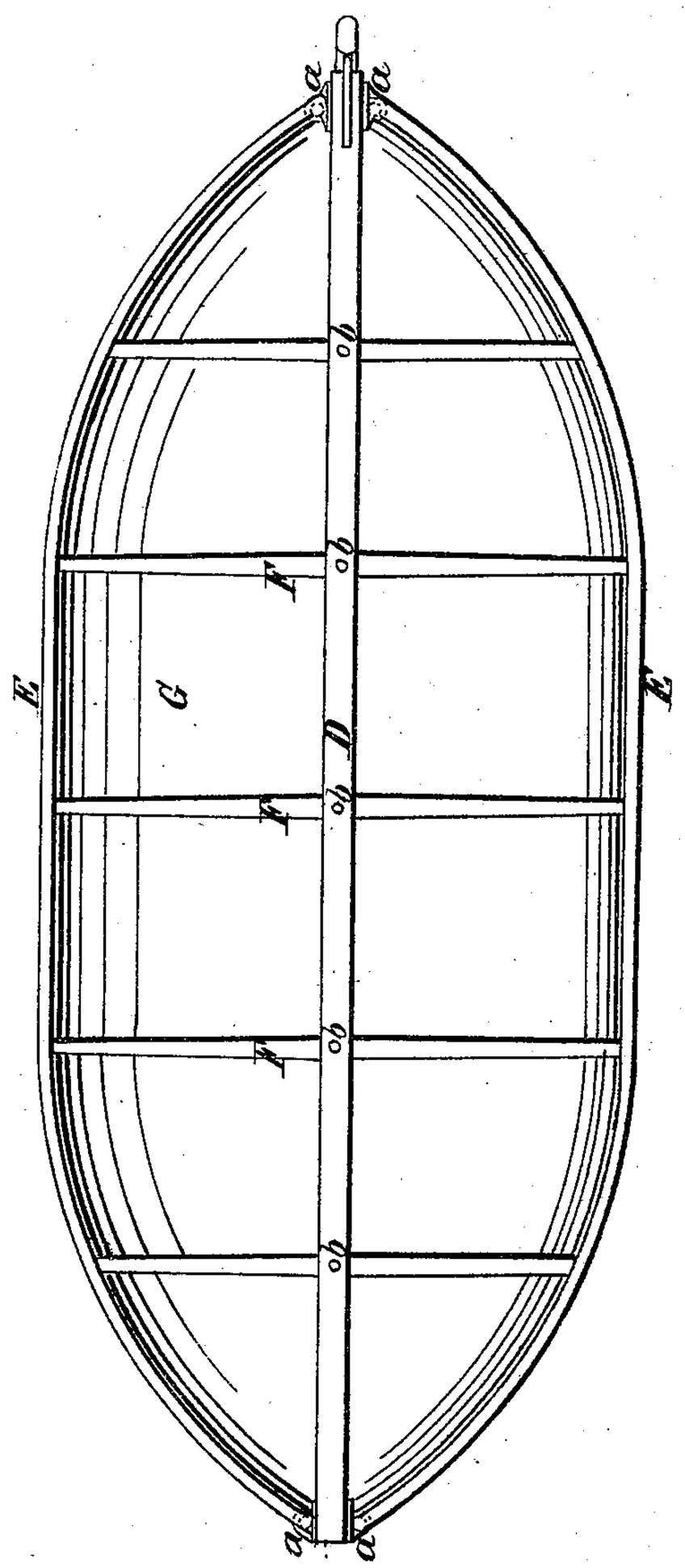

Fig: 2.

Sheet 2. 2 Sheets.

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Fig: 4.

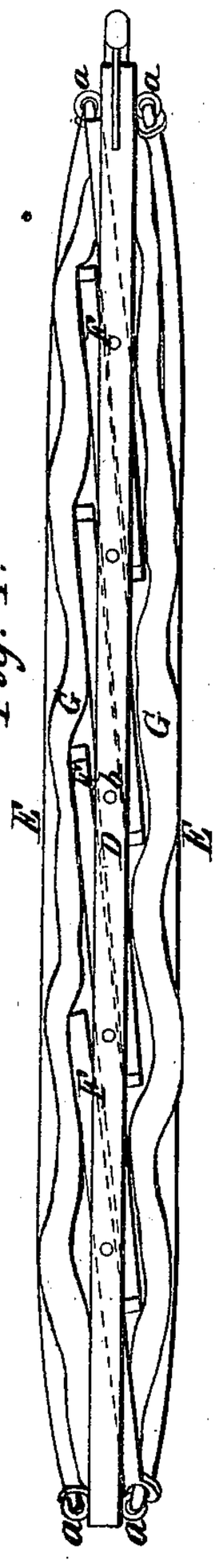


Fig: 7.

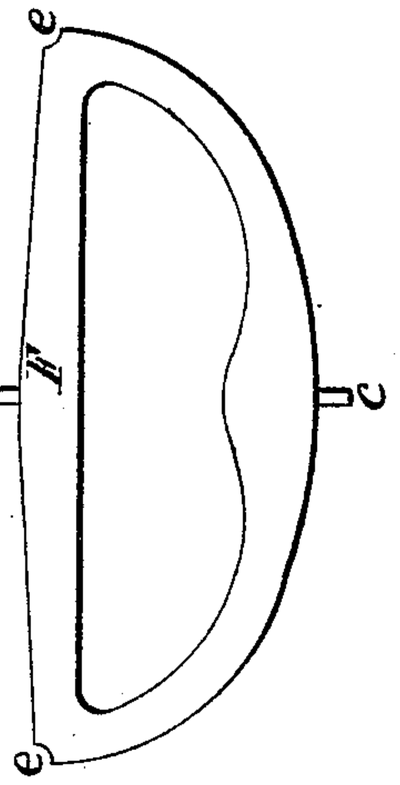


Fig: 6.

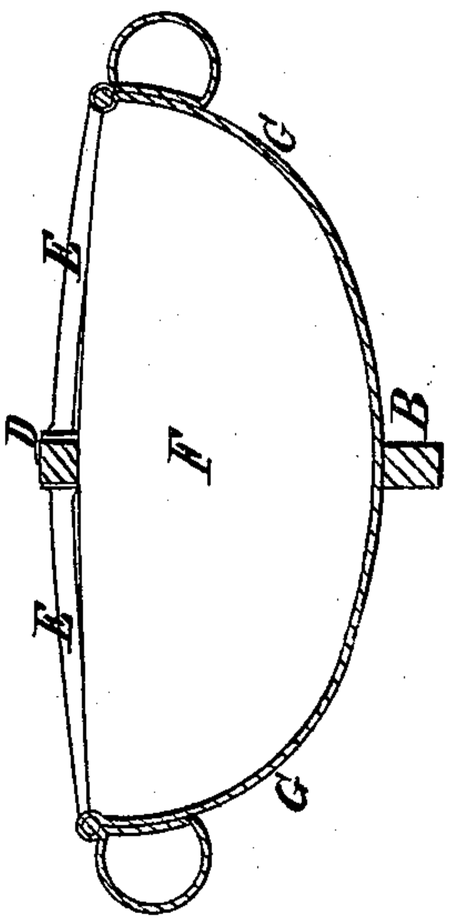


Fig: 5.

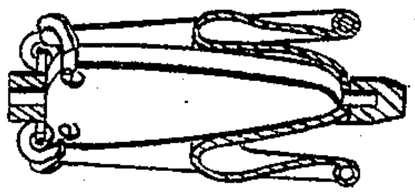


Fig: 3.

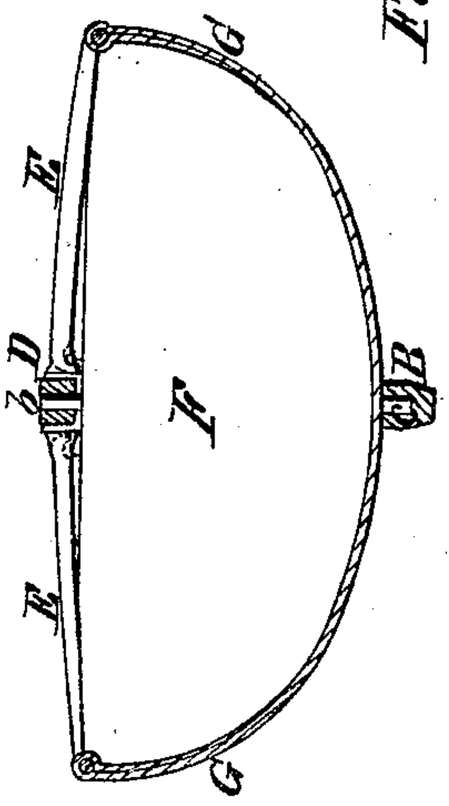
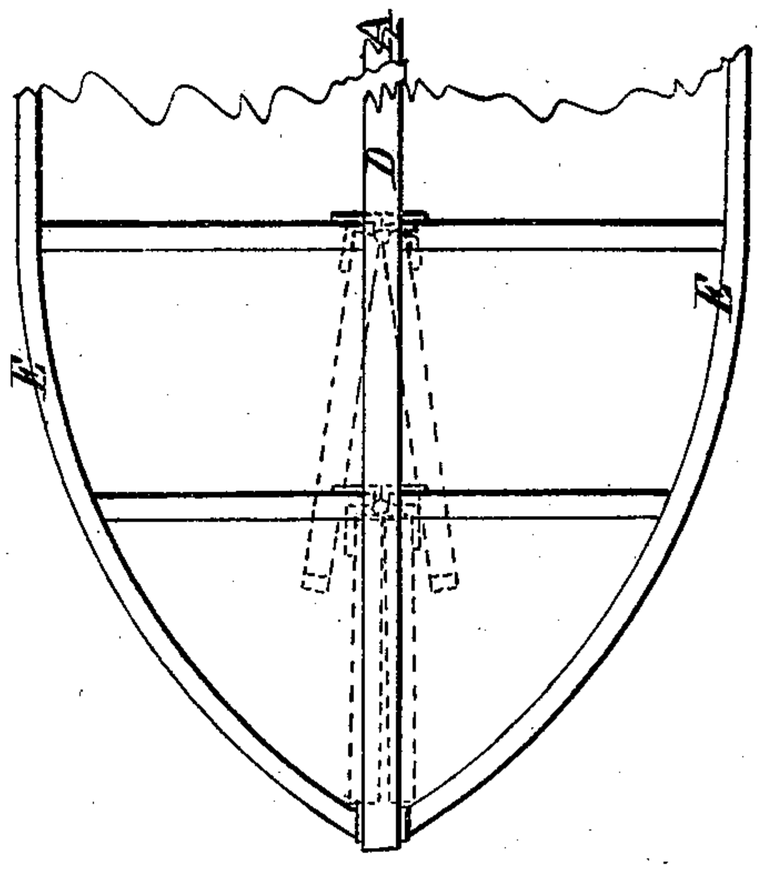


Fig: 8.



UNITED STATES PATENT OFFICE.

HIRAM BERDAN, OF NEW YORK, N. Y.

IMPROVEMENT IN LIFE-BOATS.

Specification forming part of Letters Patent No. **12,375**, dated February 13, 1855.

To all whom it may concern:

Be it known that I, HIRAM BERDAN, of the city, county, and State of New York, have invented a new and useful Improvement in Boats; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

A boat constructed according to this invention consists of a folding frame of wood or metal and a covering of india-rubber, india-rubber cloth, or any flexible water-proof material, the said frame being extended when the boat is required for use, but folded in a reduced compass to stow the boat away when not in use.

This invention consists particularly in the manner of forming the ends of the folding or swinging ribs to receive the folding or swinging gunwales for the purpose of keeping the boat securely extended when in use.

Figure 1 in the accompanying drawings is an elevation of the frame of a boat constructed according to my invention. Fig. 2 is a plan, and Fig. 3 a transverse section, of a boat in condition for service. Fig. 4 is a plan, and Fig. 5 a transverse section, of the boat folded or collapsed for stowing away. Fig. 6 is a transverse section of a boat provided with air-tubes to increase its buoyancy. Fig. 7 is a front view of a skeleton rib. Fig. 8 is a part of a plan of a boat, showing a modification in the construction of the frame.

Similar letters of reference indicate corresponding parts in the several figures.

A B C D is the principal portion of the frame of the boat, which may be termed the "center frame," constituting the stem, the keel, the stern-post, and a stay extending directly from the top of the stem to the top of the stern-post. This part of the framing, which is all perfectly rigid, I prefer to make of wood on account of its greater lightness, though it might be made of metal.

E E are two light metal bars, which may be termed "gunwale-bars," of a proper curved form to serve as the gunwales of the boat. These are attached, one on either side, to the frame A B C D by a hinge or link *a* at each end, so as to be capable of swinging downward to a position nearly parallel with the keel or center of the boat, as shown in Fig. 5.

F F are what may be termed the "ribs" of the boat, as they supply the place of the ribs of a common boat. They may be made either of a solid piece of board, as represented in Fig. 3, or may be merely of skeleton form of wood or metal, as shown in Fig. 7, or of natural crooks, like the ribs of a common boat. The shape of each must correspond with the exact transverse sectional shape required at its respective part of the boat. They are each pivoted by pivots *b c* at the center of the top and bottom to the keel B and the stay D, so as to be capable of swinging to and from positions at right angles to the keel, as shown in Fig. 2, and in line, or nearly so, therewith, as shown in Fig. 4. Each or a number of them should have a notch *e* at the top of either side for the purpose, when they are at right angles to the keel, of receiving the gunwale-bars and holding them up in place to keep the boat extended.

The above-described parts form a complete frame, only requiring a covering of water-proof material to make a strong serviceable boat.

G is the water-proof covering, which may be made in one or more pieces cut from a flat sheet of any water-proof material, to fit the outside of the frame when the latter is extended. I prefer to use sheet india-rubber or india-rubber cloth for this purpose; but canvas or other textile fabric saturated or painted or varnished over with some water-proof substance may be employed. This must be secured to the keel, the stem, and stern-post, and to the gunwale-bars, care being taken that the joint along the keel, the stem, and stern-post is water-tight.

The boat constructed as above described, when not required for service, is collapsed by having the ribs F F moved by hand to a position as nearly as possible in line with the keel and the gunwale-bars thrown down to the position represented in Fig. 5, by which the flexible covering will be folded up between the gunwale-bars and the ribs. When required to be launched for service, the gunwale bars are first thrown upward, as represented in red outline in Fig. 5. The ribs are then turned at right angles to the keel and the gunwale-bars brought into the notches *e e* in the ribs. The tension of the covering is intended to be sufficient to draw the gunwale-

bars tight down into the notches *e e*, and by this means all the parts are secured in place and the boat is made perfectly stiff and firm.

Boats constructed on this principle may be employed as life-boats, and a large number may be carried in a small compass on board ships to be employed in cases of ship-wreck. When intended to be employed for such purposes, they should be provided with an air tube or chamber under the gunwale, as shown in section in Fig. 6. This tube or chamber may extend the whole or any portion of the length of the boat and may be made of the same flexible material as the covering G, so that when the boat is collapsed or folded the said tube or chamber may be allowed to collapse by the escape of the air from within it, and will occupy but little additional room in stowing the boat. The tube or chamber may be inflated with air before launching the boat by a bellows or other means.

Instead of the ribs F F made each in one piece and turning one half toward the head and the other half toward the stern of the boat, ribs divided in the center or composed each of two parts, as shown in Fig. 8, may be employed, the two parts being hinged together or to the keel B, so as to swing both toward the head or stern, as shown in the above-named figure in red outline. In this case the stay D may be dispensed with.

By placing the ribs F F far enough from each other they may be caused, when the frame is folded, to occupy a position entirely within or between the planes of the sides of the frame A B C D without lying one against the other, as shown in Figs. 4 and 8.

I do not claim of themselves either the hinged or pivoted ribs or the hinged gunwale-bars; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The method herein described of keeping the gunwale-bars E E in place when the boat is extended for service by means of the notches *e e*, which are made in the ribs F F to receive the said gunwale-bars.

HIRAM BERDAN.

Witnesses:
S. H. WALES,
I. G. MASON.