(No Model.) 2 Sheets—Sheet 1.

J. H. HUTCHINGS.

COLLAPSIBLE BOAT.

No. 568,255. Patented Sept. 22, 1896.

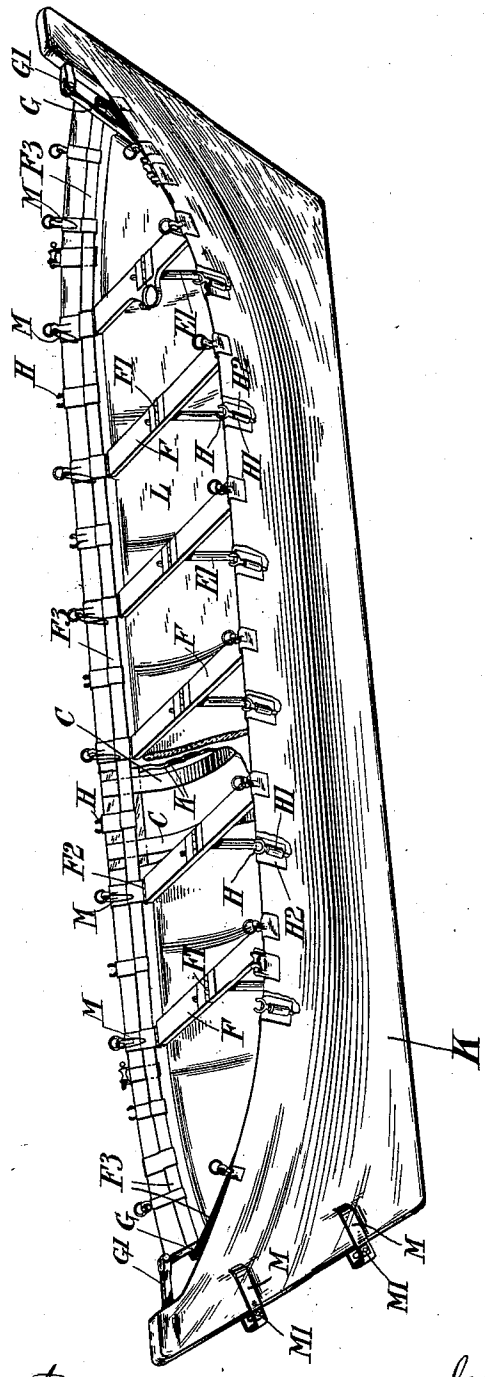

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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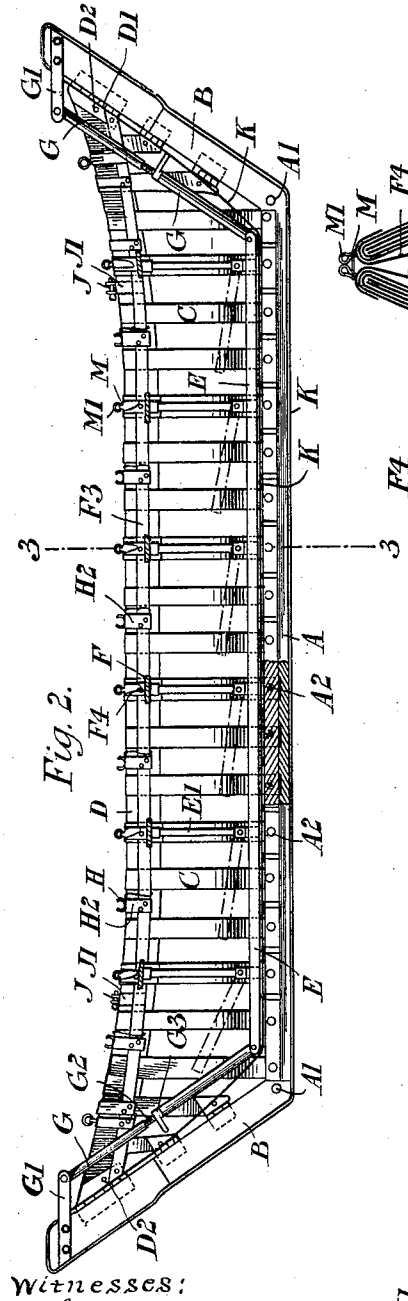

Fig. 2.

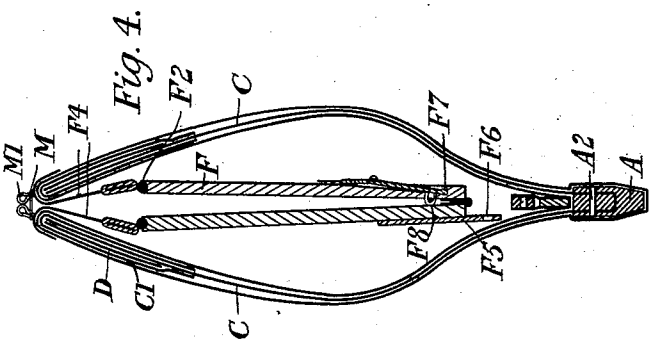

Fig. 4.

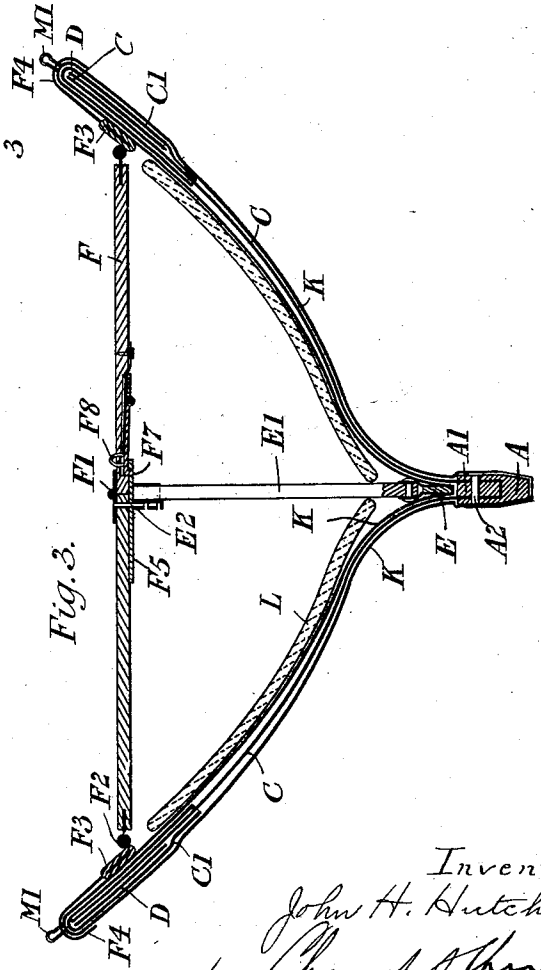

Fig. 3.

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Inventor:
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UNITED STATES PATENT OFFICE.

JOHN HAWKINS HUTCHINGS, OF LOWESTOFT, ENGLAND.

COLLAPSIBLE BOAT.

SPECIFICATION forming part of Letters Patent No. 568,255, dated September 22, 1896.

Application filed March 31, 1896. Serial No. 585,652. (No model.)

To all whom it may concern:

Be it known that I, JOHN HAWKINS HUTCHINGS, a subject of the Queen of England, residing at Lowestoft, Suffolk, England, have invented certain new and useful Improvements in Collapsible Boats, of which the following is a specification.

This invention relates to boats so constructed that they may be folded up for convenience of transport and portability.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the complete boat in its expanded or working condition, a portion being broken away to show the framing. Fig. 2 is a longitudinal central section of Fig. 1, and Figs. 3 and 4 are transverse sections on the line 3 3 of Fig. 2, showing the boat in respectively its expanded and collapsed condition.

In Figs. 1, 3, and 4 the boat is shown with its outer or canvas cover or sheathing, and in Fig. 2 without it, and Figs. 3 and 4 are drawn to a larger scale than that to which Figs. 1 and 2 are drawn.

Like letters indicate like parts throughout the drawings.

In carrying out the invention I provide a suitable keel A, of wood, metal, or other material, and connect to this, preferably by joints A′, suitable stem and stern posts B, which, in the example represented, are both alike. From the keel A extend preferably flexible ribs C to the height of the gunwales D, to which they are connected, the ribs and gunwales being flat and constructed of metal, wood, or other suitable material and as thin as possible, so as to take up little room when the boat is collapsed. When the ribs C are made of flexible metal, each pair to be attached to the keel A may be formed in one piece, as indicated in Figs. 3 and 4. These may be secured in a groove in the top of the keel A by a strip or bar A′, fitting into the groove and over the ribs, and by rivets or equivalent A^2, passing through the keel A, ribs C, and bar A′.

The ribs C may be secured directly to the gunwales D, or by means of straps or loops or equivalent C′ fastened to the ribs and encircling the gunwales D. By these last-named means the gunwales are free to move through the loops C′ independently of the ribs.

Between the ribs C at the two sides of the boat and above the keel A, I employ a keelson E, to which are pivoted stanchions E′ for supporting the seats F and stiffening the boat generally, the ends of the keelson E being connected with braces G whose upper ends are jointed to the upper ends of, respectively, the stem and stern posts B conveniently through brackets G′, secured to these posts. When the boat is collapsed, the stanchions E′ are turned down into an approximately horizontal position, as shown in dotted lines in Fig. 2 and in full lines in Fig. 4. They may be retained in the vertical position by bolts E^2, fitted thereon, being made to engage with holes in the seats F, as shown in Fig. 3. The braces G are preferably adjustable in length, and for this purpose may each be formed in two parts, one carrying a screw G^2 with a nut G^3 thereon and the other formed tubular for receiving the screw and providing an abutment-surface for the nut G^3, as shown in Fig. 2; or the two parts of each brace may be connected by ~~a right and left~~ handed screw or nut or otherwise.

The seats F are each formed in two parts hinged together, as at F′, at the center of the boat and also hinged at F^2 to bands F^3, consisting of thin strips of any suitable material covered with canvas supported by hooks or clips F^4, engaging with the gunwales. When the boat is collapsed, the seats F fold downward at the center and lie near the keelson, as shown in Fig. 4. When the seats F are straight, the gunwales D are forced and held apart by them, suitable catches preferably being provided to retain the seats in this condition even without the assistance of the stanchions E′. For this purpose I may secure on one half of the seat F a plate F^5, adapted to project beyond the second half of the seat, at which projecting part is provided an opening F^6, Fig. 4. With this opening F^6 a spring-catch or spring-controlled catch F^7, mounted on the second half of the seat F, automatically engages when the seat is straightened, as shown in Fig. 3, and to re-

lease the catch F^7 from the opening F^6 said catch has to be raised, which, in the example represented, may be effected by means of the eye or loop F^8, passing through the seat to the top thereof, said loop being moved upward by hand or by a suitable taper bolt, hook, or equivalent. Instead, however, of using a catch device such as that previously described I may employ any other device suited to the purpose. By connecting the seats to the boat by means of the bands F^3 and hooks or clips F^4, as before described, the seats together with their appurtenances may be lifted bodily out of the boat, leaving only the collapsible hull. With this arrangement it is not compulsory that the seats should fold, for when the boat is to be collapsed the seats may be removed.

The seats F, instead of being supported by the bands F^3 and clips F^4, may be hinged directly to the gunwales or connected to the sides of the boat by any suitable connecting devices.

The ends of the gunwales D are connected, preferably, by hinges or equivalent D′ to the stem and stern posts B and are also pivoted, as at D^2, at their connection with the hinges D′, so as to allow of the double movement necessary at these joints when folding the sides together. The bands F^3 and those of the ribs C which are connected to the stem and stern posts B, for example, the last two at each end of Fig. 2, are also similarly double-hinged to the posts B for a like purpose.

The rowlocks H are preferably pivoted in sockets H′, carried by clips H^2, which, like the clips F^4, are secured to and assist in supporting the bands F^3. If desired, however, the rowlocks may be mounted on the boat in any other convenient manner.

The tackle by which the boat is suspended I prefer to connect with the pulleys or equivalent J, secured upon the gunwales D by clips or equivalent J′, so that as the weight of the boat comes upon the tackle it will tend to close the gunwales together, and thus assist in the folding up of the boat. In Fig. 4 the boat is shown in the collapsed condition in which it would ordinarily be when suspended by tackle. When, however, it is desired to stow the boat away, the flexibility and jointing of the ribs allow it to be pressed into comparatively a very small space and almost flat.

The frame may be covered either inside or outside, or both, with canvas or other suitable waterproof and flexible material or sheathing K. In the example represented the frame is covered on both sides with this waterproof material, which for this purpose is formed into a double casing approximately corresponding in general shape to that of the frame. This covering K is held in position at the lower part by the keelson E, beneath which and between which and the keel A or bar A′ its inner part or casing passes, as shown in Figs. 2, 3, and 4, and at its upper part it may be secured to the gunwales by any or all of the clips F^4, H^2, and J′, or it may be secured in position in any other convenient manner.

A further protection and support for the occupants of the boat may be provided upon the inside in the form of removable canvas or other flaps or lining L, containing, preferably, thin cork, rubber, or equivalent material, and masts and sails (not shown in the drawings) may be employed, as required, and connected with the keel A, keelson E or ribs C, and seats F, as needed, and a rudder and other customary fittings can be used, if required. To accommodate the rudder-pintles, I prefer to secure two clips M to the stern-post B, outside the sheathing K, conveniently by means of bolts M′, passing through the arms of the clips, as shown in Fig. 1, though other means may be employed for the purpose. If desired, also collapsible tubes of rubber or other water and air tight material may be carried in any suitable part of the boat, conveniently around the sides under the seats F, or these may be arranged near the top at the outside of the boat to serve as fenders, and the pressure of air or gas in these tubes may be the same as that of the atmosphere, or greater, suitable pumps being employed for charging, if required. Where the air is only intended to be used at atmospheric pressure, one or more screw-valves may be employed for these tubes, left open when the boat and also the tubes are collapsed and screwed up or closed when the tubes are distended.

The ribs C and other portions requiring protection may be enameled, painted, varnished, or otherwise protected, and the boat when collapsed may be provided with a canvas or other waterproof cover or bag to protect it. Ties M and hooks or other fastenings M′ may be employed at requisite intervals along the sides or gunwales D to hold them together when the boat is collapsed, as in Fig. 4.

The before-described boats may be carried in their collapsed condition in passenger, man-of-war, and other vessels, stowed in secure or safe places, or on deck ready for use at any time.

I claim—

1. In a collapsible boat the combination with the keel of stem and stern posts jointed thereto flexible ribs secured to the keel and stem and stern posts gunwales jointed to the ribs and stem and stern posts a waterproof and flexible sheathing for the frame A keelson-braces connecting the keelson with the stem and stern posts screw adjustments for these braces seats joints and catch devices for the seats connecting devices for connecting the seats to the sides of the boat stanchions for the seats and removable lining.

2. In a collapsible boat, the combination with the keel and stem-post jointed thereto,

of ribs, united to the keel and ribs pivoted at their lower ends to the stem-post; substantially as described.

3. In a collapsible boat the combination with the keel and stem-post jointed thereto, of ribs secured to the keel, and ribs pivotally connected at their lower ends to the stem-post so as to have pivotal movement in two directions, substantially as and for the purpose set forth.

4. In a collapsible boat, the combination with the keel and stem-post jointed thereto, the gunwale pivotally connected to the stem-post, the ribs secured to the keel and extending up and secured to the gunwale, and ribs pivoted at their lower ends to the stem-post, substantially as described.

5. In a collapsible boat, the combination with the keel and stem-post jointed thereto, the gunwale double-pivoted to the stem-post, the ribs secured to the keel and extended upward and secured to the gunwale, and ribs double-pivoted to the stem-post, as and for the purpose set forth.

6. In a collapsible boat, the combination with the keel and stem-post jointed thereto, the gunwale, the flexible ribs secured to the keel and extending up and secured to the gunwale, and flexible ribs pivotally connected at their lower ends to the stem-post; substantially as described.

7. In a collapsible boat, the combination with the keel, grooved longitudinally, of the flexible integral ribs, fitted into said groove, the strip or bar fitting into said groove over the ribs, the bolts passing through the ribs, keel and bar, the gunwales, the loops or straps carried by the ribs, for securing said ribs to the gunwale; substantially as described.

8. In a collapsible boat the combination with the keel and the stern and stem posts jointed thereto, a keelson, the braces pivotally connected to the keelson, and to the stern and stem posts; substantially as described.

9. In a collapsible boat the combination with the keel and stern and stem posts jointed thereto, the keelson, the adjustable braces pivotally connected at one end to the keelson and at the other to the bracket carried by the stern and stem posts; substantially as described.

10. In a collapsible boat the combination with the keel, and the stern and stem posts jointed thereto, a keelson, the two-part braces adjustably connected together and pivotally connected at one end to the keelson and at the other to the stern and stem posts; substantially as described.

In witness whereof I have hereto set my hand in the presence of the two subscribing witnesses.

JOHN HAWKINS HUTCHINGS.

Witnesses:
ALFRED J. BOULT,
HARRY B. BRIDGE.