

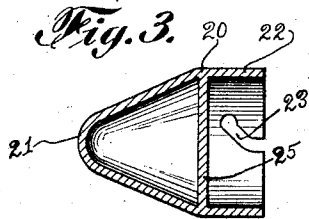
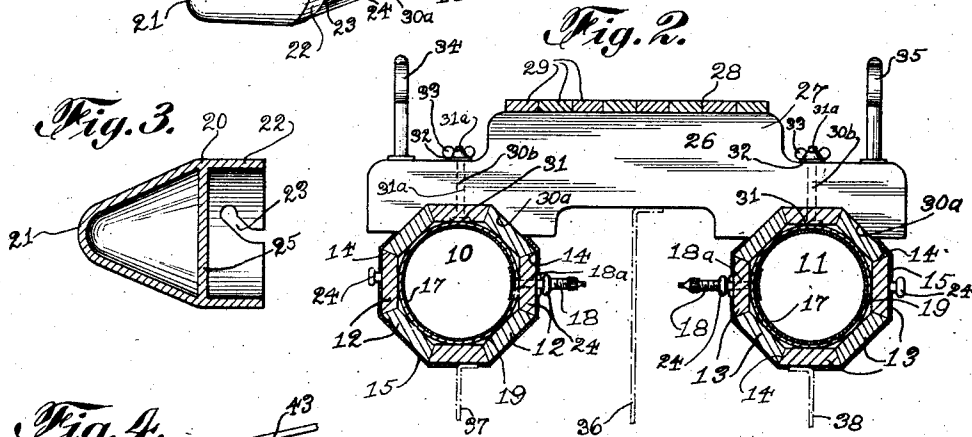
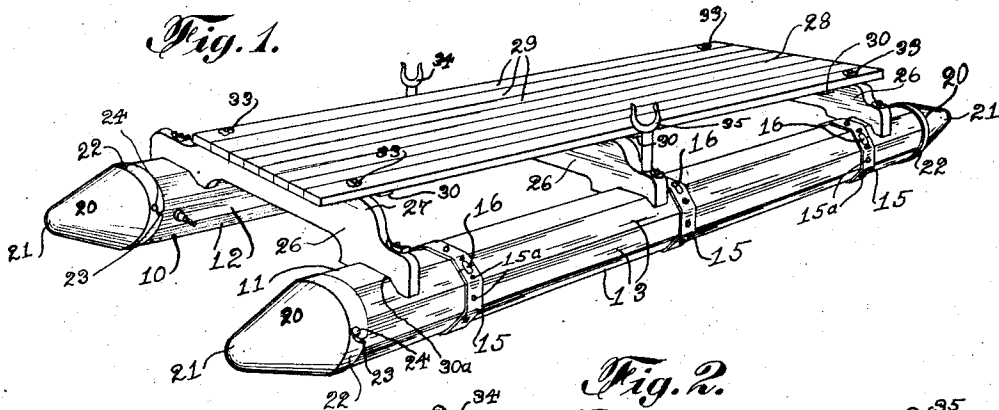
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FOLDING COLLAPSIBLE BOAT

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## UNITED STATES PATENT OFFICE.

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## FOLDING COLLAPSIBLE BOAT.

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This invention relates to water craft, and more particularly to a collapsible boat or raft of the catamaran type.

One object of this invention is to provide a collapsible boat of the above nature which is adapted to be used for locomotion, sailing, fishing, as a float in conjunction with bathing or water sports, as a life saving apparatus, or for any other purpose where a substantial collapsible boat is desired.

A further object is to provide a collapsible boat of the above nature which will be light in weight and compact when in collapsed condition, so that it may be easily transported by hand, automobile, or in any other convenient manner.

A further object is to provide a boat of the above nature which will be simple in construction, inexpensive to manufacture, easy to manipulate, and very efficient and durable in use.

With these and other objects in view there have been illustrated on the accompanying drawing several forms in which the invention may be conveniently embodied in practice.

Fig. 1 represents a perspective view of the boat as it appears in assembled operating condition.

Fig. 2 is a transverse sectional view of the same.

Fig. 3 is a longitudinal sectional view of an end cap of one of the float casings.

Fig. 4 is a perspective view showing one of the cross brace members having a hand-operated rudder hinged thereto.

Fig. 5 is a fragmentary perspective view of one of the cross brace members having a sail mast secured thereto.

Fig. 6 is a diagrammatic perspective view showing a boat which is provided with a pair of hand-operated paddle wheels.

Fig. 7 is an end view of the float casing as it appears when in collapsed position.

Briefly, this invention consists of an open-to-the-water boat of the catamaran type supported upon collapsible elongated floats. The floats are detachably connected at intervals by suitable cross brace members to form a raft-like construction, which may be quickly and easily assembled and taken down. The buoyancy for the craft is provided by rubber bladders or tubes inflated with air, said tubes being contained within flexible bags of canvas or other similar material, which are adapted to constrain the tubes and limit the

expansion thereof. Each canvas bag is in turn surrounded by a collapsible outer casing member composed of a series of slats and adapted to be rolled into position around the canvas bag, said casing member being locked in place by clamps or other suitable fasteners. The outer casing member is designed to provide rigidity for the float casing and also protects the inner tube and canvas bag from injury due to the action of the water, air, or sun, and the abrasion of rocks, sand, etc. The ends of the float casing are closed by conical shaped caps, which are adapted to be held in place by suitable bayonet pins and sockets and the pressure of the inflated bag.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the collapsible boat comprises a pair of float members, generally indicated by the numerals 10 and 11, said float members being provided with outer casings made up of a plurality of slats or segments 12 and 13, preferably constructed of wood, said slats having their longitudinal adjacent edges beveled at 14. The slats 12 and 13 of each outer casing are preferably connected together by a plurality of flexible strips 15, said strips being secured to the slats in any suitable manner as by rivets 15<sup>a</sup>.

The ends of the flexible strips 15 are joined as by turnbuckles or other rotatable fastening members 16. It will be understood, however, instead of the flexible strips, the slats may be joined together by hinges or any other suitable means.

In the operation of disassembling, a float, it will only be necessary to turn the fastening members 16, unroll the slats 12 and 13 until flat, remove the casing and tube, and then re-roll the slats into a compact bundle as clearly shown in Fig. 7.

In order to provide the necessary buoyancy for the craft, each of the floats is provided with a flexible inner tube 17, preferably of rubber, said tube having closed sealed ends, and being provided in one side with a valve 18, through which the tube may be inflated by a suitable air pump, not shown, and from which the air may be expelled whenever it is desired. The stems of said valves 18 are adapted to extend through apertures 18<sup>a</sup> in the innermost slats of the float casings, whereby the danger of accidental injury to said stems is reduced.

In order to limit the expansion of the inner tube 17 provision is made of a surrounding flexible bag 19, preferably of canvas, said bag 19 being adapted to be pressed tightly against the slats of the collapsible casing.

The canvas bag 19 may be provided intermediate its ends with a longitudinal slit, not shown, said slit having a strengthening tongue stitched underneath it on the inside of the bag, and said tongue having a small hole for the protrusion of the valve stem 18. By means of this construction, the rubber tube 17 may be inserted in the canvas bag 19 much in the same manner as a bladder is inserted in the outer casing of a football. If desired, the edges of the slit may be provided with eyelets, not shown, for receiving suitable lacing strings in order to more securely hold the tube 17 in position.

In order to close the ends of the casings and still further strengthen the construction, each of the floats 10 and 11 has a pair of hollow float caps 20, said float caps having rounded conical outer ends 21 and cylindrical inner ends 22, the latter being adapted to fit over the ends of the slats 12 and 13. The cylindrical ends 22 of each of the float caps are provided with opposed diagonal bayonet slots 23 which are adapted to fit over corresponding pins 24 mounted on opposite slats 13. The float cap may be provided with an interior partition 25 to restrain and support the ends of the tube and bag, but it will be understood that said partition may be omitted if desired.

In order to detachably connect the float members 10 and 11 and support a suitable superstructure, provision is made of a plurality of cross brace members 26—three in number in this instance. As clearly shown in Fig. 2, each of the cross brace members 26 comprise central body members 27 extending upwardly for supporting a deck 28, and said deck is preferably composed of a plurality of parallel slats 29 connected together by suitable flexible cross-strips 30.

The ends of the cross brace members 26 are provided in their bottom edges with angular notches or recesses 30<sup>a</sup> which are adapted to fit snugly over the tops of the two float members 10 and 11.

In order to securely attach the cross brace members 26 to the float casing 10 and 11, provision is made of suitable bolts 30<sup>b</sup>, said bolts having heads 31 located under the top slats 13 of the float casings, the threaded ends 31<sup>a</sup> of said bolts being adapted to extend vertically upward through openings 31<sup>b</sup> in the ends of the cross brace members 26, said threaded ends 31<sup>a</sup> having washers 32 and wing nuts 33 fitted thereon.

It will be understood that while the float casing in its assembled position has been shown as octagonal in shape, it is within the spirit and scope of the invention to make the

float casings circular, pentagonal, rectangular, or of any other suitable form.

In the operation of assembling the boat, after the end caps 20 have been locked in position upon the float casings, a small amount of additional air will preferably be introduced into the rubber tubes 17 so as to cause the said tubes to expand still further, thereby producing a more rigid construction. It will be understood, of course, that the slats 12 and 13 will have previously been locked in position. The cross brace members 26 and the deck 28 may then be secured in position upon the floats.

In order to permit the collapsible raft to be propelled through the water by a person sitting or standing on the deck 28, the central cross brace member 26 is provided on its opposite ends with a pair of oar locks 34 and 35. Lateral stability may be imparted to the craft, by locating a single keel member 36 on the underside of the cross members 26, as shown in dotted lines in Fig. 2, or a pair of keel members 37 and 38 may be secured upon the bottoms of the float casings 12 and 13, respectively. It will be understood, if desired, that all three of said keel members 36, 37, and 38 may be used at the same time.

In Fig. 4 a special form of cross brace member 40 is illustrated, said brace member having a rudder blade 39 pivotally attached thereto as by hinges 41, said rudder member having an upwardly extending shaft 42 and a forwardly extending handle or tiller 43 to be grasped by the person steering the boat.

In Fig. 5 a still further modified form of cross brace member 44 is illustrated, said member 44 having a socket member 45 secured thereto for holding a sail mast 46.

In the form of boat shown in Fig. 6, a still further form of propelling means is illustrated, comprising a pair of paddle wheels 47 mounted upon opposite ends of a shaft 48. In this form of the invention, the paddle wheels 47 are carried in suitable bearings 49 mounted on the tops of floats 50 and 51, and the central portion of the shaft is offset and provided with a handle 52 so that the paddle wheels 47 may be readily manipulated by a person sitting upon the deck 28. It will be understood that the paddle wheels may also be driven by foot power if desired, in which case any suitable pedal or treadle construction, not shown, will be installed.

It will also be understood that it is quite possible and feasible to install a suitable "out-board" or other type of motor upon the craft for propelling it.

One advantage of the present invention is that the rubber tubes 17 need not be inflated to a high pressure, but will operate efficiently at a pressure below ten pounds above that of the atmosphere.

A further advantage is that when the boat is not in use, the canvas bags 19 may be em-

ployed for wrapping about and storing the slats of the float casing and the deck, and possibly may carry other parts of the collapsed craft.

5 While there have been disclosed in this specification several forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

15 Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent is:

1. In a collapsible boat, a pair of float members, a framework supported upon said float members, each of said float members having a collapsible casing comprising a plurality of longitudinal slats arranged edge to edge, the adjacent edges of said slats being beveled, a plurality of flexible straps for connecting said slats, said casing forming a substantially circular hollow prism in assembled position, and being adapted to be rolled up into a small space when not in use, the ends of said casings having removable closure members.

2. In a collapsible boat of the catamaran type, a pair of float members, a deck mounted upon and connected to said float members, each of said float members comprising an inner tube adapted to be inflated, a flexible canvas bag surrounding said tube, and a collapsible casing of wooden slats for strengthening and protecting said tube and canvas bag, the ends of said casings having removable float caps fitted and locked thereon.

3. In a collapsible boat of the catamaran type, a plurality of longitudinal float members, a plurality of transverse cross brace members mounted upon and secured to said float members, and a collapsible strap-hinged slatted deck supported upon said cross brace members.

4. In a collapsible boat of the catamaran type, a pair of float members, a deck mounted upon and connected to said float members, each of said float members comprising an inner tube adapted to be inflated, a flexible bag surrounding said tube, and a collapsible casing of slats for strengthening and protecting said tube and bag, the ends of said casings having removable float caps fitted and locked thereon.

5. In a collapsible boat, a plurality of float

members, a frame for connecting said float members, each of said float members comprising an inflatable inner tube, a collapsible casing surrounding and protecting said inner tube, and a pair of closure members for fitting over the ends of said casings, said closure members being held in position by the expansive force of the inner tube pressing outwardly through said casing upon said closure members.

6. In a collapsible boat of the catamaran type, a pair of float members, a deck mounted upon and connected to said float members, each of said float members comprising an inner tube adapted to be inflated, a flexible canvas bag surrounding said tube, and a collapsible casing of wooden slats for strengthening and protecting said tube and canvas bag, the ends of said casings having removable float caps fitted and locked thereon, said closure members being held in position by the expansive force of the inner tube pressing outwardly through said casing upon said closure members.

7. In a collapsible boat, a plurality of float members, a frame for connecting said float members, each of said float members comprising an inflatable inner tube, a collapsible casing surrounding and protecting said inner tube, and a pair of closure members having a detachable bayonet pin and slot connection with said casings, said closure members being held in position by the expansive force of the inner tube pressing outwardly through said casing upon said closure members.

8. In a collapsible boat of the catamaran type, a pair of float members, a deck mounted upon and connected to said float members, each of said float members comprising an inner tube adapted to be inflated, a flexible bag surrounding said tube, and a collapsible casing of slats for strengthening and protecting said tube and bag, the ends of said casings having removable float caps fitted and locked thereon, said flexible bag serving as a container for the slats and inner tube when in collapsed condition.

9. In a float member for a collapsible boat of the catamaran type, an inner tube to be inflated, a flexible canvas bag for surrounding said tube, a collapsible casing for surrounding said bag for strengthening and protecting said bag and tube, and means for limiting the expansion of said collapsible casing.

In testimony whereof, I have affixed my signature to this specification.

MAURICE GAYLORD STEELE.