Dec. 10, 1940. J. LEE 2,224,482

BOAT

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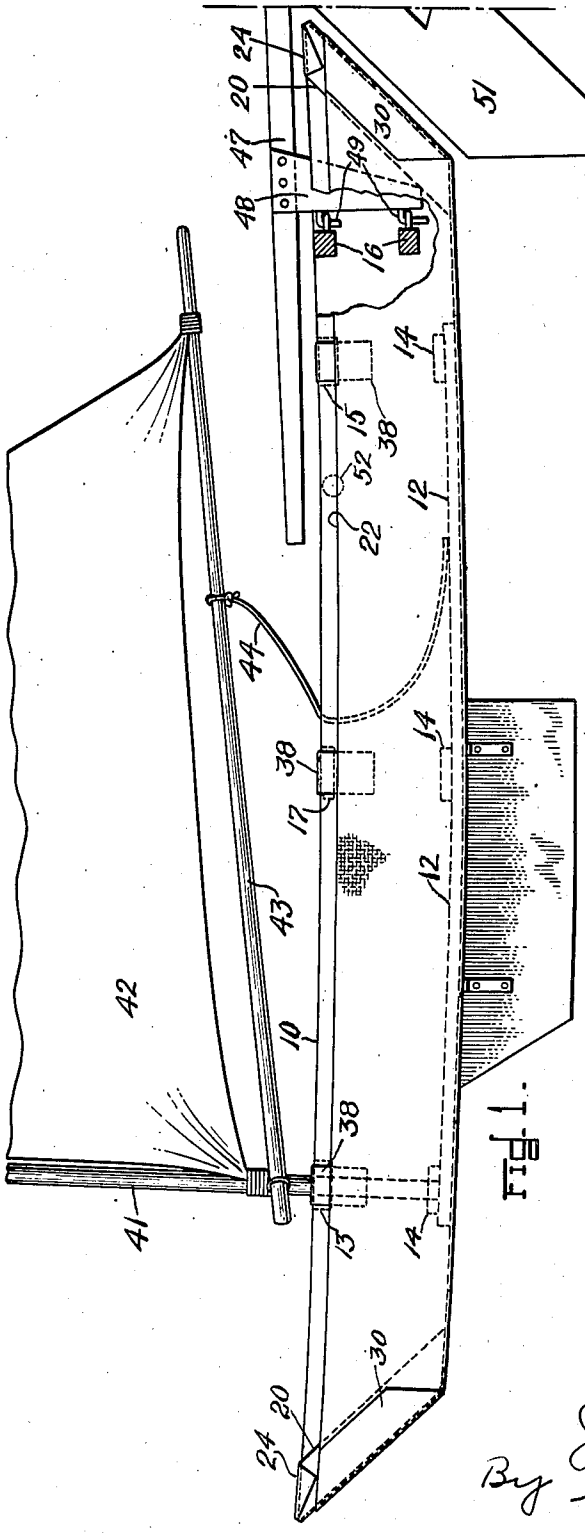


Fig. 1.

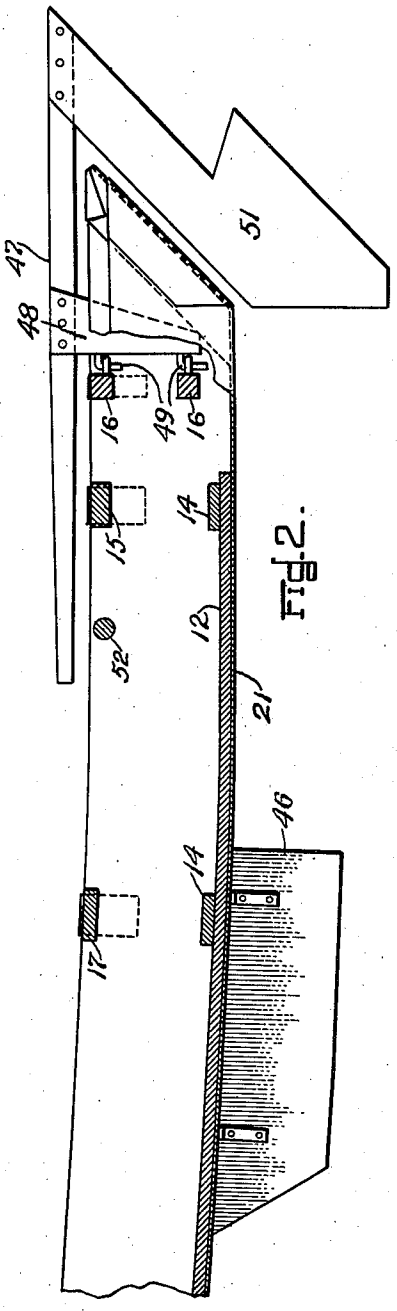


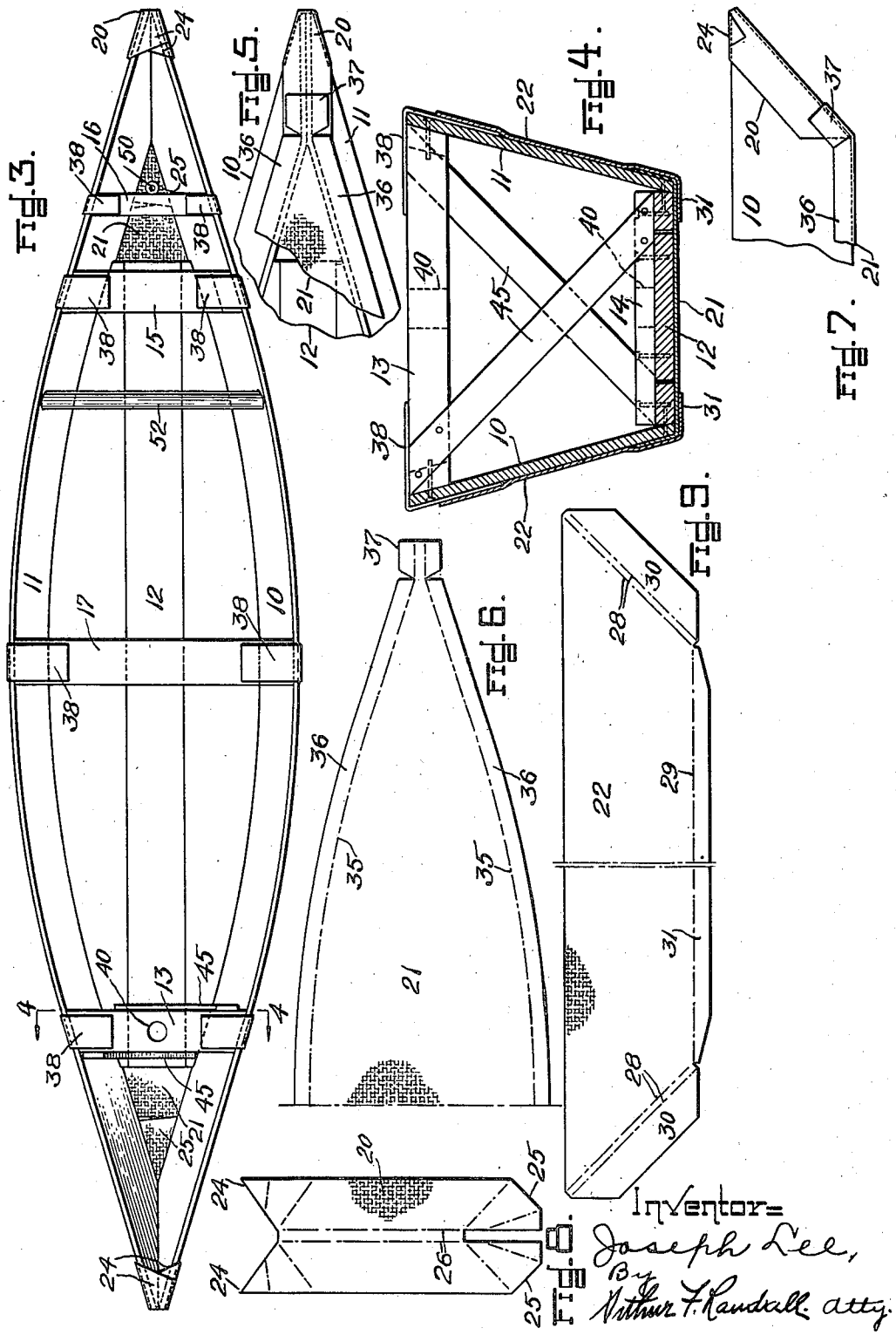
Fig. 2.

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2,224,482

BOAT

Joseph Lee, Boston, Mass.

Application October 11, 1938, Serial No. 234,384

10 Claims. (Cl. 9—6)

My invention relates to boats and more especially to pleasure sail boats for use on inland waters.

An object of the invention is to provide an improved boat of light and strong construction which can be "home made" or commercially produced by comparatively unskilled workmen, at minimum cost.

To these ends I have provided an improved boat of the character referred to having the features of construction and arrangement of parts set forth in the following description, the several novel features of the invention being separately pointed out and defined in the claims at the close thereof.

In the accompanying drawings:

Figure 1 is a side elevation of a sail boat constructed in accordance with this invention.

Figure 2 is a side elevation, partly broken away and in section, of a portion of the boat shown in Fig. 1.

Figure 3 is a top plan view of the hull of the boat shown in Fig. 1.

Figure 4 is a transverse section on the line 4—4 of Fig. 3.

Figure 5 is a bottom plan view of one end of the boat in process of construction.

Figure 6 shows one-half of the bottom sheathing element hereinafter referred to.

Figure 7 is a side elevation of the parts illustrated in Fig. 5 in condition to receive thereon the side sheathing hereinafter referred to.

Figure 8 is a detail showing one of the two end sections of the hull-shaped sheath hereinafter referred to.

Figure 9 is a plan view, partly broken away, of one of the two side sections of the hull-shaped sheath hereinafter referred to.

The embodiment of my invention herein illustrated is a small flat-bottom sail boat whose hull is pointed at both ends and in this instance measures about sixteen feet in length and is about two feet eight inches in width at its beam, but of course I may embody my invention in boats of various sizes and some other types.

The hull of this boat is constructed in accordance with the present invention and comprises two oppositely disposed, outwardly bowed wooden side wall panels 10 and 11 which may be about one-half inch thick and which have their opposite ends cut diagonally as shown. Thus when they are fastened together in bowed condition as shown in Fig. 3 the hull will have a flare as shown in Fig. 4 and also a sheer fore and aft of the waist as illustrated in Figure 1. These panels are held together and in direct contact at their opposite cutwater ends by an exterior hull-shaped covering or sheath made up of sections 20, 21 and 22 of flexible waterproof sheet material such as pyroxylin-treated sateen or canvas adhesively attached to the outsides of the wooden side panels by waterproof cement and united in overlapped relationship to provide a complete outer water-excluding hull-shaped sheath unit.

Bottom boards 12 of wood are fitted in position between the lower marginal portions of the side panels and the bottom section 21 of the outer hull-shaped sheath is adhesively attached to the under sides of these boards by waterproof cement. It is to be noted that no calking is necessary in connection with the bottom boards 12 since the latter do not serve as a bottom closure for the boat and that said boards need not extend the full length of the boat. These boards are provided merely as an inner floor for supporting the occupant of the boat and they may be nailed to transverse cleats 14 and to the lower marginal portions of the side panels 10 and 11 as shown in Fig. 4.

Between the side panels 10 and 11 are arranged three transverse struts 13, 15 and 17, of wood, one near the bow, one at the middle of the hull, and one near the stern.

Figure 6 illustrates one-half of the section 21 that is employed for the bottom of the sheath, the other half being a counterpart of that shown; Figure 9 illustrates the construction of the two sections 22 which are applied to outsides of the wooden panels 10 and 11, while two end sections like that illustrated in Figure 8 complete the set of fabric sections employed in producing the outer sheath of the boat.

Each fabric end section 20, Fig. 8, is an elongate strip provided at one end with two flaps 24, one at each side of the longitudinal median line of the section, and at its opposite end with two flaps 25, one at each of said median line. These end sections 20 are applied to the wooden side panels 10 and 11 before installation of the struts and bottom boards and while said side panels are in flat condition and held flatwise together with their diagonal ends in register.

In applying each section 20 to the ends of the side panels the longitudinal middle portion thereof between the broken lines 26, Fig. 8, is laid against and cemented to the diagonally cut ends of the wooden side panels with the flaps 24 projecting above the top edges of the panels and the flaps 25 projecting below the bottom edges

thereof. Then the opposite side portions or flaps of the section are folded inwardly against, and cemented to, the outer surfaces of the side panels.

The wooden side panels 10 and 11 are then spread apart and the struts 13, 17 and 15, Fig. 3, together with the bottom boards 12, inserted between them, said struts and boards being held in position against sidewise sliding displacement relatively to the side panels by means of nails. Then one of the flaps 24 and one of the flaps 25 are folded transversely across the angle formed by the two wooden side panels with the end portion of each cemented to the outer side of the opposite side panel after which the other two flaps 24 and 25 are folded transversely across the angle formed by the side panels and cemented to the previously folded flaps.

In this way the wooden side panels are joined or tied together at their tops and bottoms by the transversely folded flaps 24 and 25, while the body portion of each end section 20 holds together the intermediate portions of the panel ends between said flaps.

Each side section 22, Fig. 9, is made with a body portion that is bounded by the top edge thereof and by the broken lines 28 and 29 and this body portion is of the same size and shape as that of the side panel to which it is applied. At each end of this body portion is provided a flap 30 extending from the top to the bottom thereof, while at the bottom of said body portion is provided a longitudinal marginal flap 31.

The bottom section 21 of the sheath, Fig. 6, is made with a body portion that is bounded by the broken lines 35 and which is of the same size and shape as the bottom of the boat and this body portion is provided upon its opposite sides with longitudinal marginal flaps 36 and at its opposite ends with end flaps 37.

After installation of the struts and bottom boards the bottom section 21 is laid upon and cemented to the bottom boards 12 and to the bottom edges of the wooden side panels after which the flaps 36 are folded upwardly against, and cemented to, the outer sides of the latter. Then, as shown in Fig. 7, the end flaps 37 are folded upwardly against, and cemented to, the end sections 20.

The opposite ends of each strut 13, 17 and 15 are flush with the top edges of the side panels 10 and 11 and are fastened to the latter by means of straps 38 each of which may consist of a strip of pyroxylin-treated sateen, canvas or the like, one end portion of which is cemented to the top side of the strut and the other end portion of which is cemented to the outer side of the proximate side panel. These straps 38 serve to hold the side panels against being forced away from the ends of the struts.

One of the side sections 22 is now placed in position against, and cemented to, the outside of one of the wooden side panels and to those portions of the end sections 20, straps 38 and bottom section 21 which it overlies, after which the end flaps 30 thereof are folded around into positions upon, and cemented to, the opposite sides of end sections 20. The other side section 22 is then placed in position against, and cemented to, the outside of the other wooden side panel and to those portions of the end sections 20, straps 38 and bottom section 21 which it overlies, after which the end flaps 30 thereof are folded around into position upon, and cemented to, the end portions of the other side section 22.

The bottom marginal flaps 31 of both side sections are folded inwardly upon, and cemented to, the body portion of the bottom section 21 as shown in Fig. 4.

From the above description it will be seen that the side panels 10 and 11 are held in their outwardly bowed shape by the struts 13, 17 and 15 while the proximate extremities of said side panels at each end of the hull are held together by the end sections 20, the flaps 30 of the side sections and the opposite end portions of the bottom section 21. It will also be clear that three layers of fabric are provided at each end of the hull for holding the extremities of the side panels 10 and 11 together and for closing the joints between the meeting ends of the side panels.

The strut 13 and one of the cleats 14 that is directly below it are formed with vertically alined holes 40, Figs. 3 and 4, for the reception of a mast 41, Fig. 1, which is preferably a bamboo pole, and to which is fixed a sail 42. This mast is provided with a boom 43 consisting of a bamboo pole to which said sail is also fastened as usual, and the occupant of the boat controls the sail by means of a sheet or rope 44 whereof one end is fastened to the boom as shown. Diagonal braces 45, Figs. 3 and 4, may be fastened to the strut 13 and its cleat 14 to reinforce and stiffen the forward end of the boat. Also a fixed fin keel 46 may be fastened to the bottom of the boat by angle irons after application of the bottom section 21 of the sheathing.

For use in steering the boat I have provided a sweep comprising a horizontally disposed lever or bar 47 constructed with a depending arm 48 whose lower end portion occupies a position within the boat and is provided with a pair of hooks 49 that are engaged with screw-eyes 50 projecting from the rear sides of a pair of cross-bars 16 disposed within the hull and having their ends fastened to the opposite side panels 10 and 11. At its rear end the bar or lever 47 is constructed with a downwardly and forwardly extending blade 51 and it will be clear that by swinging the sweep on the pivot hooks 49 the blade 51 will steer the craft.

In using the above described boat the occupant is seated upon the floor boards between the strut 17 and a back rest 52 and holds the sheet 44 with one hand while with the other he manipulates the sweep 47. The back rest 52 may be a round crossbar whose opposite ends abut and are fastened to the side panels 10 and 11.

The above described boat is of simple, strong and durable construction and when made of the dimensions set forth above, or thereabouts, does not cost over fifteen or twenty dollars to build. Furthermore, the actual construction may be carried out by comparatively inexperienced persons.

Because of the fact that the wooden side panels are bent around the struts into the bowed shapes shown, the main function of the said struts is a thrusting action which maintains the side panels in their bowed apart condition while any strains to which the boat may be subjected in use tending to separate the side panels from the struts is opposed by the hull-shaped sheath and the straps 38. It will also be clear that the opposite ends of the wooden side panels are bound together by triple layers of fabric which also close the joints at those places. The longitudinal joints at opposite sides and bottom of the hull throughout their lengths are closed by double layers of fabric as shown in Fig. 4, said double layers connecting the lower portions of the wooden side panels with the bottom boards.

I am, of course, aware that the principle of binding to hold boats together is one of the oldest in naval construction. The early Irish curaghs, the early Viking ships, the early Eskimo kayaks, all had frames bound together by thongs, and in some cases planks were bound to the frames by internal thongs piercing knobs or cleats on the inner sides of the planks. I am further aware that the canoe offers the example of an inner wooden shell or frame merely covered by a waterproof outside layer of fabric. I am also aware that in the Black Sea and elsewhere rafts of reeds, or of heavier sticks, have been held together by external lashings. It is true, further, that in the kayak, native or exotic, the fabric or skin serves itself as the walls or shell of the vessel. However, I am not aware of a case where an external fabric hull unit serves the dual function of fastening together and holding under tension bowed wooden side walls or panels and also excluding water from the interior, thus eliminating calking and internal framing other than mere spacing and pressure resisting struts.

What I claim is:

1. A boat of the character described comprising two oppositely disposed, outwardly bowed, wooden side wall panels having proximate extremities thereof at one end of the boat arranged in direct registering contact to provide the boat with a sharp cutwater end, and a complete hull-shaped sheath unit of non-elastic waterproof textile fabric inclosing and adhesively and permanently attached to the outer sides of said side wall panels approximately throughout the length of the boat, said unit including an end-closing strip of waterproof non-elastic textile fabric having its longitudinal medial portion fitted directly against the cutwater ends of said wooden side wall panels to close the joint between the same and having its opposite side marginal portions folded into positions against, and adhesively attached to, the outer sides of said wooden side wall panels to hold said panels together; flaps at the upper ends of said opposite side marginal portions, said flaps being folded transversely in opposite directions across said end and adhesively fastened together, and flaps at the lower ends of said opposite side marginal portions, said flaps being also folded transversely in opposite directions across said end and adhesively fastened together.

2. A boat of the character described constructed in accordance with claim 1 and wherein said sheath unit also includes a bottom section of non-elastic waterproof textile fabric having longitudinal side marginal flaps, one at each side thereof, said side marginal flaps being folded upwardly against, and adhesively attached to, the outer surfaces of said wooden side wall panels and said end-closing strip, and two longitudinal side sections of waterproof textile fabric each having a body portion adhesively attached to the outer surface of one of said wooden side wall panels and to the outer surface of one of the side marginal flaps of said bottom section and provided at its bottom with a flap that is folded inwardly against, and adhesively attached to, the said bottom section, one of said two longitudinal side sections being made with an end flap, said flap being folded transversely around said end-closing strip on to the opposite side of the boat and adhesively attached to the outer side of said end-closing strip.

3. A boat of the character described constructed in accordance with claim 1 and wherein said sheath unit also includes a bottom section of non-elastic waterproof textile fabric having longitudinal side marginal flaps, one at each side thereof, said side marginal flaps being folded upwardly against, and adhesively attached to, the outer surfaces of said wooden side wall panels and said end closing strip, and two longitudinal side sections of waterproof textile fabric each having a body portion adhesively attached to the outer surface of one of said wooden side wall panels and to the outer surface of one of the side marginal flaps of said bottom section and provided at its one end with a flap, said flap being folded transversely around the pointed end of the boat on to the opposite side thereof and adhesively attached to said end-closing strip.

4. A boat of the character described comprising two oppositely disposed, outwardly bowed, wooden side wall panels having proximate extremities thereof at the opposite ends of the boat arranged in direct registering contact to provide the boat with sharp cutwaters at its opposite ends; bottom boards disposed between said side wall panels, and a complete hull-shaped sheath unit of non-elastic waterproof textile fabric inclosing said side wall panels and bottom boards, said unit including two end-closing strips of waterproof textile fabric having their longitudinal medial portions fitted against the ends of said wooden side wall panels to close the joints between the same and each having its opposite side marginal portions folded into position against, and adhesively attached to, the outer sides of said wooden side wall panels to hold the latter together, flaps at the upper ends of the opposite side marginal portions of each end-closing strip, said flaps being folded transversely in opposite directions across the boat and adhesively fastened together, flaps at the lower ends of the opposite side marginal portions of each of said strips, said flaps being also folded transversely in opposite directions across the boat and adhesively fastened together, a bottom section of non-elastic waterproof textile fabric adhesively attached to said bottom boards and having longitudinal side marginal flaps, one at each side thereof, said side marginal flaps being folded upwardly against, and adhesively attached to, the outer surfaces of said wooden side wall panels and said end-closing strips, and two longitudinal side sections of waterproof textile fabric each having a body portion adhesively attached to the outer surface of one of said wooden side wall panels and to the outer surface of one of the side marginal flaps of said bottom section, a flap provided at the bottom of each side section, said flap being folded inwardly against, and adhesively attached to, the said bottom section, flaps at the opposite ends of one of said side sections which are folded around said end-closing strips and adhesively attached thereto, and flaps at the opposite ends of the other of said side sections which are folded around and adhesively attached to the end flaps of said first mentioned side section.

5. A boat of the character described constructed in accordance with claim 4 including a transverse strut disposed between the upper portions of said side wall panels for holding the same in spaced apart relationship.

6. A boat of the character described constructed in accordance with claim 4 including a transverse strut disposed between the upper por-

tions of said side wall panels for holding the same in spaced apart relationship, and also including two straps of waterproof textile fabric provided one at each end of said strut, each of said straps having one end portion adhesively attached to the top side of said strut and its opposite end portion folded downwardly between the adjacent side wall panel and the side section of the sheath that is attached thereto and adhesively attached to both of said parts.

7. A boat of the character described comprising two oppositely disposed, outwardly bowed, wooden side wall panels and a hull-shaped sheath unit inclosing said side wall panels made from waterproof textile fabric and within which said side wall panels are confined and by which the opposed proximate extremities of said wooden side wall panels at each end of the boat are held together in direct registering contact, said sheath unit including a bottom wall section and two oppositely disposed side wall sections fitted flatwise against, and adhesively attached to, the outer sides of said wooden side wall panels; transverse struts disposed between and abutting the inner sides of said wooden side wall panels so as to maintain the same in their bowed condition under the binding effects of said sheath unit, the top sides of said transverse struts being flush with the top edges of said wooden side walls panels, and straps of waterproof textile fabric connecting the opposite ends of said struts with the side wall panels, each of said straps having one end portion adhesively attached to the top side of its strut and its opposite end portion folded downwardly and adhesively attached to the outer side of the proximate wooden side wall panel.

8. A boat of the character described comprising two oppositely disposed, outwardly bowed, wooden side wall panels, bottom boards attached to said panels and a hull-shaped sheath unit inclosing said bottom boards and panels and binding together the opposite ends of said panels in direct registering contact, said unit being made from flexible waterproof textile fabric and including a bottom wall section adhesively attached to said bottom boards, two side sections which are fitted flatwise against, and adhesively attached to, the outer sides of said wooden side wall panels, two strips, each folded around one end of the boat and adhesively attached to the proximate ends of said side sections, and transverse struts disposed between and abutting the inner sides of said wooden side wall panels so as to maintain the same in their bowed condition.

9. A boat of the character described constructed in accordance with claim 8 including a pair of cross-bars adjacent to the stern of the boat disposed one above the other, and also including a steering sweep that is pivotally supported by said cross-bars, said sweep including a forwardly extending lever arm.

10. A boat of the character described comprising two oppositely disposed wooden side wall panels having proximate extremities thereof at each end of the boat arranged side by side in direct registering relationship to provide the boat with pointed ends, transverse struts fixed permanently in position between and abutting the inner sides of said side wall panels to hold the intermediate portions of the same in spaced-apart relationship, a wooden bottom wall, and a flexible waterproof textile fabric sheath unit adhesively attached to the exteriors of said side wall panels and said bottom wall, said sheath comprising two longitudinal side sections extending throughout the length of the boat each having a body portion adhesively attached to the exterior of one of said wooden side wall panels with its bottom marginal portion throughout the length thereof folded inwardly and adhesively connected with the exterior of said bottom wall so as to rigidly connect its side wall panel with said bottom wall, and each of said side sections being made at its opposite ends with end flaps which are folded around the opposite ends of said side wall panels and adhesively attached to the exterior of one of the latter so as to fasten said opposite ends together and hold the intermediate portions of said side wall panels permanently bent outwardly and in abutting engagement with the opposite ends of said struts.

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