Feb. 23, 1926. 1,573,958

R. A. WHALL

FOLDING BOAT

Filed Nov. 9, 1925

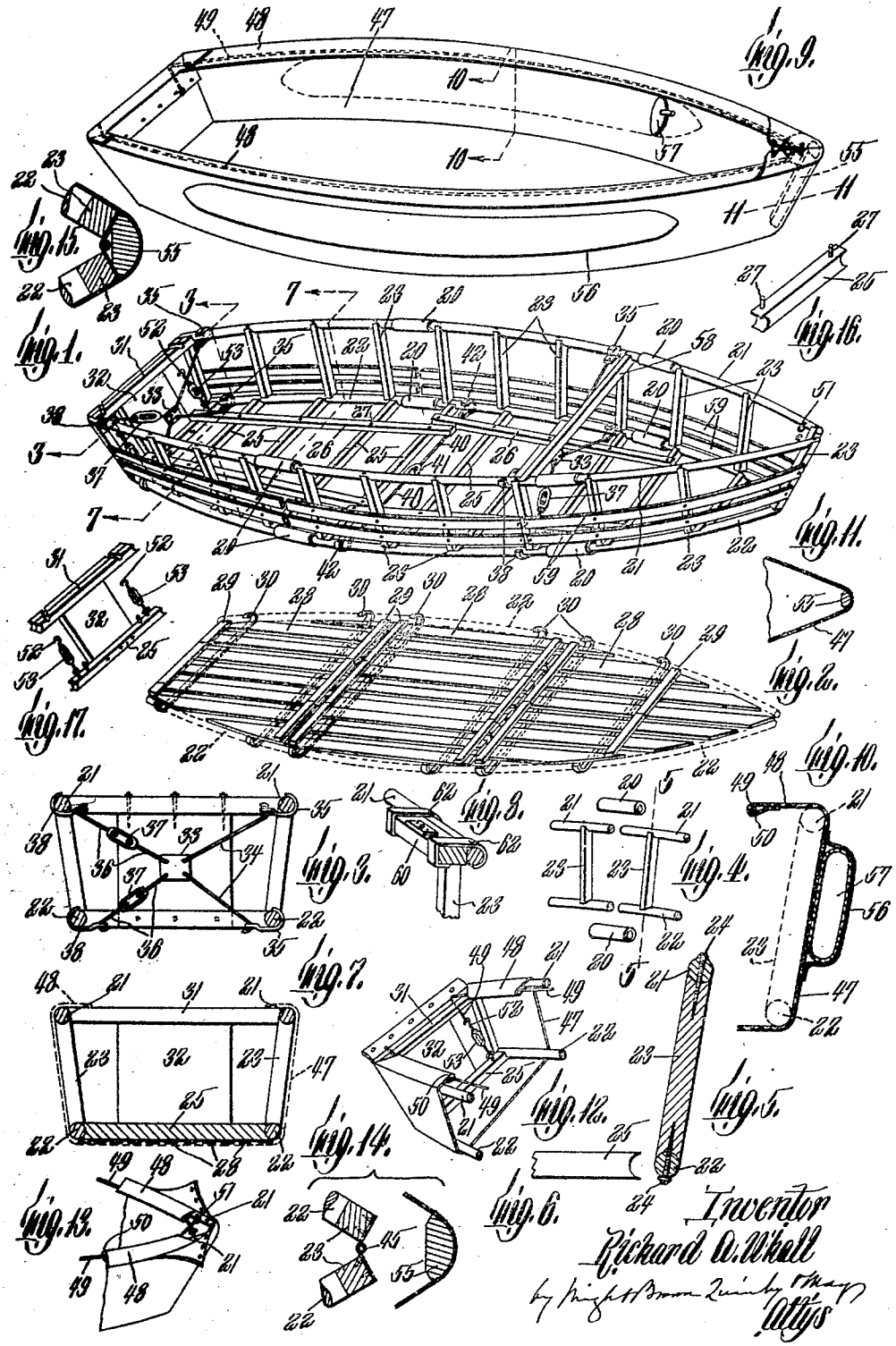


Fig. 9.

Fig. 15.

Fig. 16.

Fig. 1.

Fig. 11.

Fig. 17.

Fig. 2.

Fig. 10.

Fig. 3.

Fig. 8.

Fig. 4.

Fig. 7.

Fig. 12.

Fig. 5.

Fig. 14.

Fig. 6.

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UNITED STATES PATENT OFFICE.

RICHARD A. WHALL, OF ATHOL, MASSACHUSETTS.

FOLDING BOAT.

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To all whom it may concern:

Be it known that I, RICHARD A. WHALL, a citizen of the United States, residing at Athol, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Folding Boats, of which the following is a specification.

The invention is embodied in certain improvements in a folding boat which includes a frame composed of separable sections, adapted to be packed in small compass and including, when erected for use, a flat sectional bottom portion, curved sectional side portions converging to the bow, a transverse stern portion interposed between the rear ends of the side portions, and means connecting the side portions to prevent spreading of the frame, and confine the rear ends of the side portions against the stern portion.

The invention is also embodied in certain improvements in means for securing to the frame a canvas cover, conforming to the external surfaces of the bottom, side, and stern portions, the general object being to provide a boat which may be compactly folded and transported on the running-board of an automobile, quickly adapted for use, and capable of carrying a considerable load, and a motor, the nature of the improvements characterizing the invention being such that the boat is desirably strong, rigid and safe.

Of the accompanying drawings forming a part of this specification—

Figure 1 is a perspective view, showing the frame erected for use, minus the floor portion.

Figure 2 is a perspective view, showing by full lines, the floor portion, and by dotted lines, the lower margins of the side portions.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a fragmentary perspective view, showing parts of two side portion sections, and two coupling sleeves to be associated therewith.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 6 is a fragmentary side view, showing a portion of one of the stringers which constitute elements of the bottom portion.

Figure 7 is a section on line 7—7 of Figure 1.

Figure 8 is a fragmentary perspective view, showing a part of one of the side portions and a row-lock-supporting block associated therewith.

Figure 9 is a perspective view of the cover.

Figure 10 is a fragmentary section on line 10—10 of Figure 9.

Figure 11 is a fragmentary section on line 11—11 of Figure 9.

Figure 12 is a fragmentary perspective view, showing the stern portion of the boat.

Figure 13 is a fragmentary perspective view, showing the bow portion of the boat.

Figure 14 is a fragmentary sectional view, showing separately the forward ends of the side portions, and the bow end of the cover.

Figure 15 is a fragmentary sectional view, showing an assembly of the parts shown by Figure 14.

Figure 16 is a perspective view of one of the stringers.

Figure 17 is a perspective view of the stern portion.

The same reference characters indicate the same parts in all of the figures.

The curved side portions of the frame shown by Figure 1 are composed of a plurality of sections, coupled together end to end by sleeves 20. Each section includes a curved upper gunwale rod 21, a curved lower or base rod 22, and spaced apart upright posts 23, having recessed ends receiving portions of the rods, and fixed thereto by screws 24. The rods 21 and 22 constitute the upper and lower margins of the side portions and are preferably cylindrical, the side portions converging to the bow, and being spaced apart at their rear ends by the stern portion hereinafter described.

The bottom portion includes transverse stringers 25, interposed between the lower rods 22 of the two side portions, and having recessed ends receiving portions of said rods, as shown by Figure 7. The stringers are held in engagement with the lower rods by the transverse tension members hereinafter described.

The bottom portion includes also longitudinal tie bars 26, connecting the stringers and detachably engaged therewith by dowels 27 (Figure 16) fixed to the stringers and entering apertures formed for their reception in the tie bars. The stringers and the tie bars constitute a knock-down grid, the parts of which may be quickly assembled and separated.

The bottom portion also includes floor sections formed as shown by Figure 2, to bear on the under sides of the stringers 25, as shown by Figure 7, each section being composed of longitudinal strips 28, and transverse strips 29. The floor sections are provided with hooks 30, adapted to engage the lower rods 22, forming the lower margins of the side portions, said rods being shown by dotted lines in Figure 2.

The stern portion includes a transverse bar 31, interposed between the rear ends of the gunwale rods 21, forming the upper margins of the side portions, and provided with recessed ends, as shown by Figure 17, receiving portions of said rods, the rods being held in engagement with the bar 31 by the tension members above mentioned and hereinafter described.

The stern portion also includes a flat body piece 32, fixed to and projecting downward from the bar 31, and fixed to the rear stringer 25.

The tension members above referred to connect the side portions and are contractible to prevent lateral spreading of the frame, and to confine the rear ends of the side portions against the stern portion. I have here shown three tension members, viz, a rear member located adjacent to the stern portion, a forward member adjacent to the bow portion, and an intermediate member between the rear and forward members, the preferred construction of these members being as next described.

Each of the rear and forward members is composed of a central plate 33, two rods 34, jointed to the plate and provided with hooks 35, separably engaged with the rods 21 and 22 of one side portion, and two rods 36, jointed to the plate, and provided with turnbuckles 37, and with hooks 38, separably engaged with the rods 21 and 22 of the opposite side portion.

The tension member may be contracted by manipulating the turnbuckles to cause the hooks to exert an inward pull on the side portions. The rear and front tension members are thus engaged with both the upper and lower margins of the side portions. The intermediate tension member is adapted to engage only the lower margins of the side portions, formed by the lower rods 22. Said member extends across the bottom portion in close proximity thereto, so that it does not obstruct the interior of the boat. The intermediate member is composed of two alined rods 40 (Figure 1), connected by a turnbuckle 41, and hooks 42 on the outer ends of the rods, separably engaged with the lower rods 22.

The operation of erecting the frame is as follows:

The side portion sections are assembled and coupled together by the sleeves 20. The stern portion is then placed between the rear ends of the side portions. The tension members are then engaged with the side portions and contracted by their turnbuckles. This operation clamps the rear ends of the gunwale rods 21 against the bar 31 and the rear ends of the base rods 22 against the rear stringer 25, and confines the side portions so that they cannot spread apart at any point. The forward ends of the side portions are preferably connected by hinges 45, which are secured to the forward end posts 23, one of these hinges, of which there are preferably two, being shown by Figures 14 and 15. The hinges prevent the forward ends from spreading apart, and permit the forward sections of the side portions to fold together when the frame is taken apart.

The canvas cover 47, separately shown by Figure 9, conforms to the external surfaces of the bottom, side, and stern portions, and is provided with longitudinal flanges 48, projecting inward over the upper margins of the side portions, and with longitudinal ligatures 49, which may be of strong cord or flexible wire, extending through pockets 50 on said flanges. The forward ends of the ligatures are engaged, as shown by Figure 13, with hooks 51 on the forward ends of the rods 21. The rear ends of the ligatures extend across the bar 31 of the stern portion, as shown by Figure 12, and are engaged with the upper ends of tensioning members, composed of hooked rods 52, and a turnbuckle 53, the lower ends of said members being engaged with the rear stringer 25. Manipulation of the turnbuckles tension the ligatures, so that they exert an inward pull on the cover flanges 48 and securely confine the latter.

The cover may be conveniently applied to the frame when the latter is turned bottom up, the ligatures being tensioned after the assembly is turned top side up.

I prefer to interpose a bow post 55, between the forward ends of the side portions, as shown by Figure 15. Said post is preferably fixed in any suitable way to the bow portion of the cover, as indicated by Figures 11 and 14. The bow post fills the angular space between the forward posts 23, and backs the cutwater formed by the bow portion of the cover.

The sides of the cover are preferably provided with pockets or sponsons 56, containing inflatable air tubes 57. To prevent the side portions from springing inward, I interpose a strut or brace 58, between the gunwale rods, as shown by Figure 1.

The side portions preferably include strake strips 59 (Figure 1), secured to the outer sides of the posts 21.

Figure 8 shows an oarlock-supporting block 60, formed to bear on the inner side of a gunwale rod 21, and on the inner side

of a post 23. The block is provided with outwardly projecting hooks 62, separately engaged with the gunwale rod.

I claim:

1. A folding boat frame composed of separable sections, and including when erected, a flat sectional bottom portion, curved sectional side portions converging to the bow, a transverse stern portion interposed between the rear ends of the side portions, and contractible transverse tension members connecting the side portions, to prevent lateral spreading of the frame and adapted to confine the rear ends of the side portions against the stern portion.

2. A folding boat comprising a frame composed of separable sections and including, when erected, a flat sectional bottom portion, curved sectional side portions converging to the bow, a transverse stern portion interposed between the rear ends of the side portions, a bow post interposed between the forward ends of the side portions, and contractible transverse tension members connecting the side portions and adapted to confine their rear ends against the stern portion, and their bow ends against the bow post.

3. A folding boat as specified by claim 1, the said tension members including forward and rear members adapted to engage the upper and lower margins of the side members adjacent the ends of the frame, and an intermediate member adapted to engage only the lower margins of the side members, at points between the forward and rear members.

4. A folding boat frame as specified by claim 1, the side portions being composed of longitudinal sections, each including upper and lower rods and uprights posts interposed between and fixed to said rods, the upper rods collectively forming a sectional gunwale, and coupling sleeves separably engaged with the adjacent ends of said rods.

5. A folding boat frame as specified by claim 1, the side portions being composed of longitudinal sections, each including upper and lower rods and upright posts interposed between and fixed to said rods, the upper rods collectively forming a sectional gunwale, and strake strips fixed to the posts and bearing on the outer sides thereof.

6. A folding boat frame as specified by claim 1, the bottom portion being composed of transverse stringers extending between the lower margins of the side portions and separably engaged therewith by said tension members, and provided with upstanding dowels, longitudinal tie bars connecting the stringers and apertured to receive said dowels, the stringers and tie bars constituting knock down grids, and floor sections formed to bear on the under sides of the stringers and provided with hooks adapted to engage the lower margins of the side portions.

7. A folding boat frame as specified by claim 1, the stern portion being composed of a transverse bar interposed between the rear ends of the upper margins of the side portions, and separably engaged therewith by said tension members, and a body piece fixed to and extending downward from the bar and fixed to a member of the bottom portion.

8. A folding boat frame as specified by claim 1, comprising also hinges flexibly connecting the forward ends of the side portions.

9. A folding boat frame as specified by claim 1, the side portions being composed of longitudinal sections, each including upper and lower rods and upright posts interposed between and fixed to said rods, the upper rods collectively forming a sectional gunwale, the frame comprising also row lock-supporting blocks, each having hooks engaging one of said gunwale rods, and confining the blocks against the inner side of the rod, and against the inner side of one of said posts.

10. A folding boat comprising a frame embodying the construction specified by claim 1, and a canvas cover conforming to the external surfaces of the bottom, side and stern portions, and provided with longitudinal flanges projecting inward over the upper margins of the side portions and with longitudinal ligatures connected with said flanges and engaged at their forward ends with the forward ends of the side portions, the rear ends of the ligatures extending over the stern portion, and contractible ligature tensioning members connecting the rear ends of the ligatures with the bottom portion, the arrangement being such that the ligatures, when tensioned, exert an inward pull on the cover flanges.

In testimony whereof I have affixed my signature.

RICHARD A. WHALL.