April 15, 1958 L. W. GREEN 2,830,308

COLLAPSIBLE BOAT

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FIG. 1.

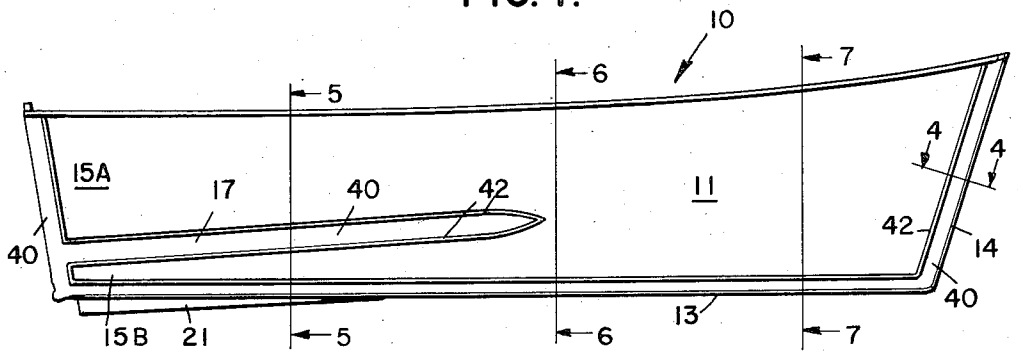



FIG. 2.

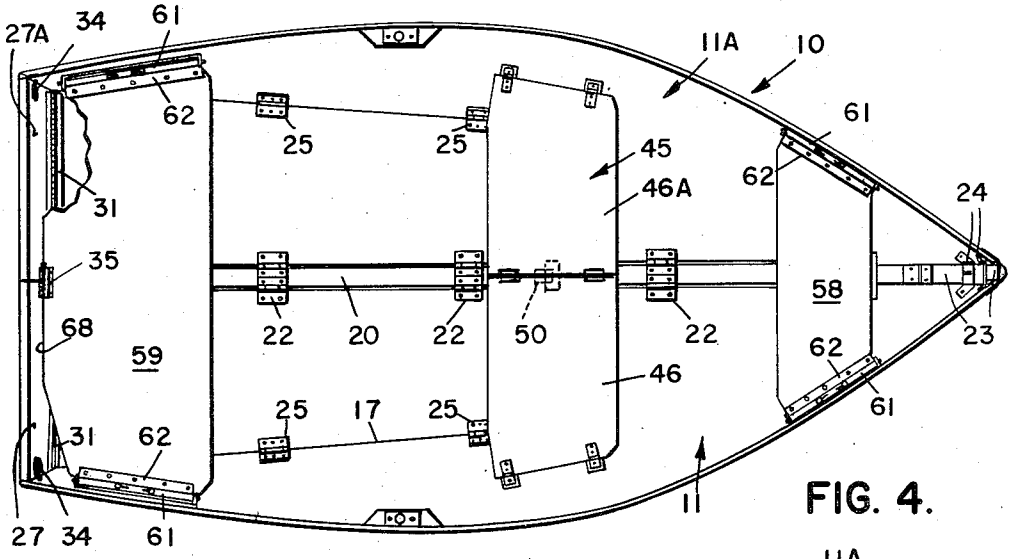



FIG. 3.

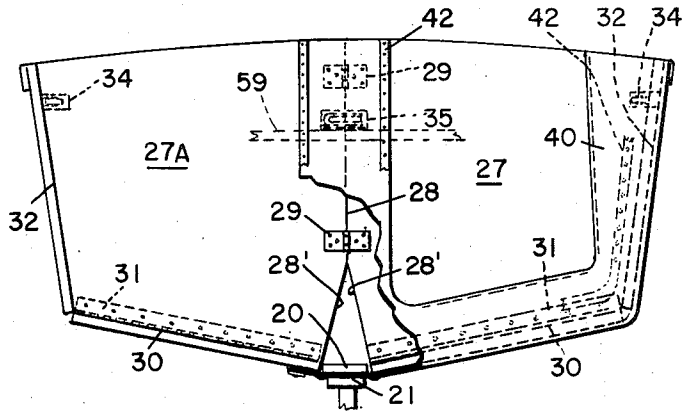
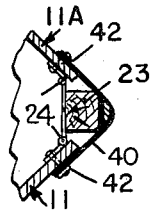



FIG. 4.




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FIG. 5.

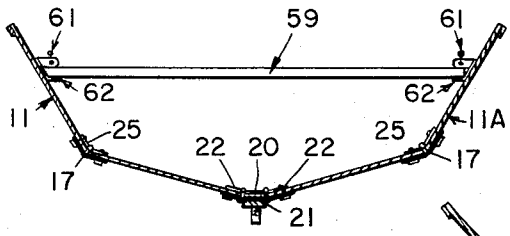



FIG. 5A.

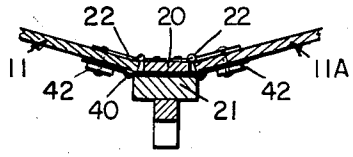



FIG. 6.

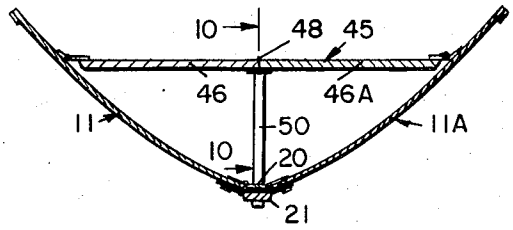



FIG. 7.

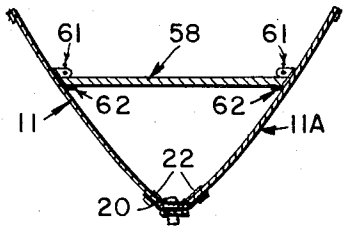



FIG. 9.

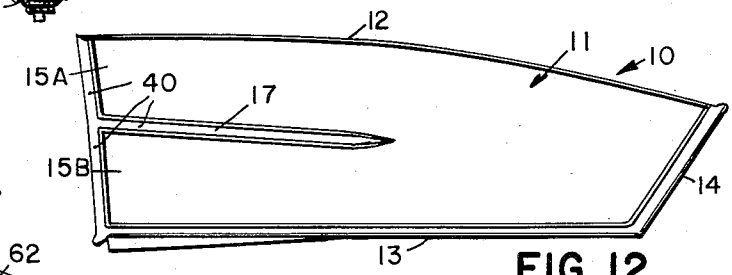



FIG. 8.

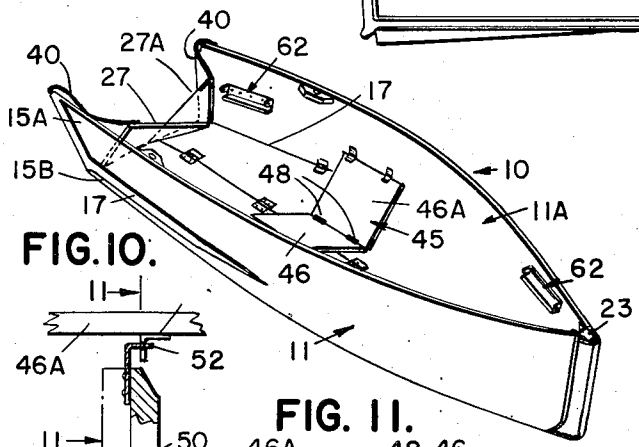



FIG. 12.

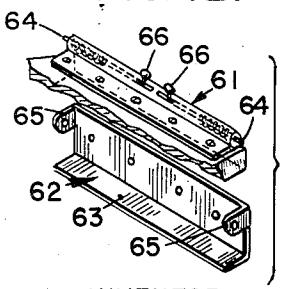



FIG. 10.

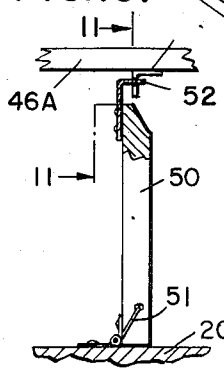
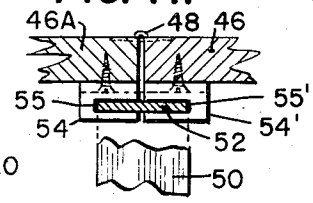



FIG. 11.




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United States Patent Office 2,830,308 Patented Apr. 15, 1958



2,830,308

# COLLAPSIBLE BOAT

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Application October 17, 1955, Serial No. 541,004

6 Claims. (Cl. 9—2)

This invention has to do with collapsible or foldable boats.

An object of the invention is to provide a novel and improved collapsible or foldable boat of simple construction.

Another object is to provide such a boat which is easy to collapse or to expand and make ready for use and which can be readily handled by one person.

A further object is to provide a collapsible boat which can be folded to a substantially flat condition for storage or transport.

A particular object is to provide a collapsible boat of few parts embodying only two main hull members which together form the sides and bottom of the hull. In this connection it is an object to provide a construction wherein a pair of sheet-like members of novel construction are designed to form the sides and bottom of a hull having a curved forward portion with the sides and bottom thereof blending together and a rear portion having relatively flat side and bottom portions disposed at a substantial angle to each other.

A further object is to provide a collapsible boat in which seat elements form the principal means for bracing the hull against collapse.

Still another object is to provide a collapsible boat which is stable in the water.

These and other objects will be apparent from the drawings and the following description. Referring to the drawings, which are illustrative of one form the invention may take:

Fig. 1 is a side elevational view of a boat embodying the invention shown in expanded position ready for use;

Fig. 2 is a plan view of the boat of Fig. 1;

Fig. 3 is an elevational view of the stern of the boat, on a somewhat larger scale;

Fig. 4 is an enlarged sectional view on line 4—4 of Fig. 1;

Figs. 5, 6, and 7 are sectional views on lines 5—5, 6—6, and 7—7, respectively, of Fig. 1;

Fig. 5A is an enlarged view of the lower portion of Fig. 5;

Fig. 8 is a perspective view of the boat partially collapsed;

Fig. 9 is a side elevational view of the collapsed boat;

Fig. 10 is an enlarged sectional view on line 10—10 of Fig. 6;

Fig. 11 is a fragmentary sectional view on a larger scale on line 11—11 of Fig. 10; and

Fig. 12 is an enlarged fragmentary exploded perspective view of a seat support bracket and latch.

More particularly describing the invention, in the drawings I show a boat 10 embodying my invention. A major feature of the invention is the provision of only two main hull members, designated 11, 11A, which together form substantially the entire hull, namely the bow, sides and bottom thereof. It is also a feature of the invention that these two hull members are so constructed and arranged that the hull can be partially of the rounded type with the sides and bottom merging and partially of either the flat bottom or V-bottom type as will later appear.



The two members 11 and 11A are complementary and may be of any suitable, stiffly flexible, waterproof material. Marine plywood is one example of such a material and reinforced plastic sheeting, another. Each member has an upper or top edge 12, which may be slightly convex as shown, a straight bottom or lower edge 13, and a straight forward edge 14, the latter being inclined forwardly somewhat from bottom to top. Each member also has a rear edge which is divided into two sections, 15A and 15B, by a slit or line of parting, indicated by 17, which extends from the rear edge forward to a point about half the length of the member, the slit preferably being inclined forwardly and downwardly somewhat toward the bottom edge of the member.

The two main hull members 11 and 11A are hingedly connected along their lower edges and along their forward edges. As shown in Figs. 4–7, I prefer to provide a composite keel formed of an inner strip 20 and an outer strip 21 between the lower edges of the hull members 11, 11A. Members 20 and 21 are secured together by screws (not shown). Hinges 22 are spaced along the member 20 and the portions of the members 11, 11A marginal thereto. Between the forward edges 14 of the hull members 11, 11A I provide a strip 23 with hinges 24 therealong attached to the hull members. I also hingedly connect the portions of each of the hull members marginal to the lines of parting 17, hinges 25 being shown for the purpose.

At the stern of the boat I provide a transom means which includes two complementary transom members 27 and 27A which are hingedly connected along their inner edges 28 as by hinges 29 for inward hinging movement in the direction shown in Fig. 8. Below edges 28 are outwardly inclined edges 28' on the transom members defining an inverted V. Each of the transom members is hingedly connected along its lower edge 30 to a main hull member of the boat from the line of parting thereof 17 substantially to the lower or bottom edge 13 thereof by a continuous hinge 31. As best seen in Fig. 3, the transom members are each provided with an outer edge 32 disposed to form an angle with the lower edge 30 which is somewhat greater than 90° and considerably less than 180°. With this construction, when the members 11 and 11A are secured to the transom means, they provide a relatively flat, V-bottom hull from about the center of the boat to the stern. Forward of the lines of parting 17, the hull is rounded with the sides and bottom merging. Suitable latch members 34 may be provided for detachably securing the transom members to the sides of the boat and a central latch 35 may be provided on a rear seat member 59 to latch the same to the transom members.

All seams or joints between members forming the hull of the boat and including portions adjacent the lines of parting 17 of the members 11 and 11A are sealed against the entrance of water, and this may be accomplished by providing flexible sealing stripping therefor, indicated by 40, formed of any one of a variety of materials. A tough fabric impregnated with synthetic rubber is suitable. The sealing stripping can be secured by a waterproof bonding material and may be additionally secured by means of mounting strips 42 which are secured by means of screws or rivets (not shown). It will be apparent that in order to permit folding of the boat to collapsed position, such as shown in Fig. 9, the sealing stripping should have some slack across the joints and considerable extra material in the region of the outer edges of the transom members which hinge inwardly when the boat is collapsed.

At about the center of the boat hull I provide a foldable seat, designated **45**, made up of the complementary members **46** and **46A**, each of which is hinged at its outer edge portion to one of the members **11** and **11A**. The seat members are also hingedly connected at their inner edge portions as by hinges **48**, in a manner to permit of their being folded inwardly as shown in Fig. 8 when the boat is collapsed. For the purpose of supporting the seat members in alignment with each other so that they may serve as a seat to support a load and also as a brace for the sides of the hull, I provide a post **50**, best shown in Figs. 6, 10 and 11, which is hingedly mounted at its lower end to the keel member **20** and resiliently urged upwardly by a torsion spring **51**. The post carries a forwardly projecting tongue **52** which is received in the bracket elements **54, 54'** mounted on the seat members and presenting oppositely disposed recesses **55, 55'** for receiving the tongue. With the tongue in position in the bracket elements the seat elements are firmly secured against both upward and downward movement.

In addition to the center seat **45**, I provide two other seats, one in the bow of the boat, indicated by **58**, and the other at the stern, designated **59**. Each of these seats is detachably secured in place by a latch **61** at each end secured thereto which cooperates with a bracket **62** mounted on the hull member of the boat. The bracket includes a shelf **63** (Fig. 12) for supporting the seat member. Each latch includes a pair of projecting pins **64** for reception in apertured ears **65** on the bracket, the pins being operated by knobs **66** projecting through slots in the body of the device.

The rear seat is so positioned that its rear edge **68** abuts the two transom members thereby serving to brace them against inward deflection, while the latch **35** locks the transom members to the seat and against outward movement.

The three seat members when secured in place serve to brace the hull as well as to provide seating space for occupants of the boat. It will be apparent that the seat members **58** and **59** are readily removed from the boat to permit the collapse thereof and that the center seat **45** can be readily collapsed by pivotally moving the supporting post downwardly to the bottom of the boat.

It will also be apparent that I have provided a construction wherein two main hull members can be used to form the bottom and sides of a boat in which the forward portion of the hull may be described as being of rounded shape, such that the sides and bottom merge without any clear line of demarcation and yet have the rear portion of the hull with the sides and the bottom portions clearly separate and at a distinct angle one to the other such that the sides and bottom portions form a relatively shallow V-bottom. This is accomplished by providing the slits or lines of parting in the two main side elements and by choosing a transom means such that the desired shape is obtained. In this connection it will be apparent that I can greatly vary the shape of the stern portion of the boat by varying the shape of the transom members thereby to provide either a flat-bottomed boat toward the rear of the hull, a V-bottom boat of desired angle, or even an inverted V-bottom.

The boat may be readily collapsed to a substantially flat condition as shown in Fig. 9 by removing the seats **58** and **59**, removing the securing means for the transom members, such as the latches **34** and **35**, and hinging post **50** downwardly to permit the center seat **45** to hinge inwardly as shown in Fig. 8. The sides are then brought together and the transom members pivoted inwardly between the sides in a direction as indicated by their partially folded or collapsed position shown in Fig. 8. As previously indicated, at critical points the waterproof stripping must necessarily have sufficient slack to permit of this, particularly in the region of the transom means. Of course I contemplate that other seal means might be used between the transom and adjacent parts of the hull and also at other points if desired.



Although I have illustrated and described a preferred form of my invention, I contemplate that various changes and modifications can be made therein without departing from the invention, the scope of which is indicated by the following claims.

I claim:

1. In a collapsible boat, a pair of complementary, stiffly flexible, main hull members of sheet material forming the bow, sides and bottom of the hull, means hingedly securing said members to each other along their bottom and front edge portions, said members each having a line of parting between its top and bottom edges extending forwardly from the rear edge a substantial but limited distance, hinge means on said members along each of said lines of parting, transom means between said members at their rear edge portions, said transom means comprising two complementary transom panels in a common plane hingedly connected at their inner and adjacent edges and hingedly mounted at their lower edge portions to the rear edge portions of said sheet members from the lines of parting thereof inwardly toward the center of the hull, flexible watertight seal means along the forward, bottom and rear edge portions and along the lines of parting of said members and along the side and bottom edge portions of said transom means, and means bracing said members and said transom to hold the same against collapse.

2. In a collapsible boat, a pair of complementary, stiffly flexible sheet members, hinge means joining said members at their forward edges and along their bottom edges, each of said sheet members having a line of parting extending from its rear edge forwardly a substatial portion of the length of said member, means on each sheet member along its line of parting hingedly connecting the adjacent portions of the sheet member, transom means between said sheet members at their rear edge portions, said transom means having a pair of outer side edges each substantially corresponding in length to the width of the portion of a sheet member at its rear edge from the upper edge to its line of parting and having a bottom edge portion substantially corresponding in length to the width of the remaining portions of said sheet members, and seal means between all adjacent portions of said sheet members and said transom means, said transom means having a central, vertical parting line dividing the same into two panels, hinge means connecting said panels along said vertical parting line, and hinge means connecting the bottom edge portion of each panel to the adjacent rear edge portion of its adjacent sheet member.

3. In a collapsible boat, a pair of complementary stiffly flexible sheet members, hinge means joining said members at their forward edges and along their bottom edges, each of said sheet members having a line of parting extending from its rear edge forwardly a substantial proportion of the length of said member, means on each sheet member along its line of parting hingedly connecting the adjacent portions of the sheet member, transom means between said sheet members at their rear edge portions, said transom means comprising a pair of complementary members hingedly connected at their inner edges, said members each having a side edge substantially corresponding in length to the width of the portion of a sheet member at its rear edge portion from the upper edge to the line of parting and having a bottom edge forming an obtuse angle with said side edge and substantially corresponding in length to the width of the remaining portion of a sheet member, and means hingedly securing each of said transom members along its bottom edge portion to a sheet member adjacent its rear edge portion inwardly toward the center of the boat from the line of parting of the side member.

4. A collapsible boat as set forth in claim 3 in which the inner edges of said complementary members of said tran-

som means diverge from a point above the lower end thereof to the lower end and are hingedly connected only above said point.

5. In a collapsible boat having side and bottom wall means normally defining a pair of side walls and a pair of bottom walls angularly disposed relative to the side walls, said wall means being adapted to fold flat with one side and bottom wall as a unit against the other side and bottom wall as a unit, transom means comprising a pair of panels extending in a common plane between said side walls, means hingedly connecting said panels at their inner adjacent edges for folding inwardly of said side walls, means hingedly connecting the lower edge portions of said panels to the bottom walls, respectively, and means detachably securing said panels against hinged movement.

6. In a collapsible boat, transom means as set forth in claim 5 in which the inner edges of said panels are relieved at the lower ends and below the hinge means connecting them leaving a triangular-shaped space between said panels and said bottom walls whereby said panels may be folded inwardly of the boat when the same is collapsed.



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