Sept. 28, 1971 F. T. IRGENS 3,608,112

COLLAPSIBLE BOAT

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Fig. 2

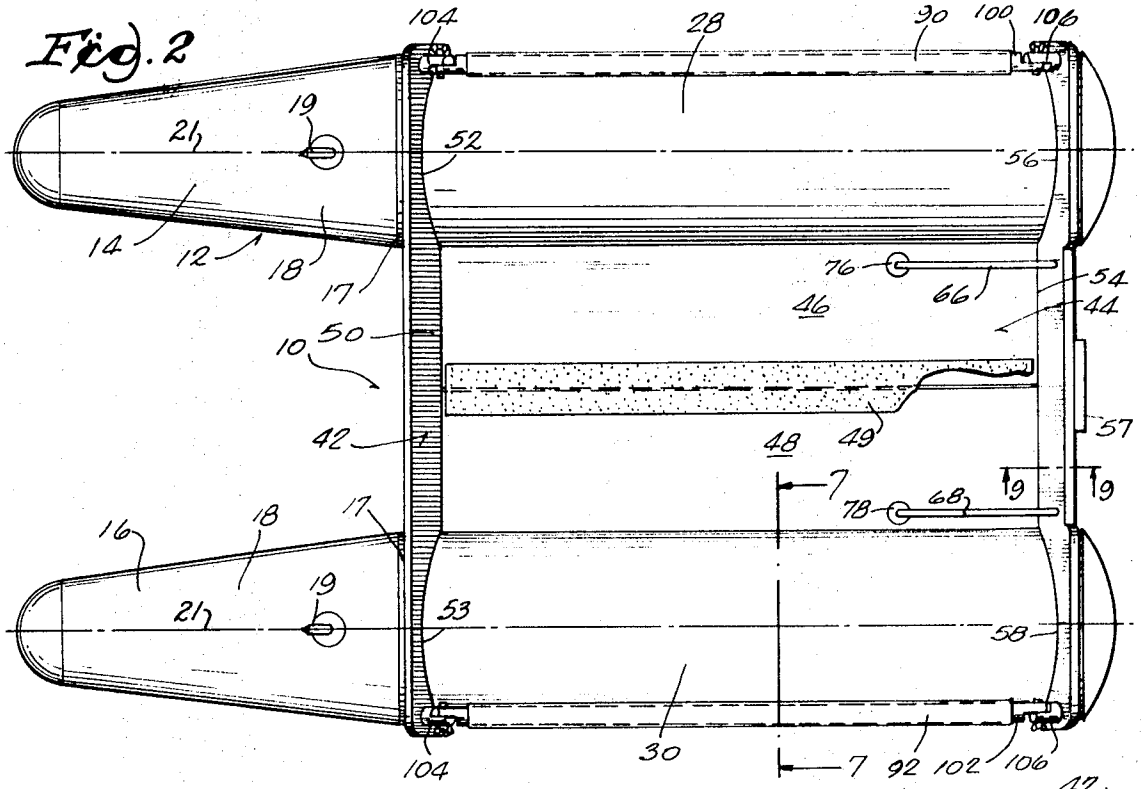


Fig. 1

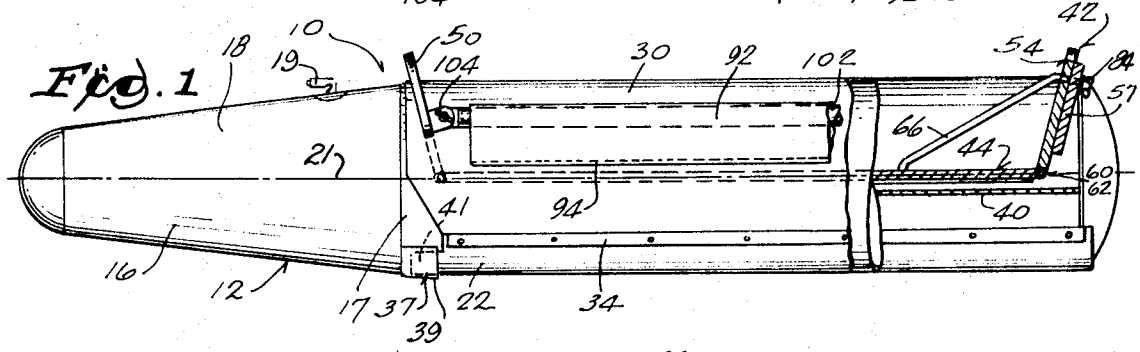
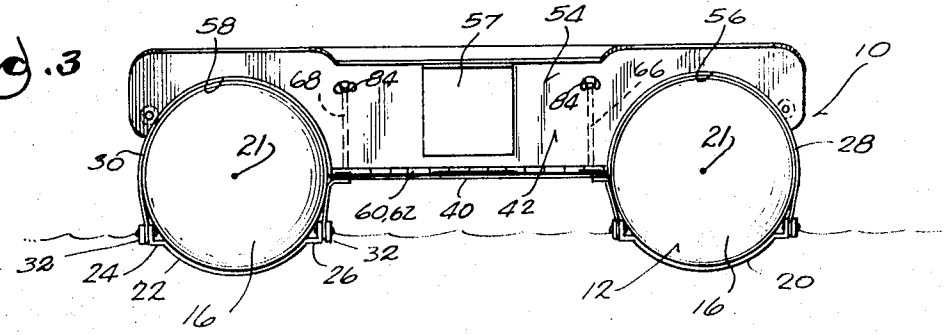


Fig. 3



INVENTOR
FINN T. IRGENS

BY Wheeler, Wheeler, Hamer & Clemency
ATTORNEYS

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COLLAPSIBLE BOAT

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Fig. 4

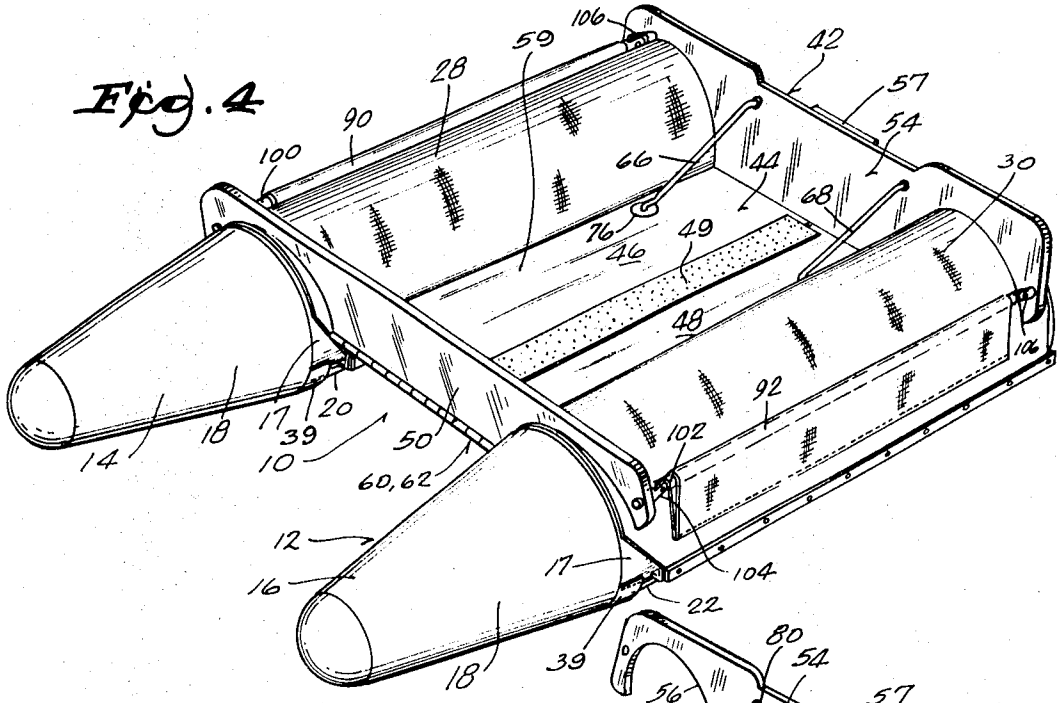
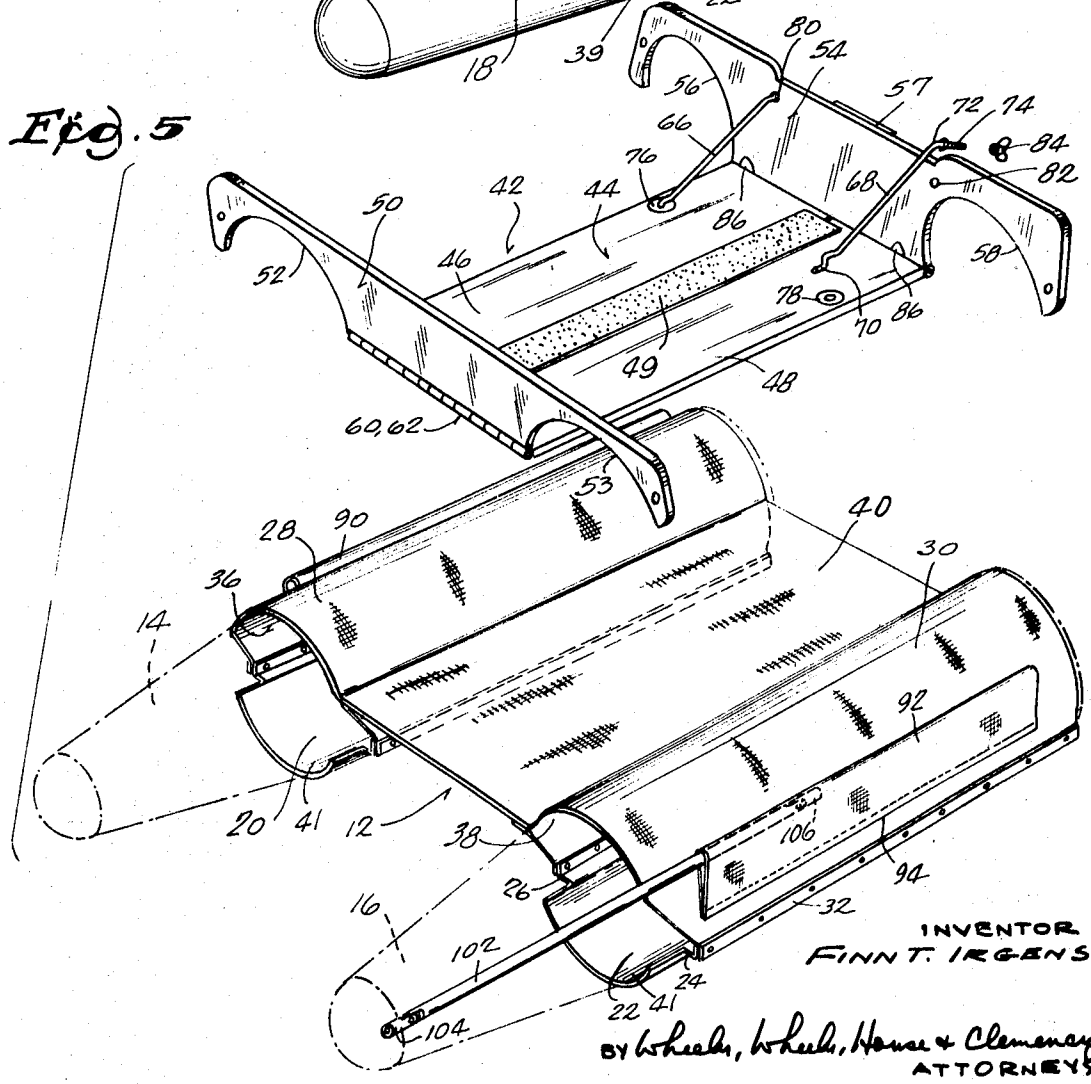


Fig. 5



INVENTOR
FINN T. IRGENS

BY Wheeler, Wheeler, House & Clemency
ATTORNEYS

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COLLAPSIBLE BOAT

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Fig. 6

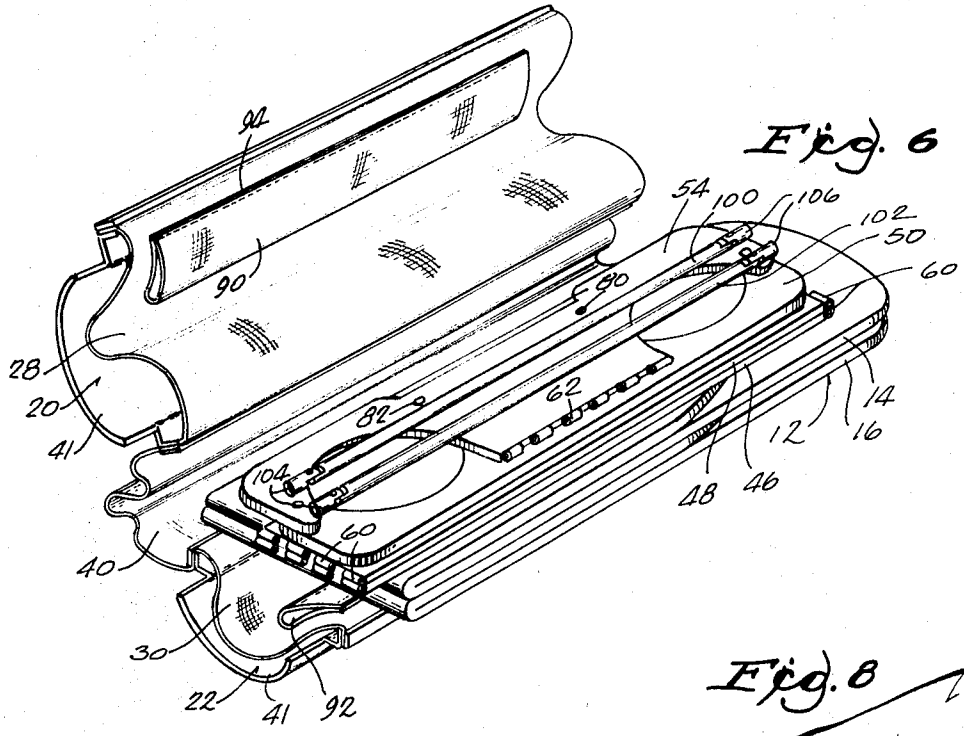
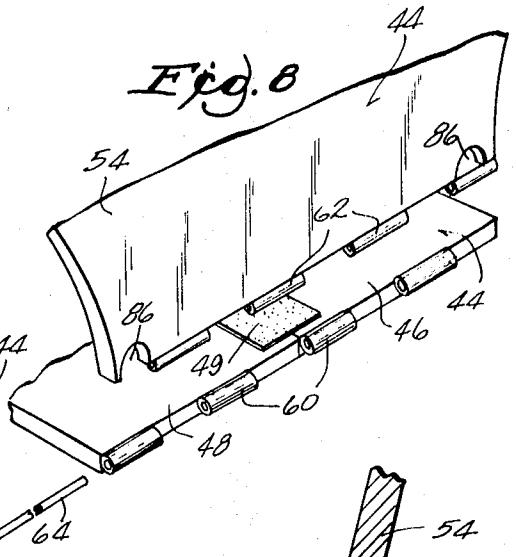


Fig. 8



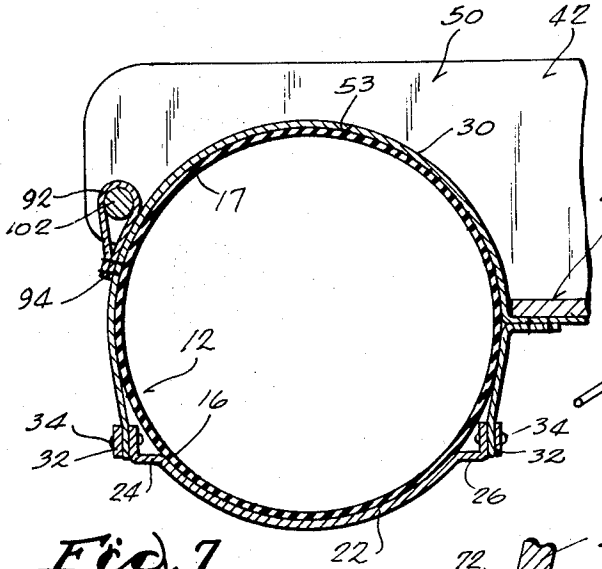
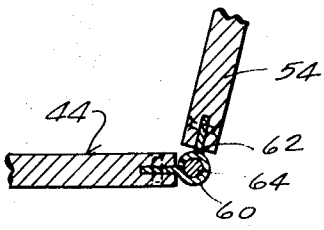


Fig. 7

Fig. 9



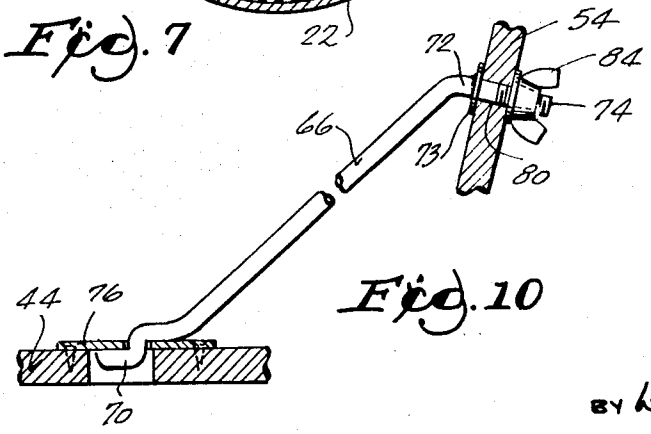


Fig. 10

INVENTOR
FINN T. IRGENS

BY Wheeler, Wheeler, Houser & Clemency
ATTORNEYS

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3,608,112

COLLAPSIBLE BOAT

Finn T. Irgens, Milwaukeee, Wis., assignor to Outboard Marine Corporation, Milwaukee, Wis.

Filed May 26, 1969, Ser. No. 827,851
Int. Cl. B63b 7/08
U.S. Cl. 9—2 16 Claims

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a collapsible boat which includes a pair of inflatable pontoons carried in sleeves. Each sleeve has an upper flexible portion and a lower rigid shell which forms a planing surface. The sleeves are interconnected by a flexible web, and are maintained in spaced parallel relation by a frame assembly which is nested between and secured to the pontoons. The frame assembly includes a bow plate, floorboard and transom adapted to carry an outboard motor. The boat can be disassembled and arranged in a compact, narrow generally cylindrical package with the rigid surfaces of the sleeves forming the outer covers for the package.

BACKGROUND OF THE INVENTION

With the development and popularity of camping trailers and campers carried by pickup trucks, collapsible inflatable boats have become increasingly desirable because they provide a compact package which is easily stored and transported. Conventional collapsible boats have several limitations in that they do not have a satisfactory planing surface and do not have a sufficiently rigid frame to maintain the outboard motor at the desired angle during operation.

SUMMARY OF THE INVENTION

The invention provides a boat with a pair of inflatable pontoons each provided with rigid planing surfaces which are detachably secured to the pontoons and extend in underlying relation to and on both sides of the centerlines of the pontoons. A boat in accordance with the invention can also include a frame assembly which includes a transom capable of supporting outboard motors of up to 25 horsepower or more. The pontoons are part of a pontoon assembly which includes a flexible material or fabric containing two saddle portions which are joined by a web portion. The saddles ride on the upper surfaces of the pontoons. To afford rigid planing surfaces, an arcuate skid or shell is connected to and depends from each saddle portion. The shells, together with the saddles, form sleeves which receive the pontoons. When the pontoons are inflated in the sleeves they are firmly held against axial movement by the tight fit. Curved pockets on the undersurface of the pontoons receive the forward ends of the shells to prevent separation of the shells from the pontoons and entry of water therebetween during boat operation.

The frame assembly includes a foldable floorboard having two rectangular floorboard portions joined along adjacent longitudinal edges by a flexible hinge, a bow plate and a transom. In use, the floorboard remains above the surface of the water at all times. The web connecting the pontoons prevents entry of water between the pontoons and the floorboard. Openings in the lower edge of the transom afford drainage of water from the cockpit. The bow plate and transom are secured to the floorboard by hinges and can be disassembled from the floorboard when the boat is collapsed for storage. The frame assembly nests between the spaced pontoons and is secured to the pontoons by a pair of side rods which extend through elongated loops in the saddles. The side rods

are anchored at their forward ends to the bow plate and anchored at their rear ends to the transom.

The entire boat can be collapsed into a package which is approximately in length to the length of the shells and floorboard. The shells can be used as opposed enclosure members to form a package or sleeve for storing and protecting the pontoons and the components of the frame assembly when the boat is disassembled.

Further objects and advantages of the present invention will become apparent from the following description and accompanying drawings.

DESCRIPTION OF DRAWINGS

FIG. 1 is a side elevational view in fragmentary section with portions removed of the collapsible boat of the invention.

FIG. 2 is a plan view of the boat shown in FIG. 1.

FIG. 3 is a rear end view of the collapsible boat in FIG. 1 showing the transom.

FIG. 4 is a perspective view of the boat shown in FIG. 1.

FIG. 5 is a perspective view showing the frame assembly and pontoon assembly in spaced relation.

FIG. 6 is a perspective view of the boat shown in FIG. 1 in a disassembled condition and arranged in a package.

FIG. 7 is an enlarged sectional view along line 7—7 of FIG. 2.

FIG. 8 is an enlarged fragmentary perspective view showing the hinge connection between the transom and floorboard.

FIG. 9 is an enlarged fragmentary sectional view taken along line 9—9 of FIG. 2.

FIG. 10 is an enlarged fragmentary sectional view showing the transom support.

DETAILED DESCRIPTION

In the drawings, the figures show a collapsible boat in accordance with the invention which is generally designated **10**.

As best shown in FIG. 5, the boat includes a pontoon assembly **12** which includes a pair of inflatable pontoons **14** and **16**. Each pontoon has a cylindrical portion **17**, a tapered nose portion **18**, a valve **19** (FIG. 2) and a fore and aft axis or center line **21** (see FIGS. 1, 2, and 3). The pontoon assembly **12** also includes a pair of planing surfaces, one for each pontoon, in the form of rigid arcuate shells **20** and **22** which have a length approximately equal to the cylindrical portions **17** of each of the pontoons **14** and **16**. The shells **20** and **22** can be constructed of fiber glass or any other rigid lightweight material and have a radius generally equal to or slightly greater than the radius of the cylindrical portions **17**.

Means are provided for securing the shells to the pontoons. In the disclosed construction, the means is in the form of two flexible saddle portions **28** and **30** (FIG. 5) which each have a length approximately equal to the length of the shells **20** and **22**. The means also includes flange **24** and **26** along the outer margins of the shells, which flanges extend for the approximate length of the cylindrical portions **17**. The saddles **28** and **30** are secured to the flanges **24** and **26** by clamping bars **32** and fasteners **34**. The saddles **28** and **30** cooperate with the shells **20** and **22** to form sleeves **36** and **38**, which receive the pontoons **14** and **16**. The means for securing the shells to the pontoons also includes a pocket **37** (FIGS. 1 and 4) on the undersurface of each of the pontoons. The pockets **37** are formed from flexible bands or strips **39**. The strips are secured to the pontoons along the forward and side edges of the strips and are located adjacent the juncture of the cylindrical portions **17** and tapered nose portions **18**. The pockets **37** receive the forward ends **41** of the shells **20** and **22** which extend from the flanges **24** and **26**.

To retain the pontoons in space parallel relation as hereinafter described, the pontoon assembly **12** also includes a flexible web **40** which interconnects the saddle portions **28** and **30**. As disclosed, the web is formed from the same piece of material as the sleeves. Alternately, the web can be a separate piece of material which is sewn or otherwise attached to the sleeves.

As shown in FIG. 5, the collapsible boat **10** also includes a frame assembly **42** which includes a floorboard **44** which has first and second floorboard sections **46** and **48**. The floorboard sections **46** and **48** are equal in dimension and have a length slightly less than the length of the cylindrical portions **17** of the pontoons.

To reduce the overall size of the collapsed boat, the floorboard sections **46** and **48** are hinged together along the adjacent longitudinal edges by a flexible waterproof strip or hinge **49**.

The frame assembly **42** also includes a bow plate **50** which has arcuate portions **52** and **53** which receive the saddles and upper portions of the pontoons **14** and **16**. In addition, the frame assembly **42** includes a transom **54** which arcuate portions **56** and **58**. The arcuate portions **52** and **53** of the bow plate and the arcuate portions **56** and **58** of the transom permit nesting and support of the frame assembly **42** between the pontoons **14**, **16** to form a cockpit or passenger supporting compartment **59** (FIG. 4). The transom can also include a transom or motor pad **57**.

Means are provided for detachably securing the floorboard **44** to the bow plate **50** and for detachably securing the transom **54** to the floorboard. As disclosed, the forward and rear edges of the floorboard portions **46** and **48** are provided with elongated hinge portions **60** and the lower edge of the transom and bow plate are each provided with hinge portions **62** (FIG. 8). When the hinge portions **60** and **62** are properly aligned, hinge pins **64** can be inserted to secure together the hinge portions **60** and **62**. The use of a single hinge pin **64** extending through the hinge portions of both floorboard sections **46** and **48** makes the floorboard rigid and prevents movement of the floorboard sections **46** and **48** about the hinges.

The means for securing the transom **54** to the floorboard **44** includes a pair of support rods **66** and **68**. As best shown in FIG. 10, each support rod **66** and **68** is provided with terminal fingers **70** and outturned threaded rod portions **72** which extend from flanges **73**. The means also includes reinforced apertures or grommets **76** and **78** respectively in floorboard sections **46** and **44** which receive the fingers **70**. The transom **54** is provided with apertures **80** and **82** which receive the threaded portions **74**. Wing nuts **84** compress the transom **54** against the flanges **73**.

To facilitate drainage of water from the floorboard **44**, the transom **54** is provided with apertures **86**.

In accordance with the invention, means are provided for detachably securing the frame assembly **42** to the pontoon assembly **14**. As disclosed, the means includes elongated loops **90** and **92** secured along their lower edges **94** to the saddle portions **28** and **30**. The loops **90** and **92** can be constructed of the same material as the saddles and sewn or otherwise secured to the saddle portions **28** and **30**. The means also includes a pair of side rods **100** and **102** which span the distance between the bow plate and transom. When the boat is assembled, the side rods **100** and **102** are secured to brackets **104** on the bow plate and to brackets **106** on the transom and extend through the loops to secure the frame assembly **42** to the pontoon assembly **12**. The web **40** retains the pontoons **14** and **16** against lateral outward movement and prevents water from entering the area between the pontoons and floorboard.

When the boat is disassembled it can be formed into a package as shown in FIG. 6 with the shells **20** and **22** forming the outer surfaces of the package to afford protection to the inflatable pontoons and frame members. The

saddles remain connected to the shells **20**, **22**. When assembling the boat the pontoons **20** and **22** are inserted in the sleeves **36** and **38** and then inflated to provide a snug fit in the sleeves to retain them against axial displacement. The frame assembly is assembled by connecting the bow plate and transom to the floorboard **44** with the hinge pins **64**. The support rods **66** and **68** are then connected by insertion of the fingers **70** into the grommets **76** and **78**. The transom is secured to the support rods **66** and **68** with the thumb screws **84**. The frame assembly **44** can then be nested between the pontoons with the arcuate portions **52**, **53**, **56** and **58** riding on the pontoons. The side rods **100** and **102** are inserted in the loops **90** and **92** and secured at each end of the bow plate and transom.

When the boat is in use, the snug fit of the arcuate portions **52** and **53** of the bow plate and the arcuate portions **56** and **58** of the transom with the pontoons **14** and **16** and the web **40** prevents the entry of water into the cockpit **59**. The holes **86** in the transom **54** afford drainage of any water that does reach the cockpit **59**.

Various of the features of the invention are set forth in the following claims.

I claim:

1. A collapsible boat comprising first and second inflatable pontoons each with a fore and aft center line, first and second shells of rigid material, and means for disconnectably securing said shells in underlying relation to and on both sides of said center lines of said pontoons to provide rigid planing surfaces for said pontoons.

2. A boat in accordance with claim **1**, wherein said pontoons have a tapered nose portion, a cylindrical portion, and said shells have a length generally the same as said cylindrical portion.

3. A boat in accordance with claim **1**, wherein said shells each include forward ends, and said means for securing said shells in underlying relation to said pontoons includes pockets on the undersurface of said pontoons which receive said forward ends of said shells.

4. A boat in accordance with claim **1**, wherein said means for securing said shells to said pontoons comprises a flexible saddle for each of said pontoons, and means for connecting said saddles to said shells to form sleeves for receiving said pontoons.

5. A boat in accordance with claim **4**, wherein said means for securing said saddles to said shells comprises outturned flanges on said shells and fasteners extending through said saddles and anchored in said flanges.

6. A boat in accordance with claim **4**, including a frame assembly and means for connecting said frame assembly to said saddles.

7. A collapsible boat comprising first and second inflatable pontoons, first and second sshells, first and second flexible saddles, and means for connecting said saddles to said shells to form sleeves receiving said pontoons with said shells providing rigid planing surfaces under said pontoons, a frame assembly and means for connecting said frame assembly to said saddles including a loop on each of said saddles, rods extending through each of said loops, and means for detachably connecting the ends of said rods to said frame assembly.

8. A collapsible boat comprising first and second inflatable pontoons, first and second shells, first and second flexible saddles, and means for connecting said saddles to said shells to form sleeves receiving said pontoons with said shells providing rigid planing surfaces under said pontoons, a frame assembly comprising a bow plate, a floorboard, a transom, means for detachably connecting said bow plate to said floorboard, and means for detachably connecting said transom to said floorboard, and means for connecting said frame assembly to said saddles.

9. A collapsible boat in accordance with claim **8**, wherein said means for detachably connecting said bow plate to said floorboard comprises hinge portions on adja-

cent edges of said bow plate and said floorboard, and a hinge pin receivable in said hinge portions.

10. A collapsible boat in accordance with claim **8**, wherein said means for detachably connecting said transom to said floorboard comprises hinge portions on adjacent edges of said transom and said floorboard, a hinge pin receivable in said hinge portions and a pair of reinforced apertures in said floorboard, a pair of transom rods, apertures in said transom, said transom rods having a terminal finger at one end engageable with said reinforced apertures, and threaded portions on the other ends which are received in said apertures in said transom.

11. A collapsible boat comprising a pair of inflatable pontoons each having a fore and aft axis, a pair of sleeves which receive said pontoons, each of said sleeves including a lower rigid arcuate portion in underlying relation to said pontoon and extending on both sides of said axis of said pontoons, and an upper flexible portion, a frame assembly nestable between said pontoons, and means for detachably securing said frame assembly to said sleeves to maintain said pontoons in a fixed parallel relationship.

12. A boat in accordance with claim **11**, including a flexible web interconnecting said sleeves.

13. A collapsible boat comprising an inflatable pontoon, a shell of rigid material, means for detachably securing said shell to the undersurface of said pontoon to provide a rigid planing surface extending substantially completely transversely across the bottom of said pontoon, a frame, and means for detachably securing said frame to said pontoon.

14. A collapsible boat comprising a pontoon assembly including first and second inflatable pontoons, a separate sleeve encircling each of said pontoons, said pontoons being removably received in said sleeves and firmly held against axial displacement in said sleeves when said pontoons are inflated, and a flexible web interconnecting said sleeves.

15. A collapsible boat comprising a frame assembly defining a passenger supporting compartment, said frame assembly including a floorboard having first and second floorboard sections, a hinge connecting adjacent edges of said floorboard sections, a bow plate, a transom, means for detachably securing said bow plate to said floorboard, and means for detachably securing said transom to said floorboard, one of said means for detachably securing said bow plate and said transom also preventing relative movement between said floorboard sections about said hinge connecting said floorboard sections.

16. A boat in accordance with claim **15** wherein said hinge includes an axis extending transversely to said bow plate and said transom plate.

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MILTON BUCHLER, Primary Examiner

C. A. RUTLEDGE, Assistant Examiner