United States Patent

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[15] **3,673,976**

[45] **July 4, 1972**

[54] SECTIONALIZED PONTOON APPARATUS

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[22] Filed: **Nov. 21, 1969**

[21] Appl. No.: **878,627**

[52] **U.S. Cl.** ..... **114/61,** 9/1 R, 9/11 R

[51] **Int. Cl.** **B63b 35/38**

[58] **Field of Search** ..... 114/61, 66.5 F, 66.5 R, .5 R, 114/.5 F; 9/8 R, 8 P, 11 R, 1 R, 1 T; 244/105

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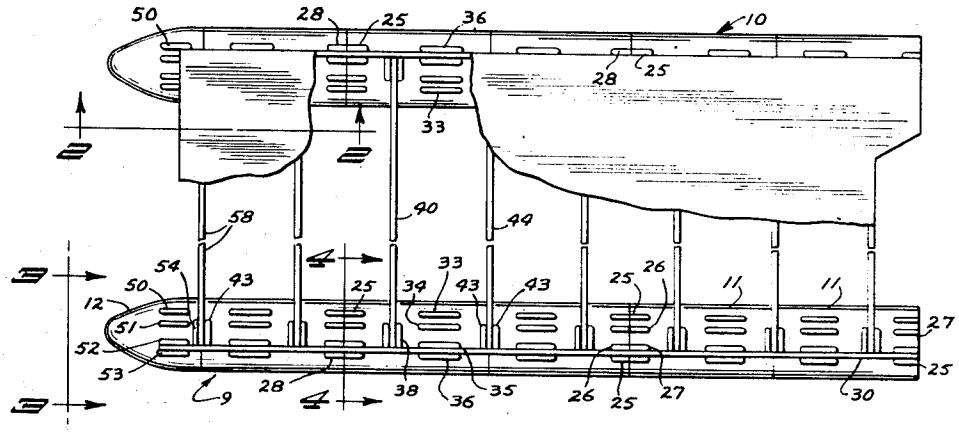
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[57] **ABSTRACT**

A pontoon boat, raft, dock or the like made from a plurality of pontoon sections having longitudinally extending tabs and transversely extending tabs, stringers bolted to longitudinally aligned longitudinal tabs, cross pieces bolted to the transverse tabs and a deck. Other than for the nose cone section for a boat, the pontoon sections have slotted end portions to receive a block to minimize twisting of adjacent pairs of pontoon sections. Further, the nose cone sections are interchangable and each of the other pontoon sections are of the same construction.

16 Claims, 7 Drawing Figures



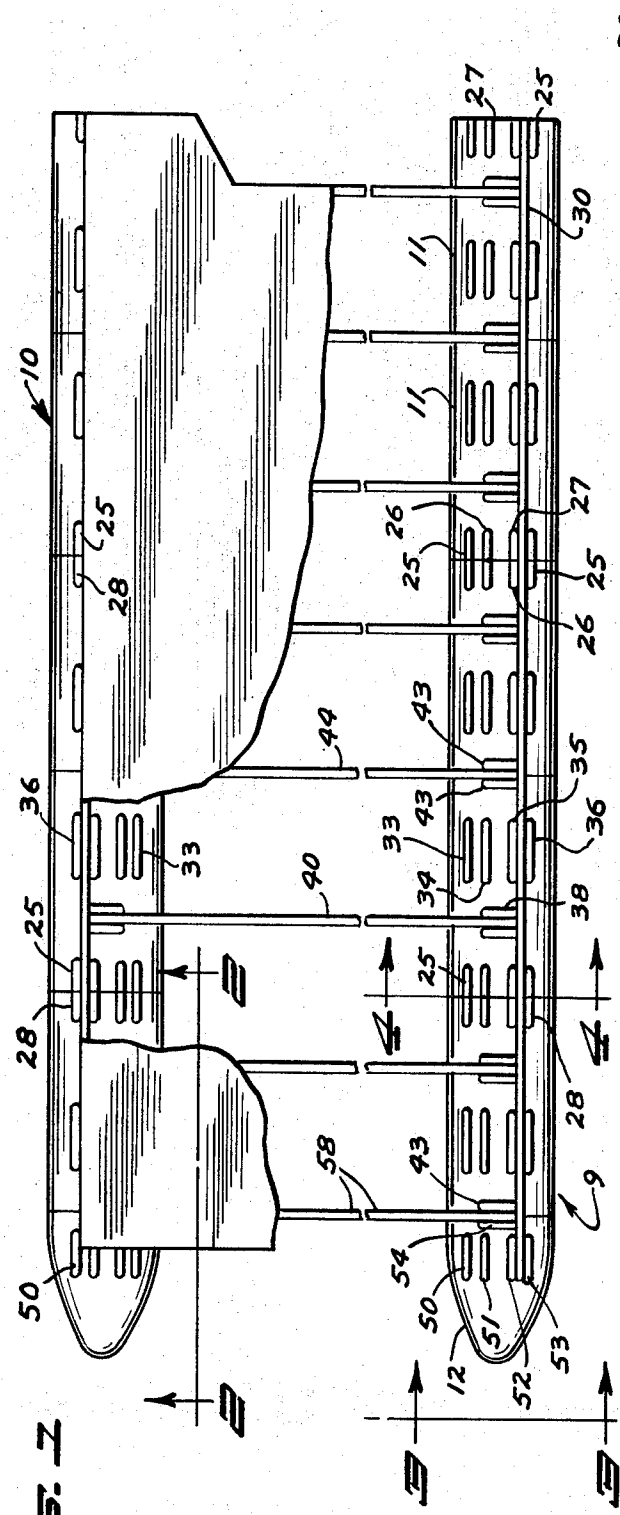


FIG. 1

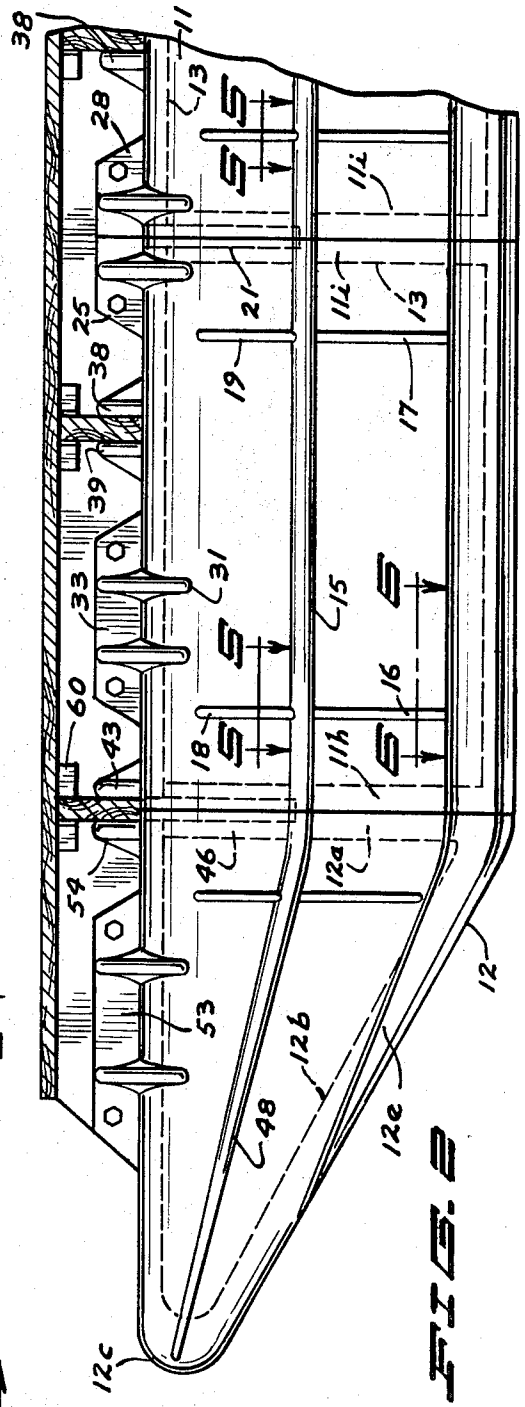


FIG. 2

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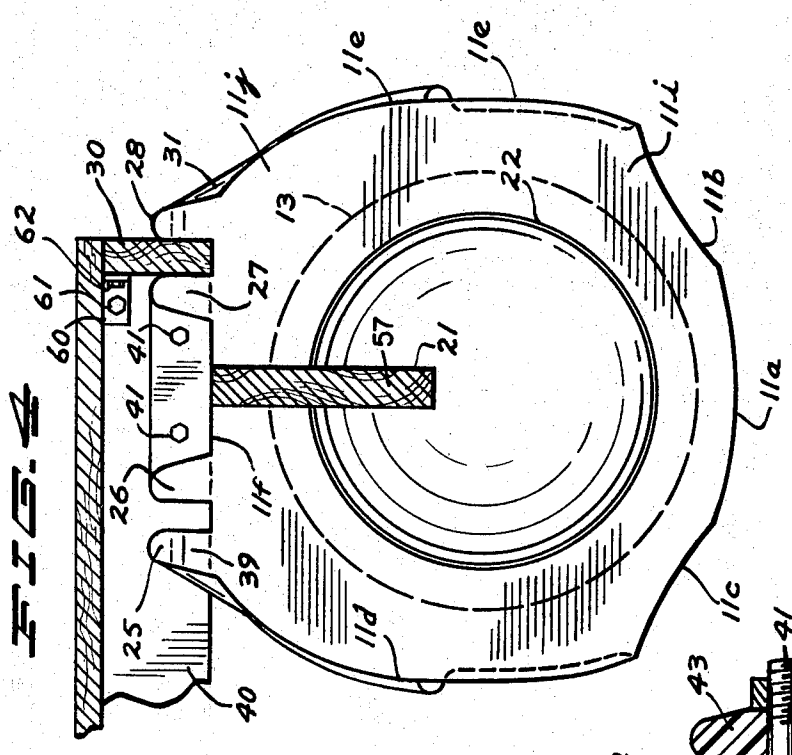


FIG. 4

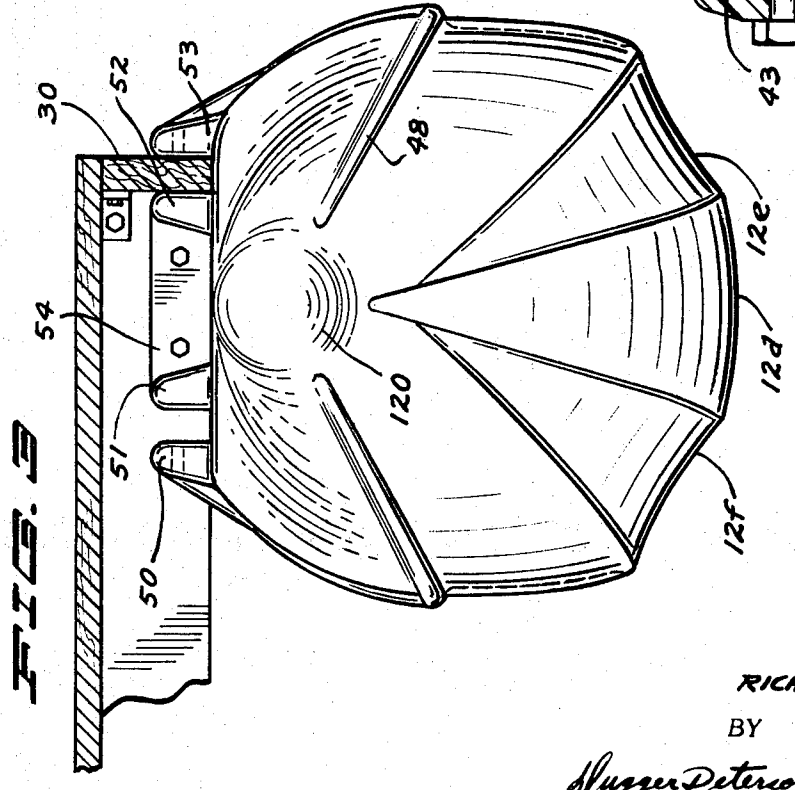


FIG. 3



FIG. 6

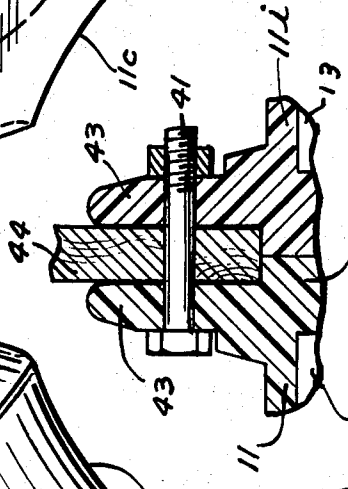


FIG. 7

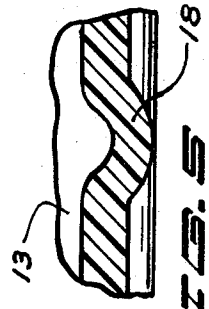


FIG. 5

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SECTIONALIZED PONTOON APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to pontoon boats, rafts, and the like, each pontoon being made up of a plurality of pontoon sections that have tab portions removably bolted to a stringer to form a pontoon and tab portions to be bolted to cross pieces.

Prior art boats and rafts have been made with pontoon sections, however, such prior art crafts have not been of a construction to be readily assembled and disassembled and still, in an assembled condition be of a rugged, sturdy construction. In order to overcome problems of the above mentioned nature, this invention has been made.

SUMMARY OF THE INVENTION

A pontoon boat, raft, dock or the like having a pair of pontoons each made up of a plurality of pontoon sections that have longitudinal tabs to be bolted to a stringer and transverse tabs to be bolted to cross pieces.

Since each pontoon with the sections longitudinally aligned has two rows of longitudinal tabs, the pontoon can be used as a right hand or a left hand pontoon, depending on which row of longitudinal tabs that a stringer is bolted to. Further, since each pontoon section of each of the adjacent pair of pontoon sections has longitudinal half tab sections, that are substantially abuttable against the half tab sections of the other, are bolted to a stringer, the ends of the sections of the adjacent pair are retained closely adjacent one another. Additionally, since the adjacent ends of two pairs of pontoon sections each have a transverse tab that extends along one side of a cross piece and the transverse tabs are bolted to a cross piece, the adjacent ends of one section of each pair are retained closely adjacent one another. Also by the provision of transverse tabs intermediate the end portions of the pontoon sections that are bolted to cross pieces and the provision of longitudinal tabs intermediate the end portions of the pontoon sections that are bolted to the stringers, even though a stringer should have a vertical crack, the pontoon sections are still firmly held together.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a pontoon boat, raft, dock, or the like, of this invention with portions of the deck and the deck supporting structure being broken away;

FIG. 2 is an enlarged cross sectional view of the front end portion of the structure of FIG. 1, said view being generally taken along the line and in the direction of the arrows 2—2 of FIG. 1;

FIG. 3 is an enlarged front end view of a front pontoon section, said view being generally taken along the line and in the direction of the arrows 3—3 of FIG. 1 and showing part of the deck mounted thereon;

FIG. 4 is an end view of a pontoon section, said view being generally taken along the line and in the direction of arrows 4—4 of FIG. 1 showing a portion of the structure mounted thereon;

FIG. 5 is a fragmentary cross sectional view generally taken along the line and in the direction of the arrows 5—5 of FIG. 2 to show protruding ribbing of the pontoon section;

FIG. 6 is a fragmentary cross sectional view generally taken along the line and in the direction of the arrows 6—6 of FIG. 2 to show the ribbing protruding into a pontoon section; and

FIG. 7 is a fragmentary cross sectional view showing the mounting of a cross member that is joined to two pontoon sections.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in particular to FIGS. 1 and 2, there is illustrated a pontoon boat, raft, dock or the like that includes a pair of pontoons respectively generally designated 9 and 10. Each pontoon is made up of a plurality of first sections 11 and a second section 12. Each pontoon section is made of a low or high density linear plastic that has a high impact factor, but that is resilient enough to give on striking sharp objects that would ordinarily cause ruptures in integrally formed pontoons that are made of, for example, steel or aluminum. Each of the sections 11 has an enclosed interior chamber 13 that extends the major portion of the length of the section.

Additionally, each of the pontoon sections 11 has a bottom convex surface portion 11*a* and a concavely curved surface portion 11*b*, 11*c* respectively integrally joined to opposite edges of surface portion 11*a*, generally upwardly extending arcuately curved surface portions 11*d* and 11*e*, respectively, and a generally flat top surface portion 11*f* that extends between the top edges of surface portions 11*d* and 11*e*. Each of surface portions 11*d*, 11*e* includes a longitudinally extending, outwardly protruding rib 15 that is about midway between the upper edge and lower edge of the respective surface portions. Further, one end portion of each of surface portions 11*d*, 11*e* is provided with a concave rib 16 while the opposite end portion is provided with a concave rib 17. Ribs 16, 17 extend downwardly from rib 15. Additionally, each of surface portions 11*d*, 11*e* at one end portion is provided with a convex rib 19; ribs 18, 19 extending upwardly from rib 15 such as shown in FIG. 2.

Each of the end portions 11*h* and 11*i* of the pontoon sections 11 has a radially elongated, generally rectangular slot 21 that opens to the top surface transversely centered relative the opposite edges of the top surface portion 11*f*. The slots do not open to the interior chamber of the pontoon sections. Further, each slot is of a height greater than one-third of the height of the pontoon section. Additionally, each pontoon section end portion has a dished, concave, central portion 22, while the end surface portion 11*j* surrounding portion 22 is generally planar.

Integrally formed with the top surface portion 11*f* of each pontoon section 11 adjacent the end portion 11*i* are four longitudinally elongated, transversely spaced tab half portions 25, 26, 27 and 28 that are solid in cross section other than for bolt apertures. The tab half portion 25 is integrally joined to the body portion adjacent the juncture of surfaces 11*d*, 11*f* while the tab half portion 28 is joined to the body portion adjacent the intersection of surface portions 11*e*, 11*f*. Further, the tab portions 26, 27 are located transversely intermediate portions 25, 28; portion 27 being spaced from section 28 sufficient distance to form a slot to have the stringer 30 extended therebetween. Similarly the portion 26 is transversely spaced from portion 25; the spacing of portions 26, 27 from one to the other being substantially greater than the width of the stringer. Additionally, the one ends of portions 25–28 are substantially coplanar with the remainder of the end surface 11*j*. Each of the portions 25–28 is provided with a transverse bolt opening 39 that is transversely aligned with the corresponding openings in the others of said portions. Integrally joined with each of portions 25, 28 is a reinforcing flange 31 that is transversely opposite the slot formed by, for example, tab portions 25, 26.

Longitudinally aligned with tab portions 25, 26, 27 and 28 respectively are longitudinally elongated tabs 33, 34, 35 and 36 respectively that are solid in cross section. Tabs 33–36 are integrally joined to the top surface portion 11*f* intermediate end portions 11*h*, 11*i*. Each of tabs 33–36 has longitudinally spaced, transversely extending bolt openings therethrough; while to tabs 33, 36 there are integrally joined reinforcing flanges 31. Longitudinally intermediate the set of tab sections 25–28 and the set of tabs 33–36 is a pair of transversely elongated, transversely extending tabs 38, 39; tabs 38, 39 being spaced to provide a transverse slot of the width to have one end of a cross piece 40 extended therebetween. The tabs 38, 39 are integrally joined with the top portion 11*f*, and are located so as to avoid interference with a stringer placed in the pair of slots formed by tab sections 25, 26 and 33, 34 respectively of a given pontoon section; and also to avoid interference with a stringer positioned in the pair of slots formed by

the tab sections **27, 28** and tabs **35, 36**, respectively. The tabs **38, 39** have a pair of transversely spaced, longitudinally extending bolt openings through which bolts **41** are extended for securing the adjacent end of the cross piece **40** thereto.

Integrally joined to the top surface portion **11***f* adjacent end portion **11***h* to extend thereabove is a transversely elongated transverse tab section **43**. The generally planar one end surface of tab section **43** is longitudinally spaced from the generally planar surface end portion **11***j* by a distance that is substantially one half of the thickness of a cross piece **44**. Further, tab **43** is longitudinally aligned with tabs **38, 39**.

In the case of a dock or raft, each pontoon advantageously may be only made up of sections **11**; however, in the case of boats, it is desired that the front section of the pontoon have its front end portion tapered in an upward direction to adjacent the top thereof. Accordingly, there is provided a section **12**. The section **12** has a rear end portion **12a** that has a slot **46** of the same size and shape as slot **21**, slot **46** opening to the top surface portion of section **12***a*. Further, section **12** has an enclosed chamber **12***b*, a nose portion **12c** that is somewhat hemispherically shaped, a bottom, concaved surface portion **12***d* to form a continuation of surface portion **11***a*, concave surface portions **12***e* and **12***f* to respectively form continuations of surface portions **11***b* and **11***c*, ribs **48** that generally form continuations of ribs **15** and reinforcing ribs generally corresponding to rib **16** and **18**. Additionally, section **12** is provided with a plurality of longitudinally extending tabs **50, 51, 52** and **53** that are longitudinally alignable and of generally the same shape as tabs **33, 34, 35** and **36**. Also, section **12***a* has a transversely extending tab portion **54** that is longitudinally located relative to the rearward generally planar end surface thereof in a manner corresponding to the location of tab portion **43** relative to planar surface **11***j*.

Using the apparatus of this invention, a plurality of pontoon sections **11** and a nose cone section **12** are placed in a row. The pontoon section **11** next to pontoon section **12** has its end portions **11***h* adjacent the portion **12***a* while the second pontoon section **11** has its end portion **11***i* adjacent the end portion **11***i* of the first pontoon section **11**. Accordingly, other than for pontoon section **12**, pontoon sections **11** are alternately opposed to each other whereby each pair of pontoon sections have the tab sections **25–28** forming a continuation of the tab half sections **28–25** respectively of the other pontoon section and each pair or pairs of pontoon sections have their end portions **11h** adjacent one another (with the exception of the first and last pontoon section of the pontoon). Likewise, a pontoon section **12** and a plurality of pontoon sections **11** are positioned relative to one another to form a pontoon that has its tab portions in the same relative positions of the first pontoon.

For the pontoon **9**, a stringer **30** is positioned in the slots formed by tabs **52, 53** of section **12**; tab and tab portions **33, 34, 25, 26** of the first section **11**; tab and tab portions **35, 36, 27, 28** of the second section **11**; tabs and tab portions **33, 34, 25, 26** of the third section and etc.; the stringer being bolted to, for example tabs **33, 34** by a bolt extending through tab **33**, stringer **30**, and tab **34**. For the pontoon **10**, a second stringer **30** is positioned in the slots formed by tabs **50, 51** of section **12**; tabs and tab portions **35, 36, 27, 28** of the first section **11**; tabs and tab portions **33, 34, 25, 26** of the second portion; tab and tab portions **35, 36, 27, 28** of the third section **11** and etc., with the stringer being bolted to said tabs.

Now an elongated block **57** is inserted into each adjacent pair of slots **21** that is of a horizontal cross section to substantially fill the adjacent pair of slots, the blocks **57** minimizing the tendency of the adjacent pair of pontoon sections from tending to twist relative one another. Further, a block **57** is inserted into the adjacent slot **46** of section **12** and the adjacent slot **21** of section **11**.

After pontoons **9, 10** have been spaced apart the desired distance, one end portion of the cross piece **58** is extended between transverse tab **54** and adjacent tab **43** and bolted to said tabs **54, 43** while the opposite end portions of the cross piece is likewise extended between and bolted to the corresponding transverse tabs of pontoon **10**. Similarly a cross piece has one end portion inserted in slot formed by tabs **38, 39** and the other end portion into the corresponding slots of the transversely opposite pontoon section. Likewise, for each pair of pontoon sections that have end portions **11i** in abutting relationship, one end of the cross piece is extended into and bolted to the adjacent tab portions **43** while the opposite end portion is extended between and bolted to the tab portions of transversely opposite pair of pontoon sections **11**. As may be noted from the drawings, the one end of the cross piece is substantially in abutting relationship with one stringer **30** while the opposite end is substantially in abutting relationship with the other stringer. Further, the vertical height of the cross pieces **30** and the stringers are substantially the same, the height of the stringers and the cross pieces being substantially greater than the corresponding dimension of the tab and tab sections.

The upper corner portion formed by the intersection of the cross piece with the stringer has a leg of an angular bracket **60** bolted to the stringer and the other leg of the bracket bolted at **61** to the cross piece. After the pontoon sections, stringers and cross pieces are assembled in the aforementioned manner, the deck is bolted to the stringers and cross pieces. If desired, railings and other structures may be built on the deck.

Using the pontoon sections of this invention, the boat, raft, or dock may be readily assembled; readily disassembled for storage or moving purposes. Additionally, in the disassembled condition, the parts take up much less space than in the assembled condition. Further, by providing the pontoon sections with transverse tabs that are integrally formed with the body portion and securing cross pieces to the transverse tabs, in the event that a crack should develop in one of the stringers, the assembled pontoon boat will not readily break apart. That is, each pontoon is not only directly attached to the stringer but is also directly attached to the cross piece. Further, due to the provision of the blocks **57**, the possible twisting movement of one pontoon section relative the other is minimized while at the same time the pontoon sections are not directly attached one to the other.

Additionally, providing two transversely spaced sets of longitudinally aligned, longitudinal tabs and tab portions, each of the sections **11** is of the same construction, but may be used for either the left hand portion or right hand portion and still place the respective stringer in the longitudinal slots that are remote from the other pontoon. As a result, the cross pieces in part may bear against the top surface **11***f* and attached to the transverse tabs regardless if a section **11** is used for the right hand or left hand pontoon and may be used with the transverse tab **43** being more closely adjacent the front end of the pontoon or more closely adjacent the rear end of the pontoon.

What is claimed is:

1. A boat, dock, raft or the like comprising a first elongated pontoon, a second elongated pontoon, each pontoon including a plurality of first pontoon sections in longitudinal alignment, each of said pontoon sections being of substantially the same size and shape, having a body portion that has a top surface portion, a first longitudinally extending tab portion integrally joined to the top surface portion to extend thereabove and having a transversely extending first tab portion, a first stringer secured to the longitudinally extending tab portions of the first pontoon, a second stringer secured to the longitudinally extending tab portions of the second pontoon, a plurality of transverse cross pieces having first ends and second ends, said first ends being secured to the first transverse tab portions of the first pontoon and said second ends being secured to the transverse tab portions of the second pontoon, and a deck secured to said stringers, each pontoon section having a second longitudinally extending tab portion transversely spaced from the first longitudinally extending tab portion a sufficient distance to have a stringer extend therebetween, the stringer of each pontoon being extended between the first and second longitudinally extending tab portions of the

respective pontoon and secured to the second longitudinally extending tab portions, and a second pair of longitudinally extending tab portions tranversely spaced from the first and second longitudinally extending tab portions and transversely spaced from each other sufficiently to have a stringer extended therebetween.

2. A boat, dock, raft or the like comprising a first elongated pontoon, a second elongated pontoon, each pontoon including a plurality of first pontoon sections in longitudinal alignment, each of said pontoon sections being of substantially the same size and shape, having a body portion that has a top surface portion, a longitudinally extending tab portion integrally joined to the top surface portion to extend thereabove and a transversely extending first tab portion, a first stringer secured to the longitudinally tab portions of the first pontoon, a second stringer secured to the longitudinally extending tab portions of the second pontoon, a plurality of transverse cross pieces having first ends and second ends, said first ends being secured to the first transverse tab portions of the first pontoon and said second ends being secured to the transverse tab portions of the second pontoon, and a deck secured to said stringers, each longitudinally adjacent pair of pontoon sections including adjacent first end portions having a half of a longitudinal tab portion, each of said half tab portion being secured to the respective stringer.

3. The apparatus of claim 2 further characterized in that each longitudinally adjacent pair of pontoon sections has an opposite end portion having a second transverse tab portion, each of said second transverse tab portions being secured to a cross piece.

4. The apparatus of claim 3 further characterized in that each of a longitudinally adjacent pair of pontoon sections opposite end portions has a radially extending slot opening to the other and that a block is located in the radially extending slots of the adjacent pair of sections to minimize angular movement of one section to the other.

5. The apparatus of claim 3 further characterized in that each pontoon includes a nose cone section having a pair of spaced longitudinally extending tab portions bolted to the respective stringer and a transverse tab portion bolted to one of the cross pieces.

6. A boat, dock, raft or the like comprising a longitudinally elongated pontoon, a second longitudinally elongated pontoon, each pontoon including a stringer and first and second longitudinally elongated pontoon sections each having a first end portion and a second end portion, a pair of transversely spaced longitudinally elongated tabs bolted to each other and the stringer intermediate said end portions, and a transverse tab joined to the first end portion, and a cross piece having one end portion bolted to the transverse tabs of one pontoon and a second end portion bolted to the transverse tabs of the other pontoon.

7. The apparatus of claim 6 further characterized in that each pontoon includes a third pontoon section having a first end portion and a second end portion, the second and third pontoon sections second end portions each having a pair of transversely spaced longitudinally elongated tab half portions, the tab half portions of the second section being bolted to the stringer adjacent the tab half portions of the third section.

8. The apparatus of claim 7 further characterized in that the second and third pontoon sections each have a pair of longitudinally spaced transverse tab portions longitudinally intermediate the respective longitudinal tabs and tab half portions of the respective section and that there is provided a second and third cross piece having one end bolted to the pair of transverse tabs of the second and third sections respectively of the first pontoon and opposite ends bolted to the pair of transverse tabs of the second and third sections respectively of the second pontoon.

9. The apparatus of claim 6 further characterized in that each of the pontoon sections has a pair of transverse tab portions longitudinally offset from the longitudinal tab portions of the respective section, and that there is provided a pair of cross pieces having first end portions bolted to the pair of transverse tabs of the first and second pontoon sections respectively of the first pontoon and second end portions bolted to the pair of transverse tabs of the first and second pontoon sections respectively of the second pontoon.

10. The apparatus of claim 9 further characterized in that there is provided brackets for joining the one end portions of the cross pieces to the stringer of one pontoon and the opposite ends portions of the cross pieces to the stringer of the other pontoon, that the pontoon sections have body portions enclosing a hollow chamber and that the tabs and tab portions are integrally joined to the respective body portion.

11. A boat, dock, raft or the like comprising a first plurality of longitudinally elongated pontoon sections, a second plurality of longitudinally elongated pontoon sections, each pontoon section having a body portion, a first stringer, a second stringer, and a plurality of transverse cross pieces having first ends and second ends, each of the first pontoon sections having a pair of transversely spaced longitudinally elongated tab portions integrally joined to the respective body portion to extend thereabove and bolted to the first stringer, said first stringer extending between the above mentioned pair of tab portions, and a transverse tab portion integrally joined to the respective body portion and bolted to the one end of one of the cross pieces, and each of the second pontoon sections having a pair of transversely spaced longitudinally elongated tab portions integrally joined to the respective body portion and bolted to the second stringer, the second stringer extending between the last mentioned pair of tab portions and a first transverse tab portion integrally joined to the respective body portion and bolted to the second end of one of the cross pieces and a deck secured to said stringers.

12. The apparatus of claim 11 further characterized in that each pontoon section has a second transverse tab portion longitudinally spaced from the respective first transverse tab portion and on the opposite side of the respective cross piece, said second transverse tab portions being integrally joined to the respective body portion and bolted to the cross piece and the first transverse tab portion of the same pontoon section.

13. The apparatus of claim 11 further characterized in that two of the first pontoon sections have first end portions and that said two sections are bolted to the first stringer with their end portions adjacent one another, each of said first end portions having a radially extending slot opening to the other, and that there is provided a block in the slots to minimize angular movement one of said two sections relative the other.

14. A boat, dock, raft or like comprising a first elongated pontoon, a second elongated pontoon, a plurality of cross pieces each having a first end and a second end, each pontoon section having a first longitudinally extending tab portion, a first stringer bolted to the longitudinally extending tab portions of the first pontoon, a second stringer bolted to the longitudinally extending tab portions of the second pontoon, each pontoon section of the first pontoon having a transverse tab portion bolted to the first end of one of the cross pieces, each pontoon section of the second pontoon having a transverse tab portion bolted to the second end of the cross piece second end, each of a longitudinally adjacent pair of pontoon sections having radially extending slots opening to one another and a block located in the radial slots of the adjacent pair of sections to minimize angular movement of one of the pair of sections relative the other, and a deck secured to said stringers.

15. A boat, dock, raft or the like comprising a first elongated pontoon, a second elongated pontoon, a plurality of cross pieces each having a first end and a second end, each pontoon including a plurality of first sections in longitudinal alignment, each pontoon section having a body portion and a first longitudinally extending tab portion integrally joined to the body portion, a first stringer bolted to the longitudinally extending tab portions of the first pontoon, a second stringer bolted to the longitudinally extending tab portions of the second pontoon, each pontoon section of the first pontoon having a pair of longitudinally spaced transverse tab portions

bolted to the first end of one of the cross pieces and to each other, each pontoon section of the second pontoon having a pair of longitudinally spaced transverse tab portion bolted to the second end of one of the cross pieces, said pairs of transverse tab portions being integrally joined to the respective body portion and the respective end of the cross pieces being extended between the two transverse tab portions of the pair of the transverse tab portions, and a deck secured to said stringers.

16. The apparatus of claim 15 further characterized in that each body portion has a top surface portion and end portions, and that each longitudinally adjacent pair of pontoon sections end portions has an elongated slot opening through the top surface of the respective pontoon and opening to the other of said pair of sections and that there is provided a block in the slots of the adjacent pair of sections to minimize angular movement of one of the pair of sections to the other.

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