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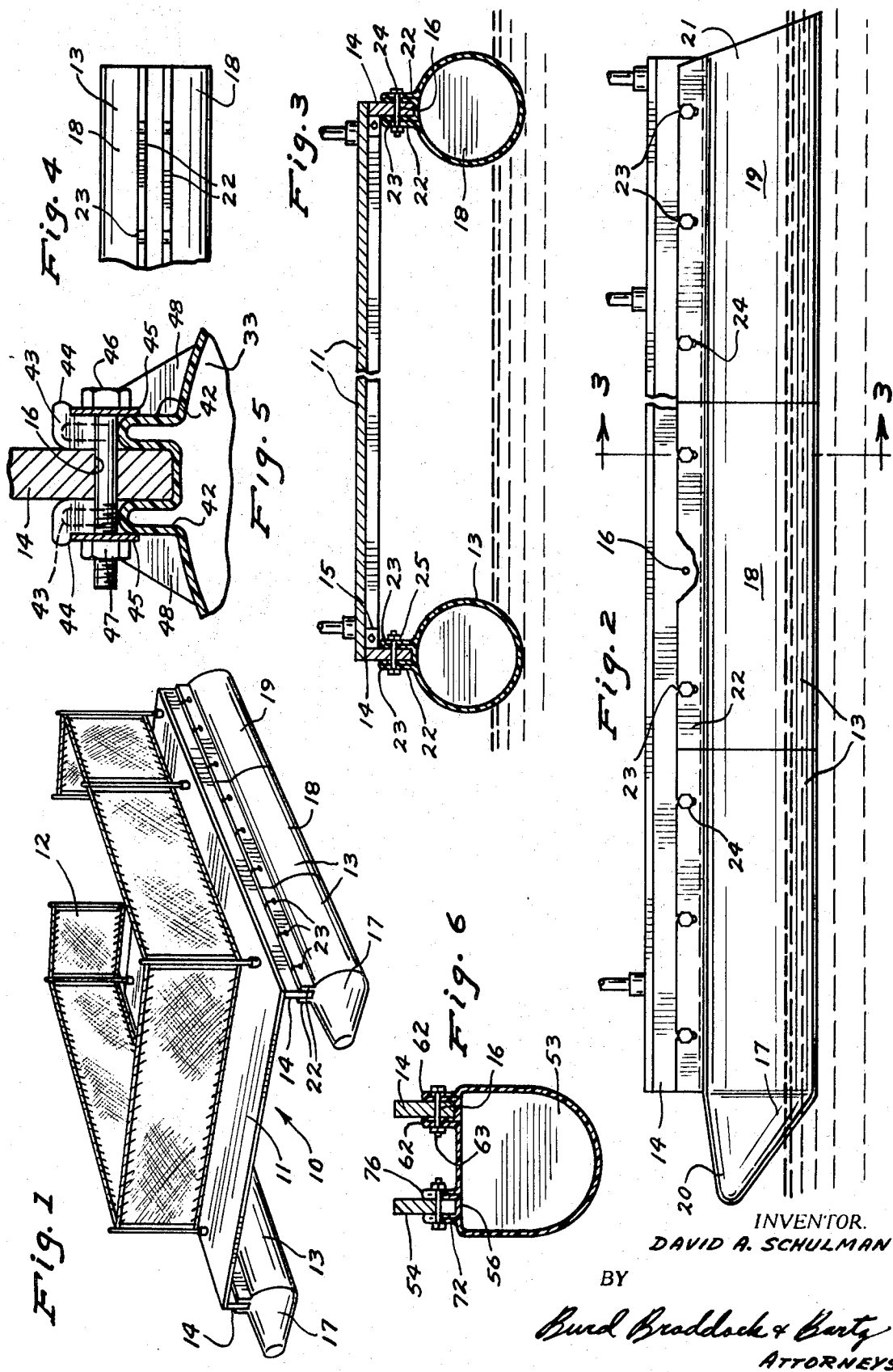
D. A. SCHULMAN

3,614,937

PONTOON STRUCTURE

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2 Sheets-Sheet 1



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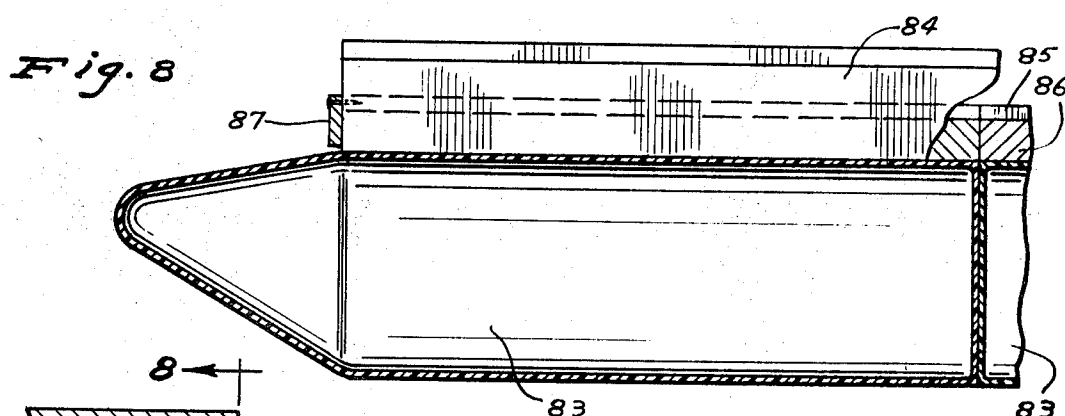
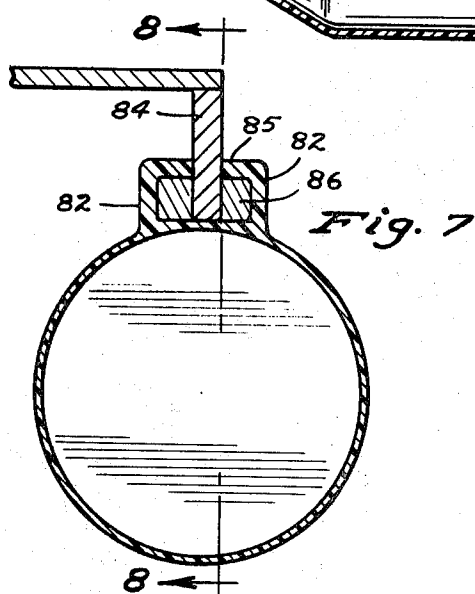
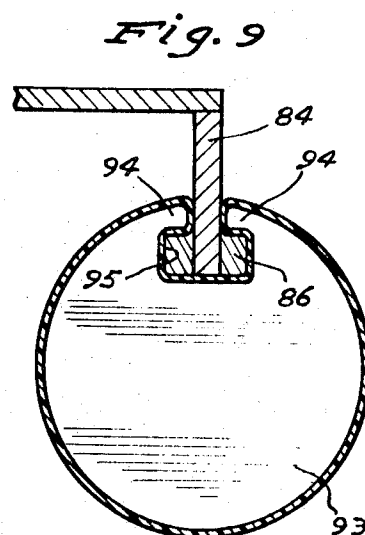
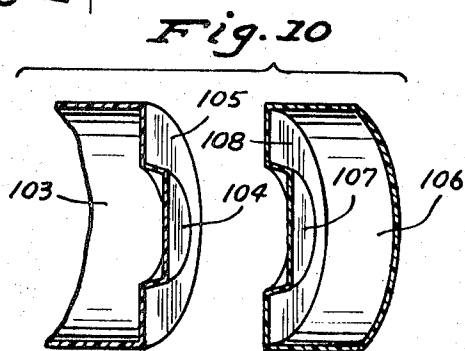
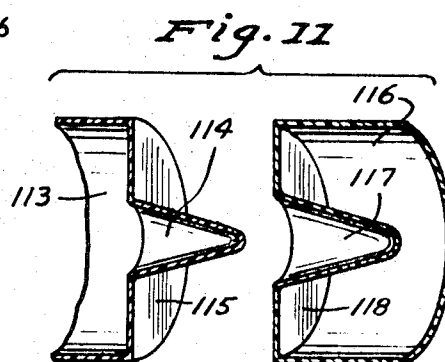
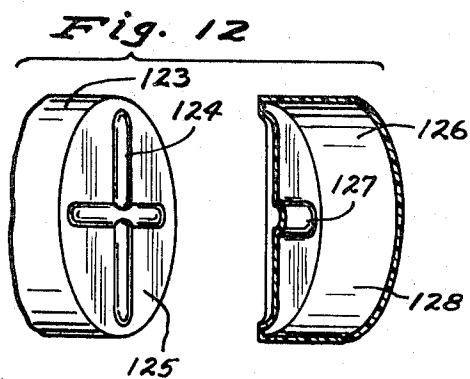
D. A. SCHULMAN

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INVENTOR.
DAVID A. SCHULMAN

BY
Burd Braddock & Barty
ATTORNEYS

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PONTOON STRUCTURE

David A. Schulman, 6915 Rosemary Road,
Eden Prairie, Minn. 55343

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3 Claims

ABSTRACT OF THE DISCLOSURE

A plurality of modular pontoon float sections of uniform cross sectional dimension are supported in longitudinal alignment with each other along two parallel sides of a pontoon boat deck through the instrumentality of a pair of longitudinally extending parallel flanges extending upwardly from each of the float sections to snugly receive one of a pair of parallel downwardly extending deck floor joists. Transverse aligned openings are provided in the flanges and in the joists to receive bolts for releasably fastening the pontoons to the deck. Pontoon sections at a front end of each aligned set can have a sloping shape to facilitate movement of the boat through the water. The openings in the pontoon flanges or in the deck joists can be slots which will permit removal of the pontoons from the joists after the bolts are loosened but without the necessity of completely removing the bolts. Such a pontoon structure can be semipermanently moored to a pier or the shore to form part or all of a dock, wharf or bridge. It can be lengthened by adding additional float sections to a longer deck or floor.

BACKGROUND OF THE INVENTION

This invention has relation to pontoon supported structures and particularly to pontoon boats or docks in which the pontoons are detachably supported with respect to the boat or dock or bridge deck or floor.

In recent years pontoon boats have become increasingly popular because they provide a stable, safe and comfortable base from which a family unit or other social group can conveniently enjoy leisure time activities such as swimming, fishing, boating and camping. They have had less than universal acceptance, however, because of the bulk, weight, cost and inconvenience of the unitary, rigid nature of former pontoon boat structures. Portable structures in the prior art suffered from disadvantages of being difficult to assemble and disassemble, and/or from not having the rigidity and safety of more permanent structures.

SUMMARY OF THE INVENTION

Pontoons made according to the present invention will be of a hollow, modular form so that several of them can be used in alignment with each other to provide buoyant support for a pontoon boat structure. The amount of buoyant support provided can be increased or decreased by adding or subtracting pontoon modules from the line. Each pontoon will be an independent hermetically sealed unit and will have outwardly extending parallel flanges or other runner receiving elements integral therewith. A pontoon boat deck or floor will have parallel floor joists or runners extending downwardly therefrom and of dimension to fit snugly between the pontoon flanges.

In one form of the invention, transverse openings are provided in the joists and in the pontoon flanges in positions so that bolts or other fasteners can hold the pontoons in fixed relationship to the deck with the pontoon flanges in surrounding relationship to the joists and with the joists resting in weight-bearing relationship upon the top of the pontoons.

The openings in the flanges or in the joists or both can be slots so that the pontoons can be assembled with or

2

disassembled from the joists merely by loosening the nuts on the bolts and without completely disassembling them; or their openings can be holes of approximately the same diameter as that of the bolts being used so that the pontoons are positively fixed with respect to the deck joists until the bolts are removed therefrom.

In another form of the invention, the runner receiving elements are constituted as a T-slot structure, and the runner has an inverted T shape designed to fit snugly into this T-slot. Means is provided from preventing the pontoons from moving longitudinally with respect to the runner when the pontoons are positioned thereon.

An object of the invention is to provide a pontoon boat structure in which a plurality of hermetically sealed modular pontoons can be very quickly assembled with or disassembled from a flat deck having parallel downward extending joists or runners.

A further object is to provide such a structure in which the more cumbersome deck with runners can be cheaply built so that it can be left or stored at its location for use while the lightweight and conveniently handled and stored module pontoons can be easily transported to safer storage points or to other points of use where they can be assembled for use with other such decks.

Another object of the invention is to provide a pontoon boat structure whereby the length thereof and the support capabilities thereof can be varied by the addition or deletion of identical modular pontoon units.

BRIEF DESCRIPTION OF THE DRAWING

In the drawings, FIG. 1 is a perspective view of a pontoon boat made according to the present invention;

FIG. 2 is an enlarged side elevational view of a boat similar to the boat shown in FIG. 1;

FIG. 3 is a vertical sectional view taken on line 3—3 in FIG. 2;

FIG. 4 is a top plan view of a portion of one of the pontoons as shown in FIGS. 1, 2 and 3;

FIG. 5 is an enlarged vertical sectional view of a portion of a pontoon of modified construction showing its relationship to a deck joist and taken along a plane similar to that indicated at 3—3 in FIG. 2;

FIG. 6 is a vertical sectional view of a pontoon of further modified design taken as if along the line 3—3 in FIG. 2;

FIG. 7 is a vertical sectional view of a pontoon of a still further modified design taken as if a long line 3—3 in FIG. 2 and showing a modified form of deck joist or runner;

FIG. 8 is a reduced vertical sectional view taken along the line 8—8 in FIG. 7;

FIG. 9 is a vertical sectional view of a pontoon of a yet further modified design also taken as if along line 3—3 in FIG. 2; and

FIGS. 10, 11 and 12 are exploded fragmentary perspective sectional views taken as if on the line 8—8 in FIG. 7 and showing a nesting relationship between three modified forms of pontoons of the invention, the figures showing the rear of a portion of one pontoon and the front of a portion of the next following pontoon.

DESCRIPTION OF PREFERRED EMBODIMENTS

A pontoon boat 10 includes a deck or floor 11 and a plurality of floats 13. If desired, the deck can be provided with a railing 12, an outboard motor and mount, a steering station, steps or ladders, and other usual or preferred features, not shown. The deck can be made up of a plurality of plywood sheets, or a plurality of slightly spaced parallel transversely extending boards. In all cases, however, extending downwardly from such

deck are at least two spaced parallel floor joists or runners 14, 14. Cross bracings such as at 15 can be provided if desired.

As shown in the form of the invention illustrated in FIGS. 1 through 4, holes or openings 16 are provided through the floor joists.

As shown, the pontoons 13 have three different modular forms. Each pontoon boat can include nose or lead pontoons 17, one or more pairs of center pontoons 18, and rear or trail pontoons 19.

The nose pontoon 17 includes a nose portion 20 which is of shape to minimize the resistance to forward movement of the aligned pontoons through the water. As shown, the rear pontoons 19 have an aesthetically, rearwardly sloped plane surface 21. Center pontoons 18 can be substituted for rear pontoons 19 without appreciably affecting the performance of the boat when underway in a forward direction. Center pontoons 18 can also be substituted for the nose pontoons 17, or the nose pontoons can be eliminated, but movement in a forward direction would be more difficult under those circumstances.

Each pontoon 13 is constituted as a hermetically sealed independent flotation unit, and, as shown, each has a pair of integral, parallel spaced-apart longitudinally extending flanges 22, 22 extending outwardly and upwardly therefrom. Each pair of flanges is provided with at least two sets of laterally aligned openings 23 there-through (3 as shown). The relationship between the flanges, the openings 23, and the body of the pontoons is such that the floor joists or runners 14 will fit snugly between the flanges when the openings 23 are in alignment with corresponding openings or holes 16 in the runners; and these runners will then rest in load bearing relationship to the pontoons. Bolts 24 and nuts 25 retain the parts in this relationship.

The pontoons of the invention could be made out of several different materials including even metal. For example, fiberglass halves could be built up and joined by cementing, or plastic pontoons could be constructed by blow molding or vacuum forming processes. A particularly effective pontoon can be made out of high density polyethylene by the rotational molding process.

An effective inexpensive way to make the pontoon boat deck or floor is, as shown, to use wood with parallel wood 2 x 6 or 2 x 8 or 2 x 10 runners extending downwardly therefrom. The construction and materials of the deck are not important, however, just as long as parallel runners of a dimension to fit snugly between the parallel pontoon flanges are provided.

The pontoon boat 10 of the present invention is pictured in FIGS. 1 through 3 in condition for use. Should a larger pontoon boat be desired, it is necessary only to extend the deck 11 and the runners 14 and to add additional center pontoons 18 between nose pontoons 17 and rib pontoons 19.

When it is desired to disassemble the pontoon boat structure, nuts 25 are loosened on the bolts 24, and each of the pontoons 13 will then be moved downwardly with respect to its runner 14 until it is in clearing relationship therewith. The nuts 25 can then be retightened on the bolts 24 without ever removing them from the holes 16 through the runners. The pontoons can then be easily stored in a safe, locked location and/or can be transported clamped to a 2 x 4 rail or runner, even on top of a car or trailer or inside of a car, to a safe location for storage.

When the boat is to be used again, the nuts will be loosened toward the end of the bolts, the pontoons will be slipped into place, and the nuts and bolts again tightened. This is particularly advantageous when assembling the pontoon boat in the water, for example, because the nuts never have to leave the bolts and so the chance of losing them in the water is eliminated and the difficulty of aligning them with the bolts underneath of the deck is obviated.

FIRST MODIFICATION

As seen in FIG. 5, a pontoon 33, in other ways identical with pontoon 18, for example, includes upwardly extending integral, parallel, spaced-apart longitudinal flanges 42, 42. These flanges are provided with aligned openings 43, 43, constituted as slots and open unwardly through the flanges 42. The space between flanges 42, 42 will be of size to snugly receive the runner 14, and the openings or slots 43 will be positioned so as to be in alignment with holes 16 in said runner.

The structure of each of the flanges 42 is such that a bead 44 extends along the top outer edge of each flange. A pair of longitudinally extending bars 45 have openings therein to receive bolts 46 and extend into bearing relation with the underside of the beads 44 to hold the parts in fixed relationship to each other when the bolts are in place and nuts 47 are tightened on the bolts as shown.

If desired, reinforcing shoulders 48, 48 can extend integrally upwardly from the upper surface of the pontoon proper to join with the outer surfaces of the flanges 42, 42.

In order to disassemble the pontoons from the runners 14, the nuts 47 will be loosened until bars 45, 45 can both be moved into clearing relationship with the beads 44 of the flanges 42, 42. After the pontoon is clear of the runner, the nuts 47 can be retightened to insure that the bolts and bars and nuts stay in assembled relation to the runners 14 until next the pontoon boat is to be assembled.

SECOND MODIFICATION

The snug fitting relationship of the runners 14 between facing surfaces of the integral flanges provides good stability in the forms of the invention as already shown. However, further stability can be provided by having two sets of flanges extend upwardly from the surface of each pontoon. This is illustrated in FIG. 6. A further advantage of this structure is that it will also serve to lend stability to the deck structure itself.

In this figure, in addition to the usual runner 14, a second runner 54 extends downwardly from the deck (not shown) in parallel relation to the runner 14. A pontoon 53 has a first set of upwardly extending parallel flanges 62, 62 extending integrally upwardly therefrom; and a second set of parallel flanges 72, 72 also extending upwardly therefrom. While the means of fastening each pair of flanges of a particular pontoon with respect to its runners would usually be the same in each case, in order to conserve drawing space, two different methods of attachment are illustrated in FIG. 6.

To hold the runner 14 in fixed relationship to the flanges 62, a round hole 16 is provided through the runner, and aligned round holes 63, 63 extend through flanges 62, 62. In this situation, the nut and bolt must be completely removed in order to remove the pontoon flanges from the runner.

In the case of runner 54 and flanges 72, 72, a slot 56 is provided in the runner, and a pair of aligned slots 76 are provided in flanges 72, 72. Thus the nuts and bolts need only to be loosened to remove the pontoon flanges 72, 72 from the runner 54 and also to remove the nut and bolt combination from both. If construction like this is used, the nuts and bolts will be stored separately and it will still not be necessary to assemble the nut onto the bolt in reassembling the structure.

THIRD MODIFICATION

The use of bolts to position the pontoons with respect to the pontoon deck can be eliminated by use of a structure as shown in FIGS. 7 and 8. In those figures, pontoons 83 are provided with upstanding flanges 82, each of which includes an arm 85 which extends toward the other flange. These arms are separated from each other by a distance sufficient to allow snug passage of a modified deck joist

5

or runner 84 therebetween. This runner 84 is provided with a T-shaped lower end portion 86 which is provided by bolting strips to the runner or in any other suitable manner, and which fits snugly into the cavity provided by the vertically upstanding portions and the arm portions 85 of the flanges 82.

When in position for use, these pontoons 83 can be held in place by the simple expedient of fastening a bar or strip 87 across the end of the runner 84 and the flanges 82.

FOURTH MODIFICATION

In FIG. 9 is illustrated a pontoon 93 designed to fit on a runner 84 having a T-shaped lower portion 86 similar to that shown in FIGS. 7 and 8. Instead of having upstanding flanges, however, the runner receiving elements are constituted as hollow inwardly extending arms 94, 94, which are spaced apart by a distance sufficiently to snugly receive the runner 84, a cavity 95 being provided below these arms and running the entire length of the pontoon to snugly receive the outwardly extending portions of 86 of the T-shaped runner 84.

Provision can be made for a bar similar to the bar 87 shown in FIG. 8 at the front and rear of the pontoons, once they are in position to hold them in fixed relationship to the deck joists, or any other suitable fastening method can be employed.

PONTOON NESTING STRUCTURES

In order to obtain further stability, the adjacent contacting surfaces of adjacent pontoons can be nested one into the other. Three such modified forms are shown, and it is obvious that further designs could be used.

In FIG. 10, pontoon 103 is provided with a hollow raised circular boss 104 in rear end wall 105, and pontoon 106 is provided with a matching depression 107 in forward end wall 108.

In FIG. 11, pontoon 113 is provided with a conical boss 114 in rear end wall 115, and pontoon 116 is provided with a matching depression 117 in forward end walls 118.

In FIG. 12, pontoon 123 is provided with an upstanding outwardly extending cross pattern 124 in its rear end wall 125, and pontoon 126 is provided with a matching depression 127 in its forward end wall 128.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A pontoon structure for providing a flotational sup-

6

port for a pontoon boat or the like having an elongated runner extending horizontally along the underside thereof comprising an elongated closed and hermetically sealed hollow pontoon of plastic material disposed horizontally, said pontoon having a pair of vertically upstanding flange means of plastic material formed integrally with the pontoon and extending in parallelism longitudinally along the upper portion thereof one on each side of the center longitudinal vertical plane of the pontoon, said flange means extending along the major portion of the length of the pontoon and being so spaced as to snugly receive the lower portion of the runner therebetween with the runner resting on the pontoon to be supported thereby, and fastening means for securing the flange means to the runner at longitudinally spaced points therealong to prohibit any relative movement between the pontoon and the runner.

2. The subject matter of claim 1 wherein said flange means are provided with laterally aligned pairs of openings for receiving the fastening means which extend through and through the runner and adapted to tighten the flange means against the sides of the runner, said openings being upwardly opening slots whereby when the fastening means are loosened the pontoon may be removed by lowering from the fastening means and the runner.

3. The subject matter of claim 1 wherein one end of the pontoon is provided with an outwardly extending protuberance and the other end of the pontoon is provided with a depression of a configuration to receive and nest such a protuberance so that two or more of said pontoons may be positioned in longitudinal alignment along the runner in interlocking relation.

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MILTON BUCHLER, Primary Examiner

F. K. YEE, Assistant Examiner