United States Patent [19]

Bossler, Jr.

[11] **3,744,071**

[45] **July 10, 1973**

[54] **SECTIONAL BOAT CONSTRUCTION**

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[73] Assignee: **Kaman Aerospace Corporation**, Bloomfield, Conn.

[22] Filed: **Mar. 24, 1971**

[21] Appl. No.: **127,671**

[52] **U.S. Cl.** ..... **9/2 S**

[51] **Int. Cl.** **B63b 7/04**

[58] **Field of Search** ..... 9/310 E, 2 C, 2 S

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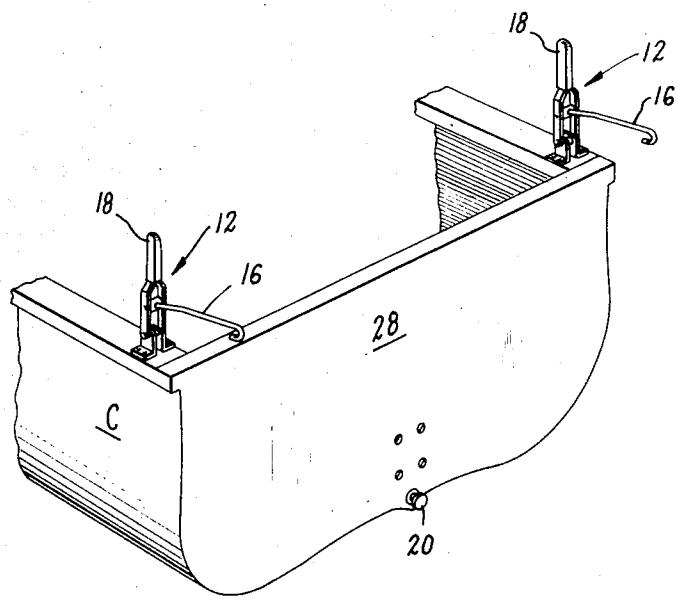
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[57] **ABSTRACT**

Three basic boat sections or units are described herein, which boat sections can be joined to one another in a variety of configurations as each boat section has at least one end with a generally flat bulkhead adapted to mate with a flat bulkhead on any of the other boat sections. Each bulkhead associated end of each boat section further includes portions of latching means adapted to releasably secure these boat sections to one another. At least one of the three boat sections has a pointed end to define the bow of either a short two or three section boat, or alternatively to define opposite ends of a canoe or three section boat. Various other boat configurations utilizing four or more of said typical three boat sections can also be assembled readily.

6 Claims, 21 Drawing Figures



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SHEET 1 OF 4

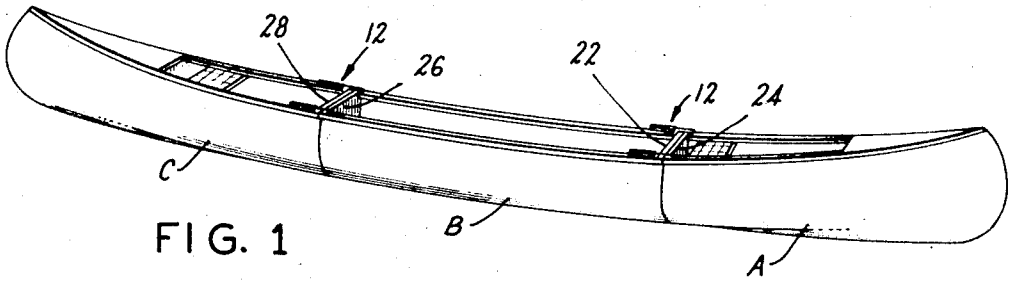


FIG. 1

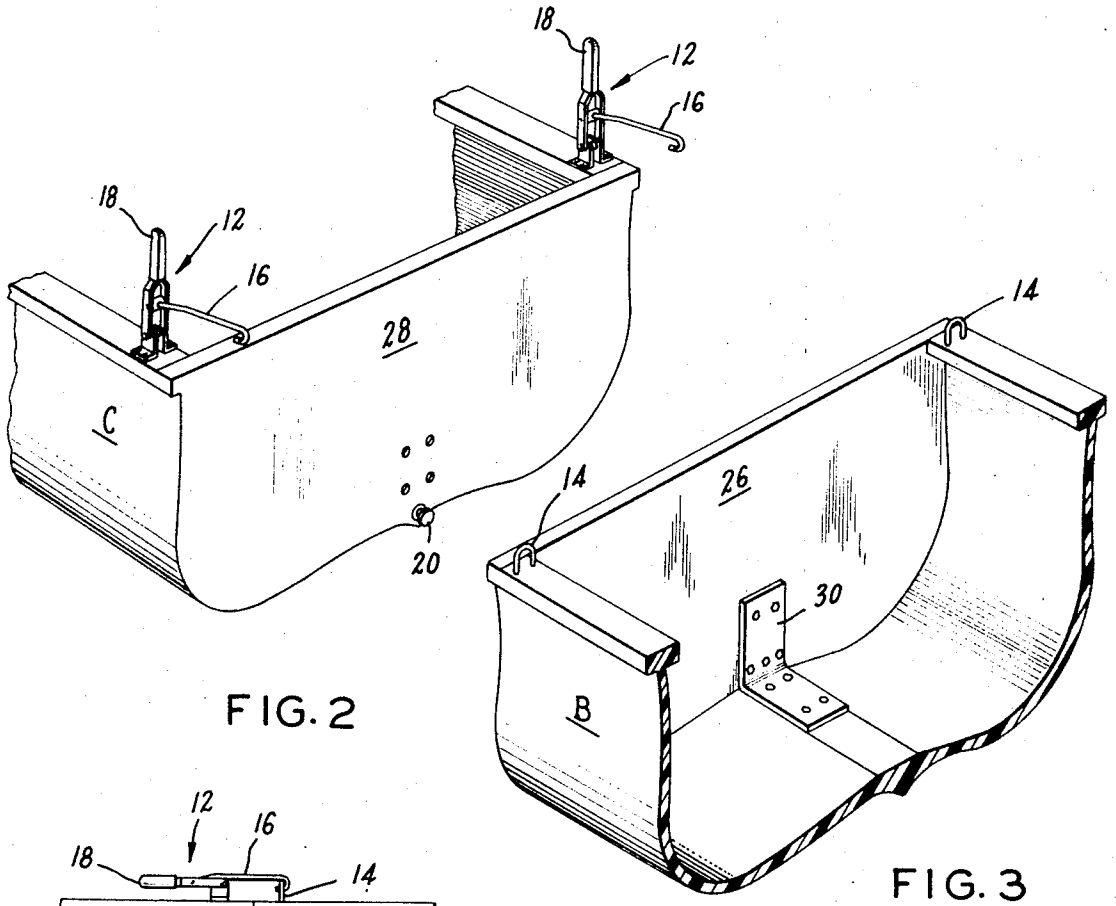


FIG. 2

FIG. 3

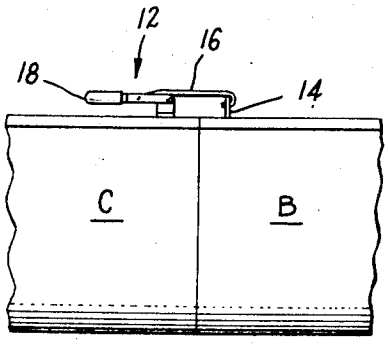


FIG. 4

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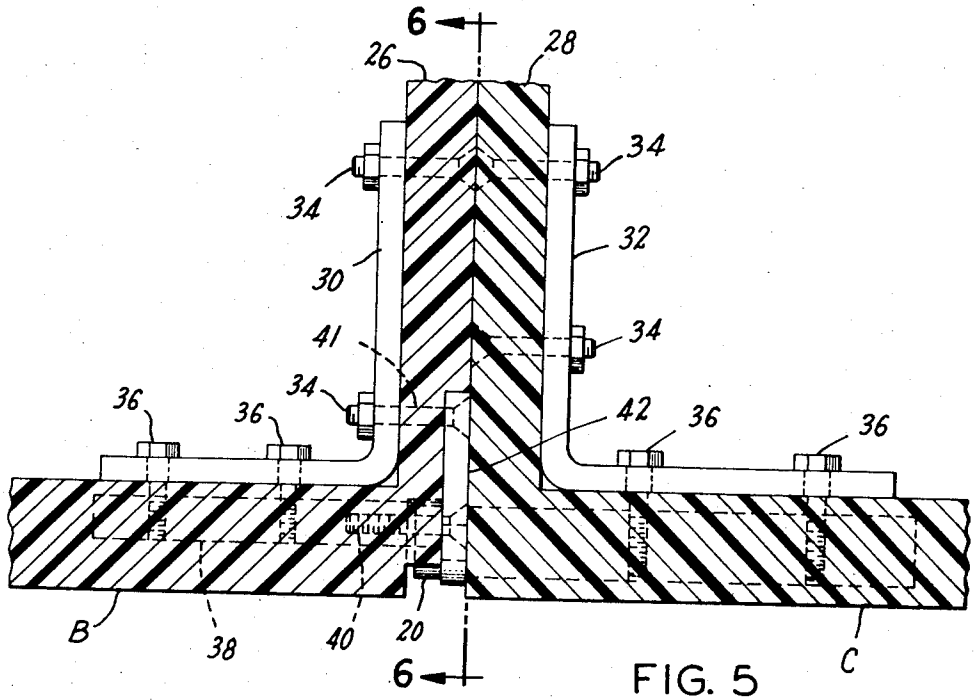


FIG. 5

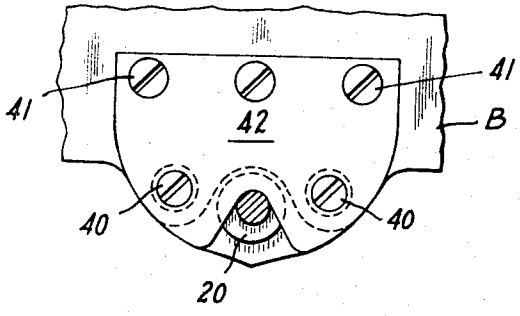


FIG. 6

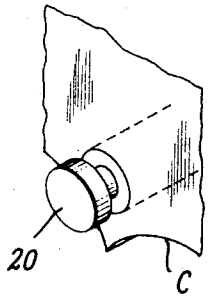


FIG. 7

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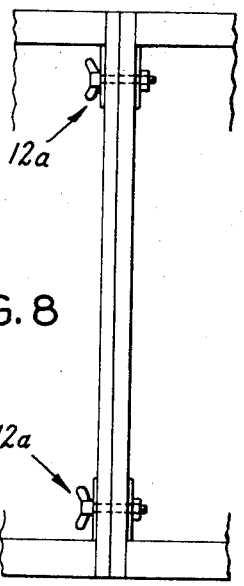


FIG. 8

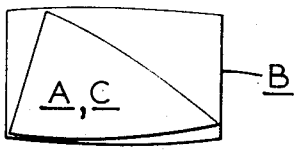


FIG. 9

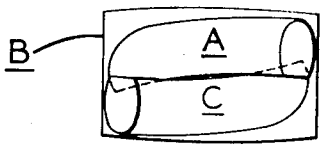


FIG. 10

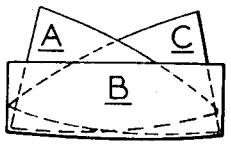


FIG. 11

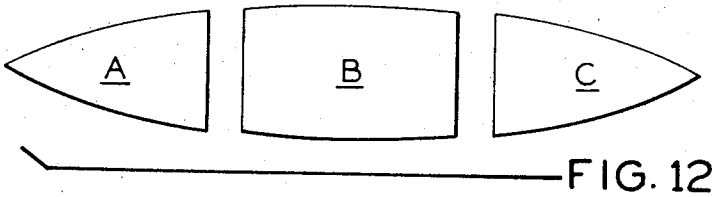


FIG. 12

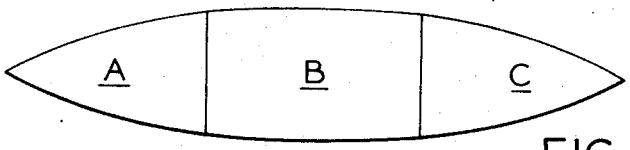


FIG. 13

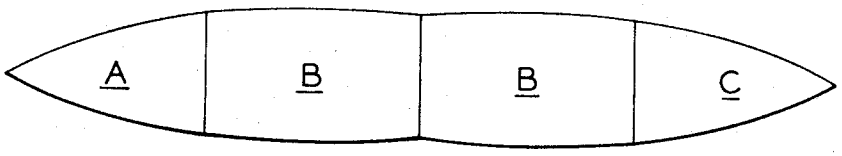


FIG. 18

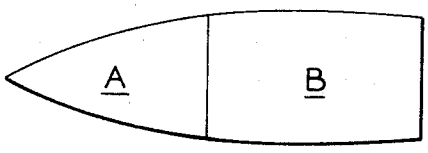


FIG. 14

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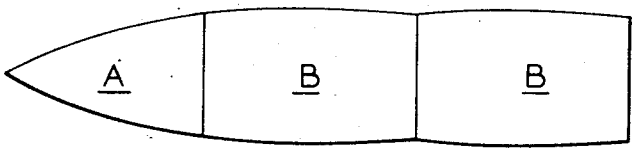


FIG. 17

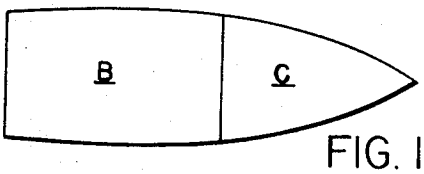


FIG. 15

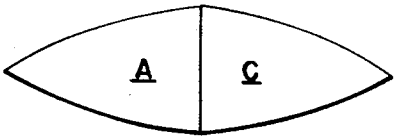


FIG. 16

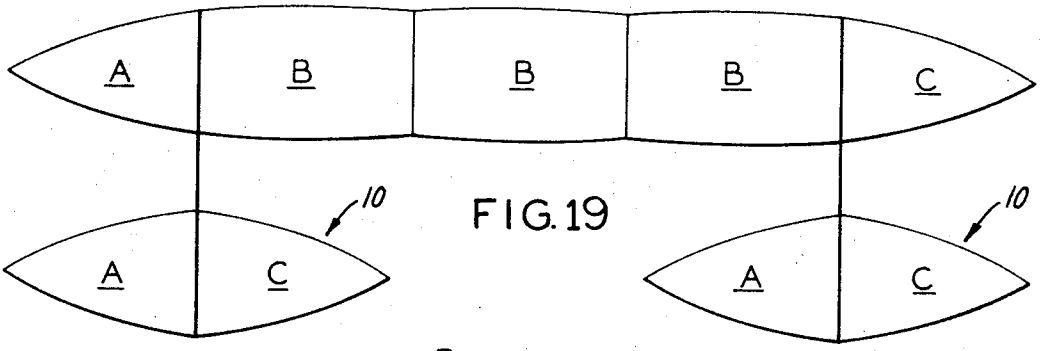


FIG. 19

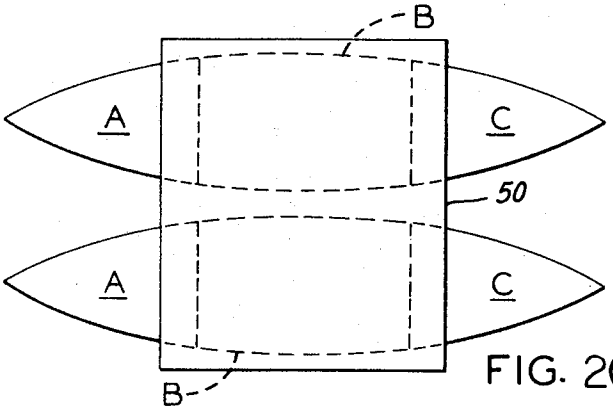


FIG. 20

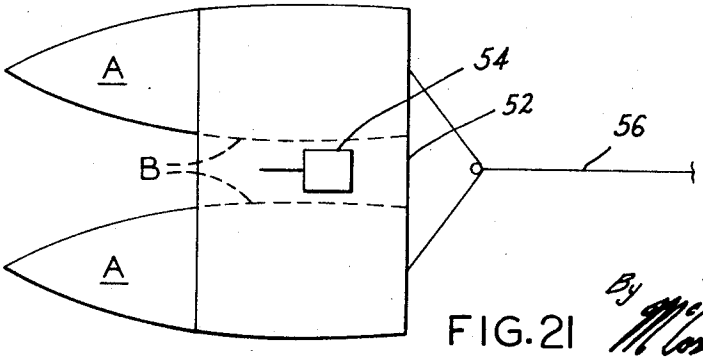


FIG. 21

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SECTIONAL BOAT CONSTRUCTION

SUMMARY OF THE INVENTION

This invention relates to sectional boats, and deals more particularly with a sectional boat construction which utilizes three basic units, any two of which can be combined to provide a small one man boat. All three units can be combined to provide a canoe which is well adapted for easy storage in a station wagon or the like, as well as being well suited to portaging or the like in its disassembled configuration.

An object of the present invention is to provide a sectional boat construction consisting of three basic units which can be joined together in any one of a variety of configurations to provide a small boat, a canoe or a somewhat larger boat, all with the same basic three units to be described herin, or of multiples thereof.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a persepctive view of a three section boat construction assembled in accordance with the present invention.

FIG. 2 is a perspective view of the end portion of one of the boat sections shown in FIG. 1.

FIG. 3 is a view similar to FIG. 2 showing the mating end portion of an adjacent boat section.

FIG. 4 is an elevational side view of the two end portions shown in FIGS. 2 and 3 in their latched condition.

FIG. 5 is a detailed vertical section taken through the keel portion of the adjacent boat sections shown in FIG. 4.

FIG. 6 is a sectional view taken on the line 6—6 of FIG. 5.

FIG. 7 is a persepctive view of the configuration of the lug which is shown to a somewhat smaller scale adjacent the keel portion of the boat end section depicted in FIG. 2.

FIG. 8 is a plan view of two adjacent boat end sections showing an alternative construction for latching the adjacent bulkheads to one another.

FIG. 9 is a schematic view showing the relative sizes of an end section A or C of the canoe shown in FIG. 1 with respect to the central or intermediate boat section B. FIG. 10 is a schematic view showing in plan view the stowed configuration of the three boat sections shown in FIG. 1.

FIG. 11 is an elevational view similar to that of FIG. 10 showing the three boat sections in their stowed condition.

FIG. 12 shows the three basic boat sections A, B and C in plan view.

FIGS. 13 through 21 inclusively show a variety of configurations using some or all or multiples of the basic boat sections A, B and C.

DETAILED DESCRIPTION

Turning now to the drawings in greater detail, FIG. 1 shows a canoe comprising three separable boat sections A, B and C, constructed in accordance with the present invention and latched to one another so as to provide a unique composite canoe having individual self-sustaning boat sections which in their separated condition are well adapted for stowage in a motor vehicle such as a conventional station wagon, as well as being adapted to being carried in the portaging commonly done with canoes generally.

The bow section A of the canoe shown in FIG. 1 has a conventional bow shape, in that the major portion of its length has the appearance of a conventional canoe. That is, it has two oppositely disposed generally convex sides which cooperate with a bottom of the boat so as to define a bow end of said boat which is of generally conventional appearance. The opposite end of the boat shown in FIG. 1 is defined by a generally similarly shaped boat section C, which is the second section to be described, and this section also has two convex sides which cooperate with a bottom surface to define the opposite end of the boat. Thus, the aft end of the canoe is generally similar to the bow end and is of conventional appearance except in the areas where these first and second boat sections are joined to an intermediate or third boat section B.

The first, or forward boat section A, has an aft bulkhead 24 connected to the convex sides and to the bottom thereof so as to provide a watertight boat section or unit. So too the second, or aft boat section C, also has a bulkhead 28, which in this case is a forward bulkhead, adapted to mate with the aft bulkhead 24 of the first or bow boat section to provide a small double ended one man canoe of the type shown in FIG. 16. The latching means, to be described, is so designed as to permit this assembly.

The means provided for both locating and latching these first and second boat sections to one another may take several different forms, the chief requirement being that the respective bulkheads abut one another, and that these bulkheads be secured to one another. FIGS. 2, 3 and 4 show a rudimentary attachment means suitable for use well above the normal waterline of the boat.

Preferably, said latching means comprises at least two over-center type catches 12, 12 mounted to an upwardly facing edge, or gunwale surface, of the aft boat section C as best shown in FIG. 2. The mating boat section, such as the mid-section B shown in FIG. 3, is equipped with strike means 14, 14, best shown in FIG. 3, which is adapted to cooperate with the projecting lever 16 of the over-center catch 12 shown in FIG. 2 in order to permit latching of these adjacent boat sections to one another in order to provide a canoe as shown in FIG. 1. The latched condition of these adjacent boat sections B and C is shown in FIG. 4 with the over-center catch 12 being depicted in its closed condition in that view. The over-center catch 12 need not be described in great detail herein, and may comprise a more sophisticated latch, which latch may be embedded in the gunwale of the canoe as desired. It is noted however that the operating lever 18 of the over-center catch preferably is directed in an aft direction as shown in FIG. 1 so as to preclude snagging of this operating lever during use of the canoe amongst low over-hanging branches or the like.

With further reference to the latching means utilized in joining the adjacent boat sections to one another, FIGS. 2 and 3 also show a projecting lug 20 at the keel line of the aft boat section C, which lug is adapted to mate with a cooperating socket provided in the area of the keel defined by the adjacent boat section B. FIG. 5 shows in vertical section the configuration of this projecting lug 20 together with its cooperating socket. The locking and locating connection provided at the keel line between adjacent boat sections will be described in

greater detail with reference to FIGS. 5, 6 and 7 hereinbelow.

Turning next to a description of the third or intermediate boat section B provided between the end sections A and C of FIG. 1, said third or intermediate boat section B preferably includes a forward bulkhead 22 which is adapted to mate with the aft bulkhead 24 of the forward or bow section A. The third of intermediate boat section B further includes an aft bulkhead 26 which is adapted to mate with the forward bulkhead 28 of the aft boat section C. It will be apparent from the description to follow that each of the forwardly facing bulkheads 24 and 26, for example, are identical to one another and that the complimentary shaped bulkheads 22 and 28, which abut the bulkheads 24 and 26 respectively are also identical to one another. Therefore, although FIGS. 2 and 3 show the bulkheads 26 and 28 in position for attachment to one another it will be apparent from this view that the bulkheads 28 and 26 of boat sections C and B could well represent the bulkheads 22 and 24 associated with the intermediate boat section B and the forward boat section A respectively.

The forward end of the third boat section B abuts the aft bulkhead of the first boat section A, and means is provided for latching these boat sections to one another. Said lateching means preferably includes the two over-centered catches 12, 12 described above, as well as the projecting lug 20 and its cooperating socket to be described below. So too, the second latching means for joining the mid-section B with the aft section C of FIG. 1 is similarly constructed comprising at least two over-center catches 12, 12 together with cooperating lug and socket means at the keel line of these adjacent boat sections.

Turning now to a more complete description of the lug and socket means defined in the keel area of the adjacent boat sections, FIG. 5 shows, in vertical section, two adjacent bulk-heads 26 and 28, and also shows the manner in which the projecting lug 20 on boat section C is secured to the intermediate boat section B. The socket which receives this lug 20 is defined at the keel line of the mid-boat section B. Supporting brackets, or knees 30 and 32, are provided inside the boat sections B and C respectively to reinforce the keel area of these boat sections, and screws 34, 34 are provided for securing these knees or angle brackets to the bulkheads 26 and 28. A second set of screws 36, 36 is provided for anchoring the projecting lugs 20 in position in the keel area of the aft boat section C, and also to anchor a reinforcing member 38 in position to support a pair of screws 40, 40 used to hold a socket defining plate member 42 to the bulkhead of the mid-boat section B. This plate member 42 defines a socket for receiving the lug 20. It should be noted that the socket is V-shaped in order to permit lug 20 to slide into the socket with one or the other of the catches 20 in a latched condition with a corresponding strike means 14. Thus, the corresponding boat sections can be pivoted about the latched catch 20 until the lug and socket are engaged, and the remaining catch 20 can then be fastened. FIG. 6 shows a sectional view taken on line 6—6 of FIG. 5. FIG. 6 shows the socket formed by plate member 42 with lug 20 engaged.

FIGS. 12 and 13 show in schematic fashion the configuration of the three part boat section A, B and C used to assemble the canoe shown in FIG. 1. Each section is a boat in its own right, i.e, is watertight and can contain a useful load. For instance, section B could be used in a duck blind. Both section A and section C may be used as a child's boat. FIGS. 14 and 15 show the two unit boat consisting of one end section, A or C, and one boat section B. This size boat configuration would be suitable for receiving a small outboard motor or the like. FIG. 16 shows a one man canoe defined by joining end sections A and C. In addition to being useful boats, FIGS. 14, 15 and 16 show boats that can be salvaged from the canoe of FIG. 13 is the event of the loss of any section. FIG. 17 shows a boat construction utilizing a single bow section A and two intermediate sections B, B. FIG. 18 shows a longer canoe than that shown in FIG. 13 utilizing the two bow sections A and C together with two intermediate sections B, B. FIG. 19 shows a still longer canoe construction than that shown in FIG. 18, utilizing three intermediate sections B, B, B and also equipped with a pair of outriggers 10, 10 defined by two pairs of bow sections A and C, which bow sections are joined together in the manner described above to define a one man canoe. These bow sections are further connected to the adjacent bulkheads of the bow sections A and C associated with the long canoe so as to provide lateral stability to this relatively long "war canoe."

FIGS. 18 and 19 show still further configurations of the catamaran variety utilizing a pair of side-by-side hulls defined in the manner described above, which hulls are connected to one another by an overlying deck portion, 50 and 52 respectively, which deck portions serve to provide an area where suitable structure can be provided for utilizing these craft. For example, in FIG. 18, the deck 50 might be fitted with a mast or the like to configure a sailboat. In FIG. 19 the deck 52 might be used as a seating area with an outboard motor 54 provided in a well generally between the two hulls so that the vehicle can be used to tow a water skier or the like with the line 56.

In conclusion then, with three basic building block units or boat sections of the type described above, a variety of water craft can be constructed in a very straightforward manner with relatively simple hardware in the form of a pair of over-center latches together with a locating lug provided at the keel portion of the adjacent boat section. For example, the canoe shown in FIG. 1 is constructed by the assembly of three separate watertight sections, each section being so constructed as to be capable of floating by itself with the result that a very versatile and safe canoe of standard size is provided, which canoe can be stored in a relatively small area, for example in the cargo compartment of a conventional station wagon. Further, two canoeists can carry the bow sections A and C in the fashion of a back pack, and can carry the center or intermediate third section B between them without even having to unload this section for portaging purposes or the like.

By way of example, and utilizing a canoe of conventional size, that is of approximately 16 feet in length, 3 feet in width, and 1 ½ feet in height, a three section canoe can be fabricated from thermoplastic material by a relatively economical injection molding process so as to provide a total canoe weight on the order of 85 pounds. The individual watertight canoe sections do not detract from the conventional canoe operation, performance, or appearance. Any unoccupied section, for example the center section B of the canoe, can be

equipped with a water shedding cover so that the covered section cannot be swamped. For example, two canoeists could occupy sections A and C leaving B covered. Further, a single canoeist might occupy section C and cover sections A and B reducing the tendency of the canoe to swamp. The watertight bulkheads provide convenient structures to which conventional canoe accessories such as oar locks, seats, masts, rudder, outriggers, floats, or even an outboard motor can be attached. The use of separate sections allows a damaged section to be replaced for less than the cost of a new canoe. As shown in FIGS. **9, 10** and **11** the three sections A, B and C make a convenient package with a length of some 5 ½ feet, that is approximately one-third of the original canoe length, a width of some 3 feet, and a maximum height of 2 ½ feet. The overall package would of course only weigh on the order of 85 pounds if fabricated from a thermoplastic material or from a fiberglas and plastic combination. The relatively small size of these sections reduces the size and cost of the mold equipment required to make a canoe according to this invention. Also, inexpensive basic building blocks can be used to make a boat of considerable size. In addition, a damaged section can be replaced for a cost less than the cost of a complete boat.

I claim:

1. A sectional boat comprising a first boat section having two oppositely disposed convex sides which meet to define one end of the boat and having a bottom integrally connected to these sides, said first boat section having an aft bulkhead connected to said sides and to said bottom to provide a watertight first boat section, a second boat section having two convex sides and a bottom similar to those of said first boat section and defining an opposite end of the boat, said second boat section having a forward bulkhead adapted to mate with said aft bulkhead of said first boat section, means located in part on said first section and in part on said second boat section for latching said first and second boat sections so that said bulkheads abut one another, said latching means comprising manually operable fasteners adjacent the upwardly facing gunwale surfaces of said abutting boat sections and located above the normal water line of the resulting boat, said latching means further including a projecting lug on one of said bulkheads, and a cooperating socket on the other of said bulkheads for receiving said lug, said lug and socket being located in line with the longitudinal center line of the bottoms of said boat section to hold said bulkheads in abutment with one another below the normal water line of the resulting boat, said projecting lug comprising a headed stud which is secured with its axis along said center line with said headed portion defining an inwardly facing annular flange, and said socket being further defined by a plate secured to the bulkhead of said other boat section so that said plate's outer surface is oriented in co-planar relationship to the outer surface of said other boat section bulkhead and so that the inner surface of said plate will engage said flange on said headed lug, said plate defines a downwardly open generally V-shaped notch to facilitate assembly of said boat sections particularly when one of said gunwale fasteners is manually fastened and prior to manual fastening of the other gunwale fastener.

2. A sectional boat as defined in claim **1** further characterized by a third boat section intermediate said first and second boat end sections, said third boat section having a forward bulkhead identical to the bulkhead on said second boat section to permit the forward end of said third boat section to abut the aft bulkhead of said first boat section, first means for latching said first boat section to said third boat section, an aft bulkhead of said third boat section which is identical to the aft bulkhead on said first boat section to permit the aft end of said third boat section to abut the forward bulkhead of said second boat section, and second means for latching said third boat section to said second boat section, said first and second boat section lalching means comprising parts of said means for latching said first and second boat sections respectively whereby said first and second sections can be latched to provide a two section boat and said first, third and second sections can be latched to provide a three section boat configuration.

3. A sectional boat as defined in claim **2** wherein said first and second boat end sections are substantially identical in overall length, and wherein said third section is slightly longer than said end sections so that at least one of the latter can be stowed inside said third section.

4. A sectional boat as defined in claim **2** wherein said third boat section has opposed sides which are convex to provide continuous longitudinal sides for said three section boat, said third section being slightly longer than at least one of said end sections to permit stowage of the latter inside said third boat section.

5. A three section boat configuration as defined in claim **4** wherein said first and second latching means each comprise at least two overcenter catches, each of which catches are mounted to an upwardly facing gunwale surface of two of said three boat sections, and strike means on the adjacent ends of each of said boat sections for cooperating with said catches to hold the adjacent bulkheads in abutment with one another.

6. A three section boat configuration as defined in claim **5** wherein said first and second latching means further include a projecting lug on two of the four bulkheads associated with said three boat sections, and cooperating sockets on the other two bulkheads for receiving said lugs respectively, said lugs and sockets all located in line with the longitudinal center line of the bottoms of said boat sections to hold adjacent pairs of bulkheads in abutment with one another below the normal water line of the three section boat.

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