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PLASTIC BOAT

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Fig. 1

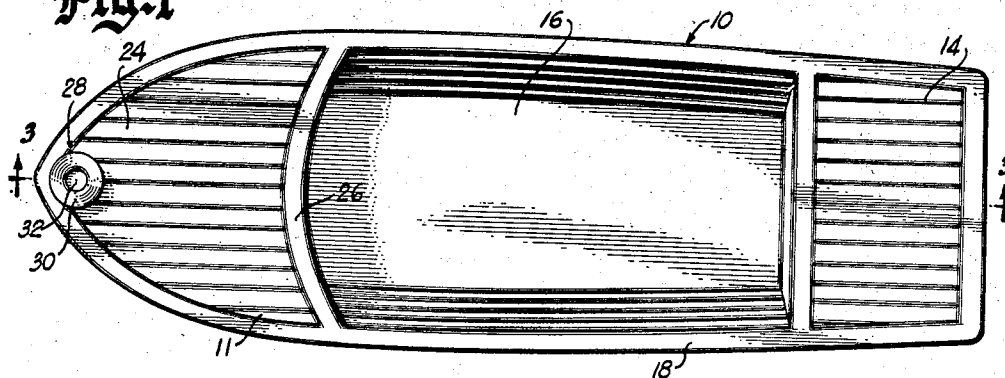


Fig. 2

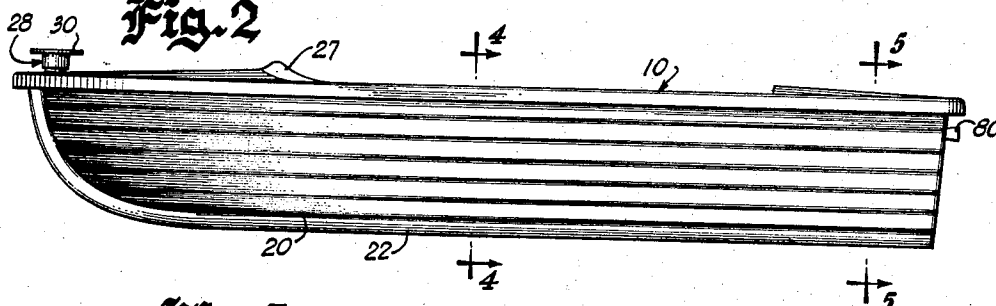


Fig. 3

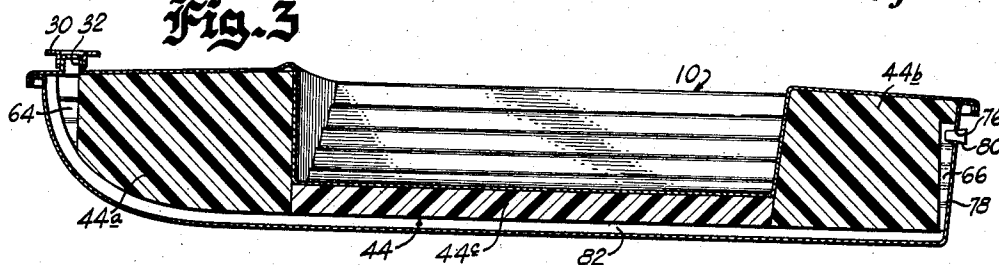


Fig. 4

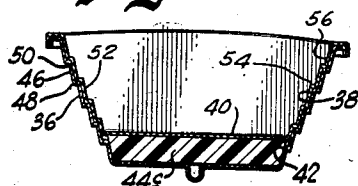
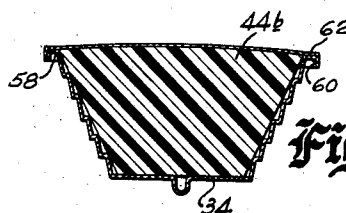


Fig. 5



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2,866,985

PLASTIC BOAT

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6 Claims. (Cl. 9-6)

This invention relates to a plastic boat, and more particularly to a skiff for children and teenagers having a two-part construction rigidified by a buoyant plastic foam.

There has not been available a boat of suitable size for use as a children's beach toy, both because conventional boats are too cumbersome and easily foundered, and because they have sharp edges and a multiplicity of parts which can cause injury and are easily lost.

Accordingly, it is an object of the present invention to provide a boat or skiff adapted to support a child or teenager, but which is small enough and light enough to be carried by the child.

Another object is to provide a boat of the type described which is formed essentially of only two pieces, i. e., a hull and a deck having a cockpit defined therein.

Another object is to provide a boat for children and teenagers which has no exposed edges which could cut or tear children's skin during their rough beach play, and which has the parts thereof joined along nested gunwales having depending edges.

Another object is to provide a boat or skiff as described which is rigidified and strengthened by means of a light-weight unicellular plastic foam which renders the boat virtually unsinkable. This material is disposed in fore and aft chambers defined by the hull and the fore and aft decks, and is in abutting engagement with the floor of the cockpit and the bottom of the hull to which it is glued to form an integral structure and to afford exceptionally strong reinforcement at this area of greatest stress. Thus, although the boat itself is preferably only five feet long, it may have a displacement of over two-hundred pounds.

Another object is to provide a boat as described such that the individual cells of the foam which is used within the shell of the boat remain intact and provide full buoyancy regardless of the number or placement of punctures or tears which might accidentally be formed in the boat.

Another object of the invention is to provide a reinforcing structure for the boat hull comprising a complementary stepped construction on the hull and the cockpit sides which permits a nested engagement therebetween of exceptional strength.

Another object of the invention is to provide a stepped and nested construction for the inner and outer shells as described which may be held together by an adhesive polystyrene glue so as to eliminate the complicated mechanism heretofore required for fastening boats along their gunwales.

Another object is to provide an integrally adhered assembly of shells formed to provide buoyant compartments that are not completely sealed from atmosphere but are substantially filled with unicellular plastic foam, said compartments being drained of water present in the compartments after use when the assembly is stored in vertical space-saving position with communication established between compartments for drainage purposes.

Other objects of the invention are to provide the boat, which is extremely simple to manufacture and is produced

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from vacuum formed sheets of high impact plastic, in sleek highly decorative styling.

Other objects and advantages of the invention will become apparent as the description proceeds in accordance with the drawings in which:

Fig. 1 is a top plan view of a skiff according to the present invention;

Fig. 2 is a side elevational view of the skiff of the invention;

Fig. 3 is a vertical sectional view taken longitudinally along the lines 3-3 of Fig. 1;

Fig. 4 is a transverse sectional view taken along the lines 4-4 of Fig. 2; and

Fig. 5 is a transverse vertical sectional view taken along the lines 5-5 of Fig. 2.

Referring now to Fig. 1, a boat 10 is shown in accordance with the invention comprising an upper portion 11 defining a front deck 12, a rear deck 14, a cockpit 16 and gunwales 18, and a lower portion or hull 20 defining a keel 22.

As shown in Fig. 2, the decks 12 and 14 are preferably slightly arched upwardly and formed with downwardly extending ribs 24 to provide a pleasing grooved plank deck appearance, and the edge 26 of the deck 12 adjacent the cockpit is bowed upwardly slightly to provide a realistic windshield contour which serves as a cross brace 27. Also a cleat or fastening element 28 is formed on deck 12, having an annular flanged member 30 received on and glued to a knob or protrusion 32 formed integrally with the deck to receive a mooring line for fastening the boat to a dock or the like.

The hull 20 of the boat is configured to correspond rather exactly to the proportions of a standard clinker-built skiff, and is gradually tapered toward the bottom 34 thereof as best shown in Figs. 4 and 5. And as seen in Fig. 4, the sides 36 and 38 of the cockpit 16 are tapered in a complementary configuration, as hereinafter further described, with the bottom wall 40 thereof in predetermined parallel spaced relationship to the bottom wall 34 of the hull.

In order to provide exceptional rigidity and strength for the boat, the space 42 between the walls 34 and 40 of the hull and cockpit respectively is maintained against deformation by means of three expanded, unicellular plastic blocks 44, which are preferably of light-weight or rubber modified polystyrene glued both top and bottom to the shells, one block 44a being cut to substantially fill the fore deck compartment, another 44b the rear deck compartment, and the third, a flat block 44c the space between hull and cockpit. This structure is, accordingly, effective to rigidify the entire hull and deck portions of the boat so that it will not break amidships, and to support the cockpit and its bottom wall against stresses produced during use of the boat.

Also effective in providing exceptional strength in the boat is a nested, mating engagement between the clinker-built sides 36 and 38 of the hull 20 and cockpit 16 respectively. Thus, as best seen in Fig. 4, each of the sides of the hull defines a plurality of steps 46, having a foot portion 48 and a riser 50, which in external appearance corresponds to the clinker-built planking of a conventional boat. And the sides 38 of the cockpit define a plurality of complementary steps 52, each formed with a foot 54 and riser 56, with the overall proportions and dimensions of the cockpit being such as to permit the cockpit to engage within the hull in snugly nested relationship. The feet 48 on the sides of the hull will, therefore, mate with and support the corresponding feet 54 of the cockpit so that no undue strain is placed on any single portion of the hull or the cockpit in supporting the weight of the occupant of the boat. Preferably, glue is applied

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where they contact and the double wall thickness afforded by the abutting risers 50 and 56 is more than sufficient to withstand all stresses normally encountered, without the need for extra materials or structure.

The double ply affords even greater strength than would single ply of comparable thickness, as well as providing an inner wall of protection in the event that in some manner the outer wall is breached. Therefore, the walls, which are preferably also of a plastic material such as a Bakelite high impact styrene, may have a relatively small thickness, for example, .080"-250". And the lightness of the boat, due to this factor and the lightness of the interstitial foam, is such that a small child can carry it without difficulty.

The two pieces 11 and 20 comprising the external portions of the boat are vacuum formed to permit especially close tolerances and accuracy of styling. Therefore, a snug fit is achieved between the hull and the cockpit which permits fastening to be accomplished without the need for special parts or devices such as screws. In the preferred form of the invention, a polystyrene solvent, trichlorethylene, is used as an adhesive for holding these parts in their fixed, nested relationship, which may be accomplished simply by coating the inner and outer surfaces of the sides 36 and 38 respectively wherever they contact each other or the foam.

The construction of the gunwales 18 assists in producing a secure fit, particularly when the parts are first assembled, for the upper marginal edge of the hull 20 is turned outwardly and downwardly at 58 and 60 to define a U-shaped structure over which is nested snugly the marginal edge 62 and depending flange 62 of the member 11 in slightly wedging relationship.

As best shown in Fig. 3, fore and aft compartments 64 and 66 are defined by the upper member 11 and the hull 20, and in particular by the forward and rearward cockpit walls 68 and 70. As already mentioned, these compartments are each filled with fitted blocks 44a and 44b of the aforementioned lightweight plastic foam to achieve added rigidity and buoyancy, as well as resistance to possible punctures in the hull. Even if an entire section of the boat should somehow be damaged, the remainder would serve as a float for the child, as a result of the sealed-off cell construction of the plastic.

In order for the air trapped in the compartments to breathe under sun warm-up and evening cool-off conditions without straining glued joints, glue is not applied continuously around the gunwale. Thus small quantities of air can pass through this snug joint if need be and if the boat is placed in cold water, the gunwale is above the water level normally. However, water does get into the compartments under play conditions and would if the sides were punctured; therefore it is desirable to provide drainage means for the interior of the boat, so that water accumulated by "breathing" in the interior of the boat can be removed. Accordingly, a drain hole 76 is defined in the rear wall 78 of the hull, which is fitted with a conventional cork 80 up under the gunwale overhang where it is not likely to be knocked out.

Moreover, the ribbing 32 providing the keel formation serves as a channel to drain water from fore to aft when the boat is stored, as it normally will be when stood lengthwise, on its square transom with the keel resting against a wall.

The preferred dimensions of the boat are such as to permit a child or teenager to ride easily in the cockpit, while maintaining the light-weight characteristics referred to. Thus the length from stem to stern is approximately five feet, while the hull at its widest dimension is nineteen inches. The maximum depth is eight inches or more, while the cockpit measures thirty-one inches long by seventeen inches wide by six inches deep. Although the boat as thus constructed weighs only ten pounds, it is capable of bearing in the water a load of well over two hundred pounds.

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The method of assembly of the boat will be evident from the foregoing description, since after formation of the upper piece 11 and the hull 20, the blocks of lightweight plastic are placed in position on the hull with adhesive applied to the hull and cockpit as described. Thereupon the upper portion is fitted into the hull with the cockpit in the aforementioned nested relationship, and the adhesive permitted to set.

The boat requires almost no upkeep, since it will not corrode, rust, rot or mildew, and it is easily carried from place to place, as in the trunk of the car. It can be paddled by hand and is highly maneuverable. Because of its attractive appearance, which can be enhanced with bright colors; and its unusual safety, it will provide an exceptionally interesting, safe and useful piece of beach equipment which can be enjoyed by children of all ages, and even their parents.

Although I have herein set forth and described my invention with respect to certain principles and details thereof, it will be understood by those skilled in the art that these may be altered without departing from the spirit and scope of the claims appended hereto.

I claim:

1. A skiff for children comprising a hull, a deck fixedly secured thereto, a cockpit defined in said deck, said cockpit and said hull each having a bottom wall disposed in predetermined spaced apart parallel relationship and means disposed between said bottom walls and in abutting relationship therewith for supporting the bottom wall of said cockpit and reinforcing said skiff, the sides of said hull and said cockpit having a stepped tapering complementary configuration whereby the individual steps of the cockpit and the hull are adapted to nest in intimate abutting relationship.
2. A skiff for children comprising a hull, a deck fixedly secured thereto, a cockpit defined in said deck, said cockpit and said hull each having a bottom wall disposed in predetermined spaced apart parallel relationship and means disposed between said bottom walls and in abutting relationship therewith for supporting the bottom wall of said cockpit and reinforcing said skiff, the sides of said hull and said cockpit having a stepped tapering complementary configuration whereby the individual steps of the cockpit and the hull are adapted to nest in intimate abutting relationship, said stepped hull and cockpit sides having a polystyrene solvent adhesive disposed therebetween for maintaining said pieces in said nested relationship without the need for further fastening elements.
3. A boat dimensioned for children comprising a hull formed of high impact polystyrene, a deck and cockpit piece adapted to nest within said hull comprising a forward deck, a rearward deck and a cockpit set downwardly intermediately of said forward and rearward deck, said cockpit comprising a front wall dependnig from said forward deck, a rearward wall depending from said rearward deck and a pair of side walls tapering towards one another and a bottom wall connecting said front, rear and side walls, said hull defining along its sides a plurality of steps forming a downwardly and inwardly directed taper for said hull and having a bottom wall connecting the sides of said hull and said cockpit having a plurality of steps on each of the sides thereof adapted to engage in snugly abutting nested relationship with the steps of said hull sides whereby to dispose the bottom wall of said cockpit in predetermined spaced parallel relationship above the bottom wall of said hull and a unicellular plastic foam disposed in snugly abutting engagement with the bottom wall of said cockpit and the bottom wall of said hull whereby to provide support for said cockpit and rigidifying reinforcement for said boat.
4. A boat dimensioned for children comprising a hull formed of high impact polystyrene, a deck and cockpit member adapted to nest within said hull comprising a forward deck, a rearward deck and a cockpit set down-

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wardly intermediately of said forward and rearward deck, said cockpit comprising a front wall depending from said forward deck, a rearward wall depending from said rearward deck, a pair of side walls tapering towards one another and a bottom wall connecting said front, rear and side walls, said hull defining along its sides a plurality of steps forming a downwardly and inwardly directed taper for said hull and having a bottom wall connecting the sides of said hull and said cockpit having a plurality of steps on each of the sides thereof adapted to engage in snugly abutting nested relationship with the steps of said hull sides whereby to dispose the bottom wall of said cockpit in predetermined spaced parallel relationship above the bottom wall of said hull, a unicellular plastic foam disposed in snugly abutting engagement with the bottom wall of said cockpit and the bottom wall of said hull, said forward wall and said forward deck defining with said hull a forward compartment and said rearward wall and said rearward deck defining with said hull a rearward compartment, and a block of unicellular plastic foam disposed in each of said compartments in snugly abutting relationship with the walls of said deck and cockpit and the walls of said hull respectively.

5. A boat dimensioned for children comprising a hull formed of high impact polystyrene, a deck and cockpit member adapted to nest within said hull comprising a forward deck, a rearward deck and a cockpit set downwardly intermediately of said forward and rearward deck, said cockpit comprising a front wall depending from said forward deck, a rearward wall depending from said rearward deck, a pair of side walls tapering towards one another and a bottom wall connecting said front, rear and side walls, said hull defining along its sides a plurality of steps forming a downwardly and inwardly directed taper for said hull and having a bottom wall connecting the sides of said hull and said cockpit having a plurality of steps on each of the sides thereof adapted to engage in snugly abutting nested relationship with the steps of said hull sides whereby to dispose the bottom wall of said cockpit in predetermined spaced parallel relationship above the bottom wall of said hull and a unicellular plastic foam disposed in snugly abutting engagement with the bottom wall of said cockpit and the bottom wall of said hull to support said cockpit and rigidify said boat, said forward wall and said forward deck defining with said hull a forward compartment and said rearward wall and said rearward deck defining with

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said hull a rearward compartment, a block of unicellular plastic foam disposed in each of said compartments in snugly abutting relationship with the walls of said deck and cockpit piece and the walls of said hull respectively and a cleat comprising a protruding element defined by said forward deck and an annular ring adapted to be secured thereto.

6. A boat dimensioned for children comprising a hull formed of high impact polystyrene, a deck and cockpit member adapted to nest within said hull comprising a forward deck, a rearward deck and a cockpit set downwardly intermediately of said forward and rearward deck, said cockpit comprising a front wall depending from said forward deck, a rearward wall depending from said rearward deck, a pair of side walls tapering towards one another and a bottom wall connecting said front, rear and side walls, said hull defining along its sides a plurality of steps forming a downwardly and inwardly directed taper for said hull and having a bottom wall connecting the sides of said hull and said cockpit having a plurality of steps on each of the sides thereof adapted to engage in snugly abutting nested relationship with the steps of said hull sides whereby to dispose the bottom wall of said cockpit in predetermined spaced parallel relationship above the bottom wall of said hull, a unicellular plastic foam disposed in snugly abutting engagement with the bottom wall of said cockpit and the bottom wall of said hull, said forward wall and said forward deck defining with said hull a forward compartment and said rearward wall and said rearward deck defining with said hull a rearward compartment, and a block of unicellular plastic foam disposed in each of said compartments in snugly abutting relationship with the walls of said deck and cockpit and the walls of said hull respectively, said wall defining a drain hole and having a plug insertable therein to afford drainage for moisture resulting from breathing in the interior of said boat.

References Cited in the file of this patent

UNITED STATES PATENTS

291,909	Jessup	Jan. 15, 1884
2,376,753	Bowen	May 22, 1945
2,417,508	Leyde	Mar. 18, 1947

FOREIGN PATENTS

25,254	Great Britain	1898
111,056	Great Britain	Nov. 15, 1917