March 2, 1943. B. LERMONT 2,312,722

METAL BOAT

Filed June 21, 1940

Fig. 1

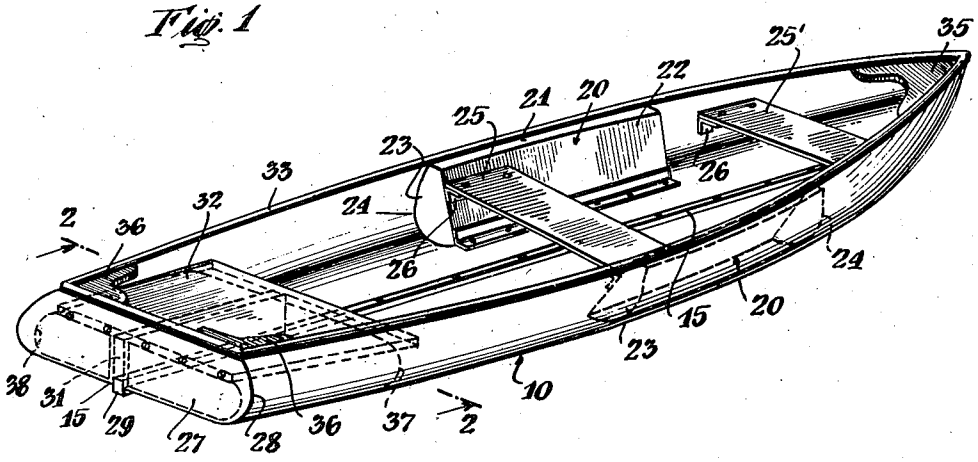


Fig. 2

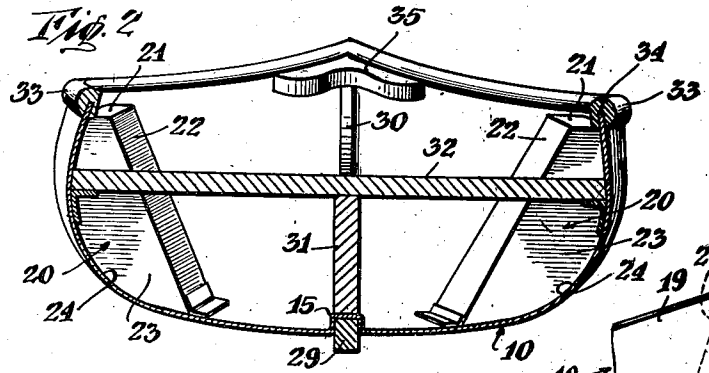


Fig. 4

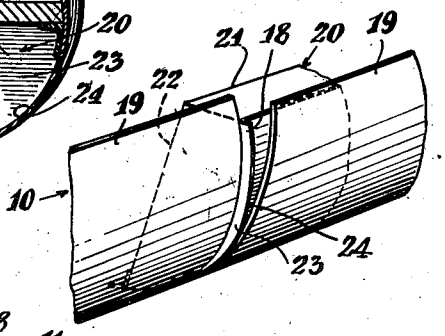
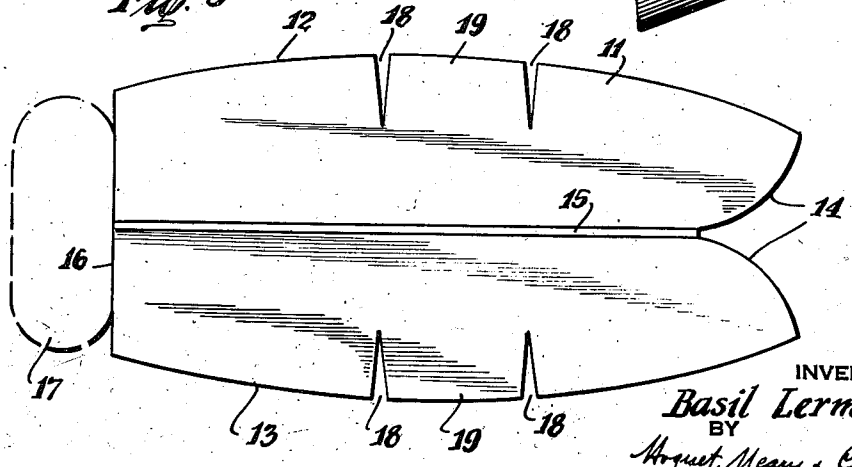


Fig. 3



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METAL BOAT

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3 Claims. (Cl. 9—6)

This invention relates generally to boats and more particularly to an improvement in the hull construction of small metallic boats, such as, for example, canoes, rowboats, dinghies, and outboard utility and racing outboard motor boats.

Metallic boat hulls are well known and are quite commonly in use at the present time. Such hulls, however, are relatively expensive, not because of the expense of the materials utilized in such hulls, but chiefly for the reason that the machinery and labor required for such manufacture are costly.

The hulls of small boats may be manufactured by means of stamping dies and die presses, thus permitting extremely rapid production of hulls. However, in practice, relatively few metallic boats are produced in this way for the reason that the demand for small boats does not justify the expense of installing the dies and presses that are required.

Methods of manual assembly of large craft by riveting or welding plates together and to a framework are not readily applicable to small boats, for the reason that the number of operations required in making a small boat would be excessive, and moreover would result in a very patchy appearing hull having a rough contour.

In accordance with this invention, I have provided a metallic boat hull which is formed principally of one sheet of metal without the necessity of providing expensive and complicated die forming devices, and requiring a minimum amount of manual work in the preparation of the same. The hulls made in accordance with my invention are properly shaped hydrodynamically, are seaworthy and rugged, and except when severely damaged, are practically unsinkable.

A characteristic feature of the boat is the provision of flotation compartments formed in and as a part of the sides of the hull so that compartments independent of the hull are not required.

More particularly, the hull may be formed from a sheet of metal of appropriate shape which is shaped over a simple form having substantially frusto-conical portions at the bow and stern sections, and a center portion which is preformed in any suitable way to impart the desired transverse and longitudinal curvatures thereto which are required in a hydrodynamically correct form of boat.

The material which would normally buckle in the shaping of a metal blank into hull form is eliminated by removing gussets from the blank prior to shaping around the form, thus permitting the hull to contract at the desired points. The lines of weakness which would otherwise be formed at the zones where the gussets are removed are strengthened by means of the flotation compartments on the interior of the boat which join to the hull at those zones where the gussets are removed.

As a result of this construction, the boat has an excellent longitudinal rigidity, increased buoyancy and a pleasing appearance, due to the smooth curvatures of the hull.

For a better understanding of the present invention, reference may be had to the accompanying drawing, in which:

Figure 1 is a perspective view of a typical form of boat embodying the invention;

Figure 2 is a view in section taken on line 2—2 of Figure 1;

Figure 3 is a plan view of a typical form of blank from which the boat is formed; and

Figure 4 is a detail of the hull and flotation tank construction at an intermediate stage of the formation of the hull.

As shown in Figure 1, one form of the invention may consist of a boat hull 10 which is formed from a metallic blank 11, such as that disclosed in Figure 3. The blank 11 is made of appropriate length and width and is provided with opposite outer curved edges 12 and 13 which are spaced apart a suitable distance to provide the proper beam for the hull. The stem end of the blank may be provided with inwardly converging curved edges 14 which terminate adjacent a central channel 15, extending longitudinally of the blank, this channel being adapted to receive a keel member as will be described presently.

The portion of the sheet 11 corresponding to the stern of the completed boat may be formed as a straight edge 16 or, if desired, may be provided with a flap 17 shown in dotted lines of the proper contour to form the transom of the completed hull.

It will be understood of course that the stern edge of the boat may be made of a form similar to the stem end of the blank if, for example, a double ended skiff or canoe is to be produced.

The blank may be shaped into hull form as by bending it manually or by rolling or any other suitable way about a form of appropriate contour to form the desired shape of hull. A simple form of die or form (not shown) may be of substantially hull contour having outer members of generally frusto-conical shape tapering toward the stern of the boat, and similar form elements at the stem section of the boat which taper from

substantially straight lines at the stem to a curvature of appropriate radius rearwardly thereof.

It will be obvious that if a single blank of material were to be shaped around this form, the blank 11 would tend to wrinkle or buckle at its edges because of the intersecting lines of curvature in the sheet and, moreover, for the reason that the outer edges of the sheet would be forced to contract as they are bent inwardly. To overcome this tendency of the blank 11 to buckle, appropriately sized and disposed gussets 18 may be severed from the sheet so that when the portions of the sheet are shaped around the form, the edges of the blank at the zones where the gussets 18 are removed will just meet.

Preferably, the metal sections 19 intermediate the gussets 18 are preformed to have a longitudinal and transverse curvature by rolling the sheet in order to provide the desired longitudinal curvature which imparts a good hydrodynamic shape to this section of the hull.

During the formation of the hull, flotation compartments 20 are formed in the interior of the hull in such positions as to increase the rigidity of the hull.

As shown particularly in Figures 2 and 4, the flotation compartments are formed of trough-shaped members having a top 21, an inwardly sloping side 22, and suitable end faces 23 having curved edges 24. The curved edges 24 of the end faces 23 project outwardly beyond the top surface 21 slightly and may be disposed in the spaces left by the removal of the gussets 18 as shown particularly in Figure 4. When the trough-like members are so positioned, the edges 24 are welded solidly to the edges left by removal of the gussets 18, thereby producing a tight seam of great strength. After the welding operation is completed, the projecting edges 24 may be ground down to produce a smooth surface.

While this is the preferred form of joint, it will be understood that the ends 23 of trough-like members may be provided with laterally directed flanges which overlie the adjacent edges of the sheet and are welded thereto to rigidlfy and reinforce the seams.

The other edges of the trough shaped members are secured in any suitable way, such as by welding around their entire periphery to the hull, to make the compartments 20 watertight. Inasmuch as the flotation compartments 20, together with the outer portion of the hull form a double wall structure, the central portion of the boat hull 10 will be materially strengthened.

As best shown in Figure 1, the flotation compartments also provide support for the middle seat 25 of the boat. The seat 25 may be supported on the inner walls 22 of the flotation compartments by means of suitable brackets 26 which are welded or riveted thereto. Other seats such as the seat 25' may be secured to the hull in the same way.

The preferred form of transom for the boat is formed of an appropriately shaped piece of wood 27 having curved outer edges 28 corresponding to the curvature of the rear portion of the metallic hull, although, as previously indicated, it may be formed by the flap 17. The transom 27 is secured to the rear edge of the hull as by means of screws with appropriate caulking between the metal and the wood to prevent leakage. At its center, the transom 27 is also secured to a keel member 29 which is disposed within the channel 15 extending longitudinally of the hull. The keel member 29 preferably consists of a strip of wood which projects beneath the bottom of the boat in the usual way and is secured in the channel 15 by means of spaced screws. The keel member 29 imparts longitudinal rigidity to the boat and also acts to suppress vibrations in the hull occasioned for example, by operation of an outboard motor. The forward end of the keel member 19 may either be curved upwardly or may consist of a separate member, such as, for example, a steel strip 30 as shown in Figure 2, to which the stem edges 14 are secured as by welding.

If the boat is to be used as an outboard motor boat, the transom 27 preferably is reinforced by means of a wooden member 31 of generally rectangular cross-section which is supported on and secured to the upper edge of the channel 15 and extends along a portion only of the length of the boat. The reinforcing member 31 is screwed to the transom and carries on its upper edge a stern seat 32 which has its lateral edges supported on suitable brackets (not shown) which are fixed to the hull. The rear edge of the seat 32 is also secured to the transom 27, thereby reinforcing it and, it has been found, suppressing the transmission of the vibration of an outboard motor to the remainder of the hull 10.

The gunwales of the boat hull which otherwise would be raw edges of the metal sheet preferably are finished with wood strips which cover these raw edges and impart a finished appearance to the boat. As best shown in Figure 2, these strips 33 may have their upper surfaces rounded and are provided with grooves 34 extending inwardly from their lower surfaces, which receive the edges 12 and 13 of the hull. The gunwale strips 33 may be secured to the metal hull by means of screws passing through the inner portions of the strips, the edges of the metal and into the outer portions of the strips.

The boat may be trimmed additionally by inserting a generally triangular piece of wood 35 at the stem end of the boat and suitable trimming pieces of generally L-shaped formation 36 at each corner of the stern of the boat.

If desired, the flotation of the boat may be further improved by the addition of separate flotation tanks 37 and 38 beenath the stern seat 32 of the boat.

While my invention has been described with reference to one form of small boat, it will be understood that other forms of boats such as, for example, canoes, dinghies, double ended skiffs and the like, may be similarly formed. Moreover, the boat may be trimmed in different ways as may be desired, without departing from the invention. Therefore, the form of boat disclosed herein should be considered as illustrative only and not as limiting the scope of the following claims.

I claim:

1. A boat comprising a metallic hull having a channel therein extending longitudinally of and opening downwardly from the bottom of the hull, a keel member secured in said channel, a wood transom in said hull joined to said keel, a supporting member secured to said transom and said keel and extending only a portion of the length of said hull, and a stern seat secured to said hull and transom and to the upper edge of said supporting member.

2. A boat comprising a single sheet of metal forming the sides and bottom of at least the center portion of a boat hull having transversely and longitudinally curved sides, said hull having two spaced apart seams in each of its opposite

sides, and a trough-like member at each side of said hull having a top and a side wall and generally sector-shaped end walls each having a free edge, the edges of said end walls being secured to said hull substantially in alignment with said seams and all of said edges being secured to said sides of said hull to form water-tight flotation compartments which reinforce said hull.

3. A boat comprising a transversely and longitudinally curved sheet metal hull, having longitudinally spaced apart seams in the sides thereof, and flotation compartments substantially coextensive in length with the space between said seams secured in water-tight relationship between said seams to the inside of said hull, said flotation compartments being trough-like members having top, side and generally sector-shaped end walls, said end walls being secured to said hull substantially in alignment with said seams to reinforce said seams.

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