Oct. 6, 1953 B. FREES, JR., ET AL 2,654,102

BOAT STRUCTURE

Filed Sept. 1, 1948 2 Sheets-Sheet 1

Fig. 1

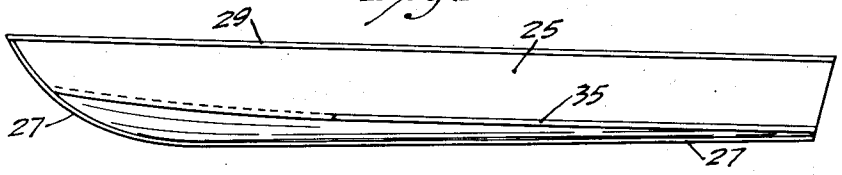


Fig. 2

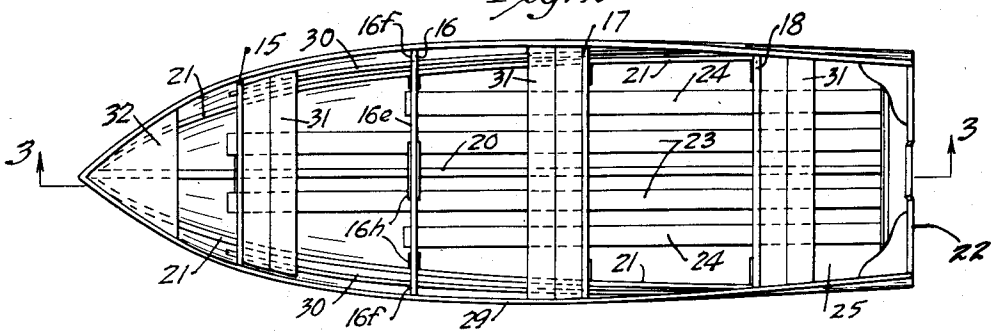


Fig. 4

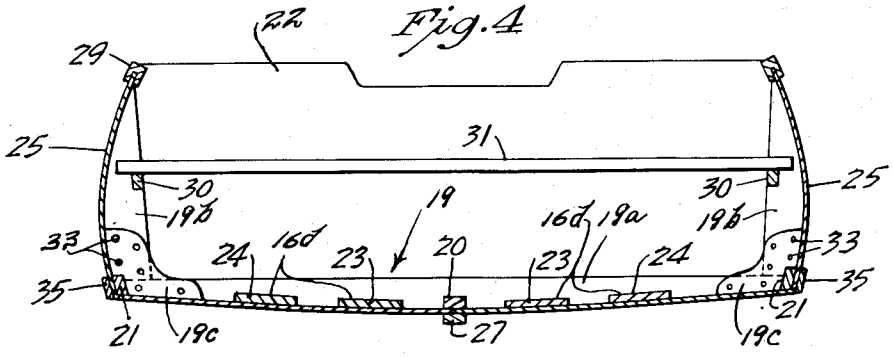


Fig. 5

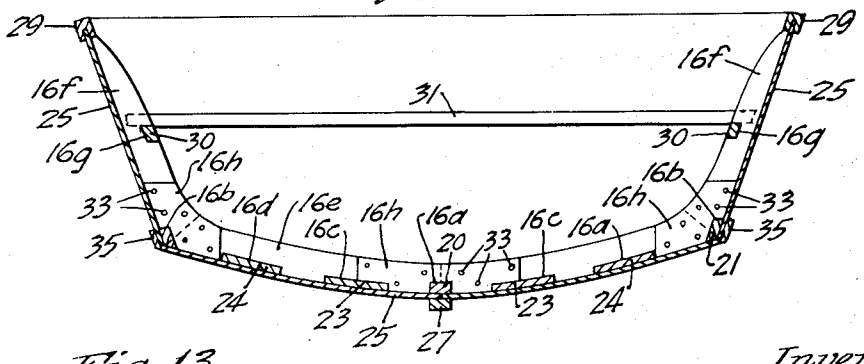
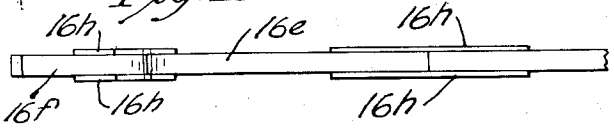


Fig. 13



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BOAT STRUCTURE

Filed Sept. 1, 1948 2 Sheets-Sheet 2

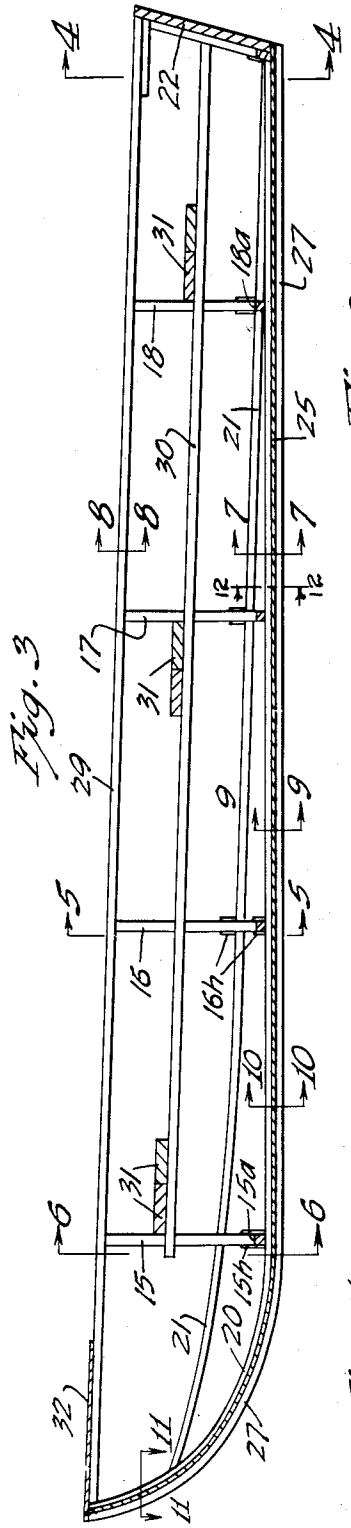


Fig. 3

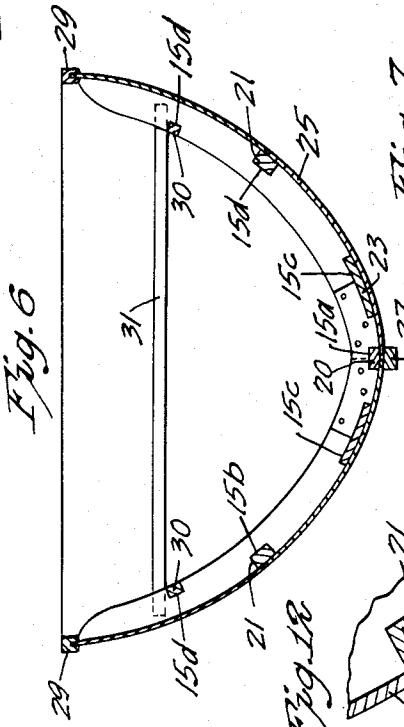


Fig. 6

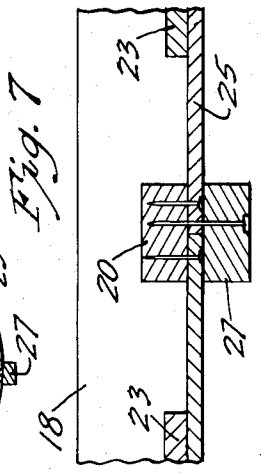


Fig. 7

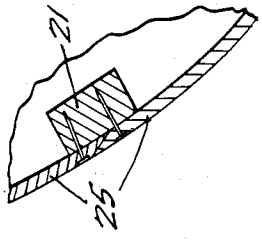


Fig. 12

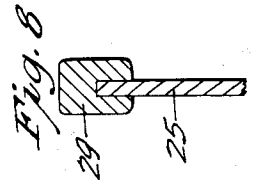


Fig. 8

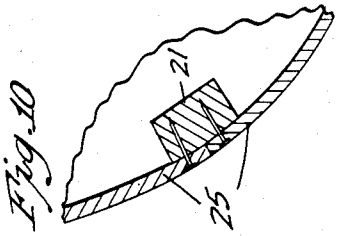


Fig. 10

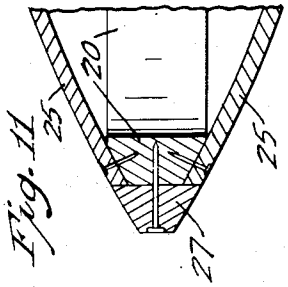


Fig. 11

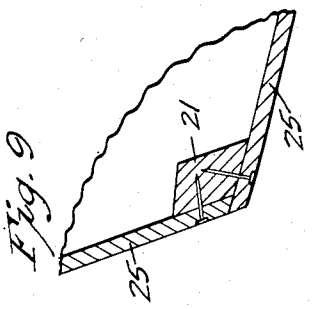


Fig. 9

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BOAT STRUCTURE

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Application September 1, 1948, Serial No. 47,172

12 Claims. (Cl. 9—6)

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This invention relates to a boat and while the invention might be applicable to various types of boats, it particularly is directed to a comparatively small boat, such as a rowboat, or one to which an outboard motor can be secured.

It is an object of this invention to provide a boat which is strong, light in weight and one that can be quickly made and sold at a very reasonable price.

It is a further object of the invention to provide a boat having a plurality of longitudinally spaced transversely extending rigid ribs of general bow or U-shape, a rear board or transom spaced rearwardly of the rearmost rib, an inner keel strip received in slots disposed centrally at the bottoms of said ribs respectively, said keel strip extending from said transom and being curved upwardly forwardly of the foremost rib to the top of said boat, a layer of plywood secured to the outer sides of said transom and ribs, said plywood forwardly of said foremost rib having its sides converging to and secured to said inner keel strip.

It is also an object of the invention to provide a boat such as set forth in the preceding paragraph, said boat having a substantially flat bottom at its rear end, said bottom becoming of curved formation toward the front end of said boat, said boat being considerably deeper at the front end than at the rear end.

It is still another object of the invention to provide a boat comprising a plurality of longitudinally spaced transversely extending rigid ribs, a transom disposed rearwardly of the rearmost rib, a layer of plywood secured to the outer sides of said transom and ribs the sides of which converge substantially to a point forwardly of the foremost rib, and a plurality of floor boards disposed inwardly of said layer of plywood.

It is further an object of the invention to provide such a boat as set forth in the preceding paragraph in which said floor boards are received in shallow slots formed in the outer sides of said ribs, some of said floor boards being of greater lengths than the others.

It is furthermore an object of the invention to provide a boat comprising a plurality of longitudinally spaced extending rigid ribs the same having slots disposed centrally in the bottom sides thereof, a transom disposed rearwardly of the

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rearmost rib, an inner keel strip disposed in said slots and extending from said transom forwardly and being curved upwardly forwardly of the foremost rib to the top of said boat, said ribs having other slots at the sides thereof respectively and chine strips disposed in said slots and thus disposed at each side of said boat, said chine strips extending from adjacent the bottom of said transom forwardly and upwardly and meeting said inner keel strip at a point substantially midway of the height of the boat, and a layer of plywood secured to the outer sides of said transom and ribs, said plywood forwardly of the foremost rib converging to and being secured to said keel strip.

It is still another object of the invention to provide a boat such as generally set forth in the preceding paragraph, said layer of plywood being in sections which sections meet at the sides of said boat substantially at the outer side of said chine strip, said sections having a butt joint at the forward end of said boat and having a lap joint at the rear portion of said boat.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which—

Fig. 1 is a view in side elevation of the boat;

Fig. 2 is a plan view of the boat;

Fig. 3 is a vertical section taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a transverse vertical section taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a transverse vertical section taken on line 5—5 of Fig. 3;

Fig. 6 is a transverse vertical section taken on line 6—6 of Fig. 3;

Fig. 7 is a fragmentary transverse vertical section taken on line 7—7 of Fig. 3;

Fig. 8 is a fragmentary transverse vertical section taken on line 8—8 of Fig. 3;

Fig. 9 is a fragmentary transverse vertical section taken on line 9—9 of Fig. 3;

Fig. 10 is a fragmentary transverse vertical section taken on line 10—10 of Fig. 3;

Fig. 11 is a horizontal section taken on line 11—11 of Fig. 3;

Fig. 12 is a transverse vertical section taken on

line 12—12 of Fig. 3, said sections being taken as indicated by the arrows; and

Fig. 13 is a partial plan view of one of the ribs used.

Referring to the drawings, a boat is shown comprising a plurality of longitudinally spaced tranvsersely extending ribs 15, 16, 17, 18 and 19. While these ribs vary in shape as will be later described, they are all of general bow or U-shape. Disposed rearwardly of and adjacent the rearmost rib 19 is a rear end board or transom 22. This transom is shown in elevation in Fig. 4. Rearmost rib 19 comprises end portions 19a of semi-segmental form thus having their outer sides slightly curved and a bottom portion 19b the bottom edge of which is very slightly convex. Portions 19a and 19b are connected by gussets 19c to which they are connected by screws or rivets 33. Ribs 15 to 19 have slots 15a, 16a, 17a, 18a and 19a in their bottom sides centrally thereof and an inner keel strip 20 is disposed in said slots and extends from transom 22 to the front end of said boat, said strip curving upwardly forwarwdly of foremost rib 15 to the top of the boat. Strip 20 is of substantially rectangular form from transom 22 to rib 15 but is of trapezoidal form in cross section beyond rib 15. Ribs 15 to 18 have other slots 15b, 16b, 17b and 18b at either side thereof respectively and chine strips 21 are disposed respectively in said latter slots the same extending substantially from transom 22 forwardly and upwardly to the front end of a boat where they meet the inner keel strip 20. It will be noted that said chine strips at the rear end of the boat are substantially in contact with the bottom of the boat but extend upwardly as they extend forwardly so that the front ends of said chine strips are disposed substantially at or a short distance above the midpoint of the height of the boat at the forward end. The ribs 15 to 19 have shallow slots 15c and 16c therein at each side of the center thereof, said slots showing in Figs. 4, 5 and 6. Floor boards 23 are disposed in the slots 15c and 16c in all of the ribs, said boards being seen in plan in Fig. 2. The four ribs 16, 17, 18 and 19 have other similar slots 16d in the bottoms thereof spaced outwardly of slots 15c and 16c. Other floor boards 24 similar to floor boards 23 are disposed in these slots 16d, the same appearing in plan in Fig. 2 where it will be seen that boards 24 extend only a short distance beyond rib 16. A layer of plywood 25 is secured to the outer sides of ribs 15 to 19 and transom 22. Forwardly of rib 15 this plywood at either side of the boat converges at the center of the boat and is secured to the sides of inner keel strip 20, as shown in Fig. 11. The shape of foremost rib 15 is shown in Fig. 6. It will be seen that this rib has its outer side in an arc which is substantially semi-circular. Rib 16 is shown in Fig. 5 where it will be seen that this rib has a bottom portion 16e which is of slightly arcuate shape and has upwardly extending side portions 16f which have rectilinear outer sides. The specific form of ribs 17 and 18 in front elevation is not shown but these are somewhat similar to rib 19, the bottom edges of the central portions thereof being formed on more of an arc. It will be noted that the height of the boat at the rear end is much less than the height of the boat at the forward end or at the location of rib 15. The boat also changes from a substantially flat bottomed boat at the rear portion to a substantially round bottomed boat at the forward portion. At the forward portion as stated, inner keel strip 20 is of trapezoidal shape in cross section having its short side at its forward end and the plywood 25 is secured to the rearwardly diverging sides of this strip. An outer keel strip 27 is provided which at its forward end is also of trapezoidal shape. As shown in Fig. 11 the rear side of this strip 27 abuts the front side of strip 20 and the front edges of the plywood layer 25. Said outer keel strip 27 rearwardly of rib 15 is substantially rectangular in transverse cross section and extends to the rear side of rear end board 19.

In practice the boat is made on a mold of solid material such as concrete. This mold is of the shape of the inner side of the boat inwardly of the plywood layer. The mold has transverse slots therein for receiving the ribs 15, 16, 17, 18 and 19 and grooves for receiving the transom 22. It has grooves for receiving the strips 20 and 21 between the slots receiving the transverse ribs. The transverse ribs are placed on the mold in the proper slots, the strips 20 and 21 are placed in position, the floor boards 23 and 24 are placed in their respective slots and the layer of plywood 25 is then secured in place while the boat is still on the form. As shown in Figs. 7 and 11 the outer keel strip 27 is nailed to the inner strip 20. The plywood 25 is in four sections and the sections at each side meet substantially along the outer sides of the chine strips 21. At the forward portion of the boat, that is forwardly of a zone adjacent rib 16, the said layers meet in a butt joint, as shown in Fig. 10. As shown in this figure and in Figure 9 it will be seen that chine strip 21 is secured by nails passing through the plywood 25. In the rear of said zone the said sections of plywood meet in a lap joint, as shown in Fig. 12. A gunwale strip 29 is provided, the same being of general rectangular shape in vertical cross section with its corners slightly rounded. Strip 29 has a slot disposed centrally therein in its lower side and this receives the top edge of the plywood 25, which plywood is suitably secured in strip 29 by adhesive or nailing. The ribs 15 to 18 have slots 15d and 16g at either side thereof in their inner edges. Strips 30 are disposed in the slots 15d, 16g and 19e in all of the ribs, which strips serve as supports for transversely extending seat boards 31. The forward portion of the boat is preferably provided with a deck 32.

Ribs 16, 17, 18 and 19 which have bottom and side portions have the said bottom and side portions made of separate pieces. Said ribs are preferably made of layers of plywood and gusset pieces 16h are disposed across the various layers, the same preferably being secured by adhesive to the other layers and also secured by transversely extending nails or screws 33. It will be noted that the sides of the boat at the rear end are disposed in a slightly convex curve, as shown in Fig. 4. Preferably a wear or buffer strip 35 is secured by suitable nails along the outer side of the boat at the bottom portion thereof, which strip extends from transom 22 to rib 16. Boards 36 of substantially triangular form extend between and are secured to the gunwale 29 and transom 22 and act as braces.

From the above description it will be seen that we have provided a comparatively simple, strong and rugged boat which is quite light in weight and one which can be quickly and inexpensively produced. The plywood forms a very strong body for the boat and this body is protected by the outer keel strip 27 and by the gunwale and

buffer strips 29 and 35. The chine strips 21 add strength to the boat and also form a convenient backing for the joint between the layers of plywood 25. The boat being deeper at its forward end travels smoothly in the water, especially when propelled by a motor. The boat will be preferably provided with a pleasing finish of paint or varnish. The boats have been amply demonstrated in actual practice, found to be very successful and efficient and are being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicants' invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A plywood boat structure having in combination, an outer keel strip of narrow width extending from prow to stern of said boat, a plurality of transverse rib members of general bow form, a layer of plywood secured to the outer sides of said rib members respectively, an inner keel strip extending from prow to stern of said boat, said outer strip being secured to said inner strip said ribs having a central slot for receiving said inner keel strip and having transversely spaced shallow slots in their outer sides and a plurality of transversely spaced floor boards disposed in said latter slots and extending longitudinally of said boat at the inner side of said plywood.

2. The structure set forth in claim 1, there being four of said ribs spaced longitudinally of said boat, said boat having a substantially vertical transom, said floor boards comprising an outer pair of said floor boards extending from said transom to the foremost rib save one and an inner pair of said floor boards extending from said transom to the foremost rib.

3. A plywood boat structure having in combination, a plurality of longitudinally spaced transversely extending ribs, the rearmost one of said ribs having its central bottom portion slightly convex and having side portions extending upwardly therefrom and outwardly at a slight angle and said foremost rib having its lower side in a convex curve which is substantially semi-cylindrical and which extends to the top of said boat, a central keel strip received in slots in the lower sides of said ribs and a layer of plywood secured to the outer sides of said ribs, a rear transom extending upwardly and rearwardly at a slight angle to which the rear end of said plywood is secured, said plywood forward of said foremost rib converging to and being secured to said central keel strip.

4. A plywood boat structure having in combination, a plurality of longitudinally spaced transversely extending rigid rib members, a transom in the rear of said rearmost rib and having a substantially horizontal bottom edge, said rib members having slots in either side thereof respectively, chine strips disposed in said slots at each side and extending from said transom to the front end of said boat and a layer of plywood secured to the outer sides of said ribs and to the bottom and outer sides of said transom, said plywood at the sides of said boat forwardly of said foremost rib converging, a narrow inner keel member to which said converging sides are secured, said chine strips at said transom being

disposed at the bottom of the boat but extending upwardly as it extends forwardly and the forward end of the same engaging said inner keel strip substantially midway between the top and bottom of said boat.

5. A plywood boat structure having in combination, a plurality of transversely extending rigid rib members, a layer of plywood secured to the outer sides of said rib members, said rib members having slots at either side thereof respectively, a chine strip at each side of said boat extending longitudinally of said boat and received in said slots inwardly of said layer, said chine strip extending from the bottom of the boat at the rear upwardly to the front end of said boat, said layer of plywood being in sections which meet substantially at the outer side of said chine strip, said sections being provided with a butt joint at the forward end of said boat but being provided with a lap joint at the rear end portion of said boat.

6. The structure set forth in claim 5, there being five of said transverse ribs and said butt joint extending to the foremost rib save one.

7. A plywood boat structure having in combination, a plurality of transversely extending rigid rib members having central lower portions with slots on the bottoms thereof disposed centrally transversely thereof, a central inner keel member received in and fitting in said slots, a transom adjacent the rearmost rib member, said keel member extending from said transom to the front end of said boat, a layer of plywood secured to the outer sides of said ribs and transom respectively, said layer forwardly of the foremost ribs converging to and being secured to said inner keel strip and a lower keel member below said plywood and inner keel member secured to said inner keel member and extending to the front of said inner keel member.

8. A plywood boat structure having in combination, a plurality of longitudinally spaced transversely extending rigid ribs each having a central slot in the bottom side thereof, an inner keel strip disposed in said slots and extending from the rear end of said boat and curving upwardly from said foremost rib to the top of said boat, a transom adjacent the rearmost rib, a layer of plywood secured to the outer sides of said ribs and transom, said plywood forwardly of the foremost rib converging to and being secured to said keel strip, said keel strip being of trapezoidal shape in horizontal cross section with its short side directed forwardly and an outer keel strip secured to said inner keel strip, the inner side of said outer keel strip abutting the ends of said plywood which is secured to the rearwardly diverging sides of said inner keel strip.

9. The structure set forth in claim 1, said plywood being in longitudinally extending sections having adjacent edges disposed between said keel strips.

10. A plywood boat structure having in combination, a plurality of transversely extending rigid rib members, a layer of plywood secured to the outer sides of said rib members, said rib members having slots at either side thereof respectively, and a chine strip at each side of said boat extending longitudinally of said boat and received in said slots inwardly of said layer, said chine strip extending from the bottom of the boat at the rear upwardly to the front end of said boat and to a point a material distance above said bottom, the sides of said boat converging to a point at their top edges and to a central prow line ad-

jacent said top edges, said prow line curving upwardly and forwardly to said point, said layer of plywood being in sections which meet substantially at the outer side of said chine strip.

11. The structure set forth in claim 7, said sections of plywood meeting in a line substantially centrally of said keel members.

12. The structure set forth in claim 8, said plywood having sections disposed partly between said keel strips, the edges of which sections meet in a line substantially centrally of said keel strips.

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INGVALD O. FLOLO.

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