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BOAT CONSTRUCTION

Filed July 25, 1930

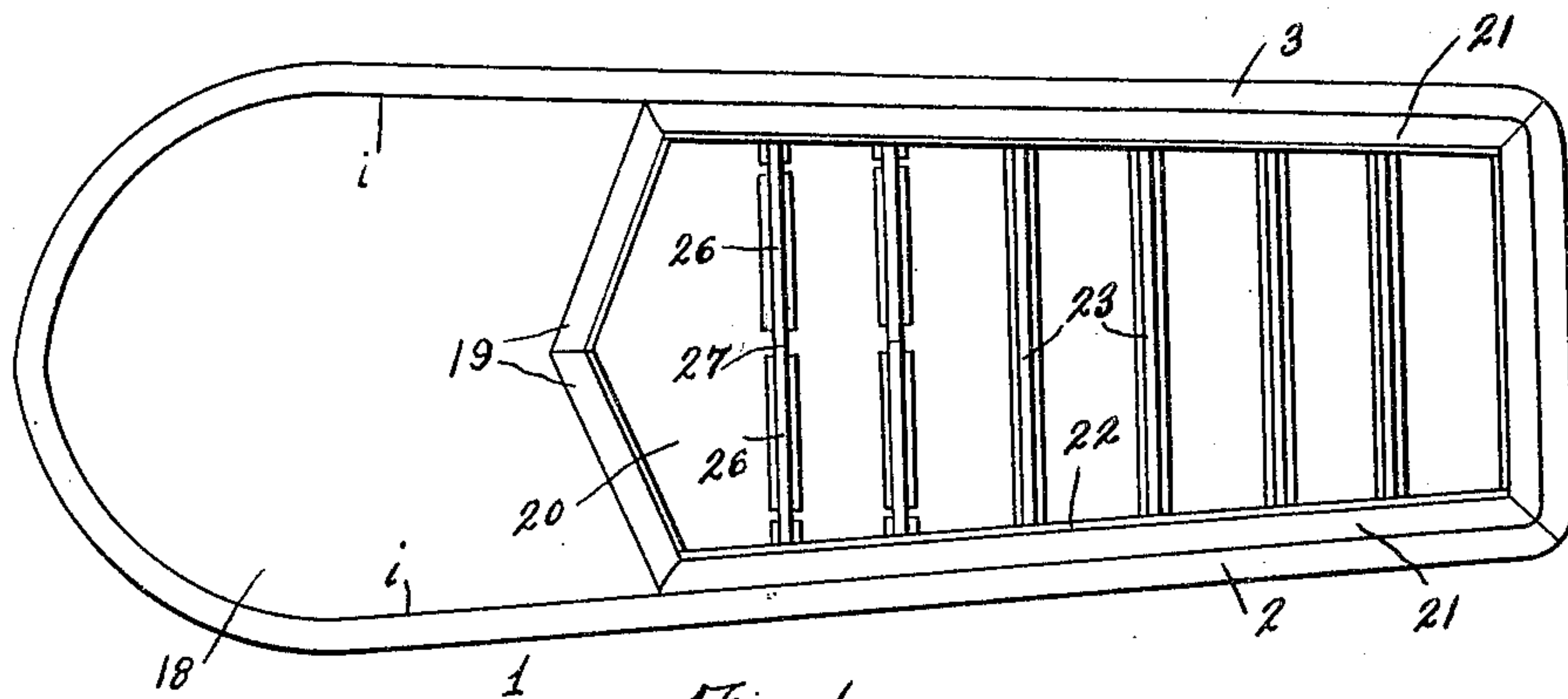


Fig. 1

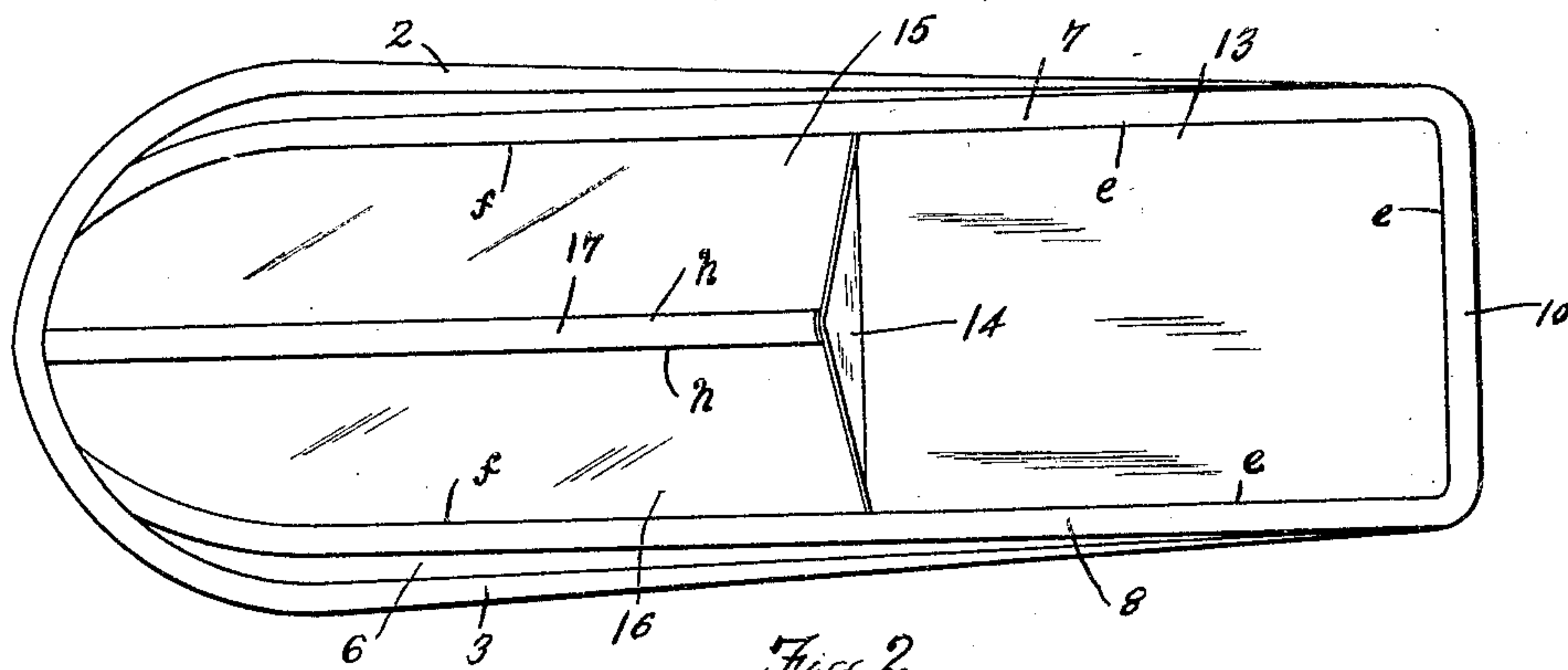


Fig. 2

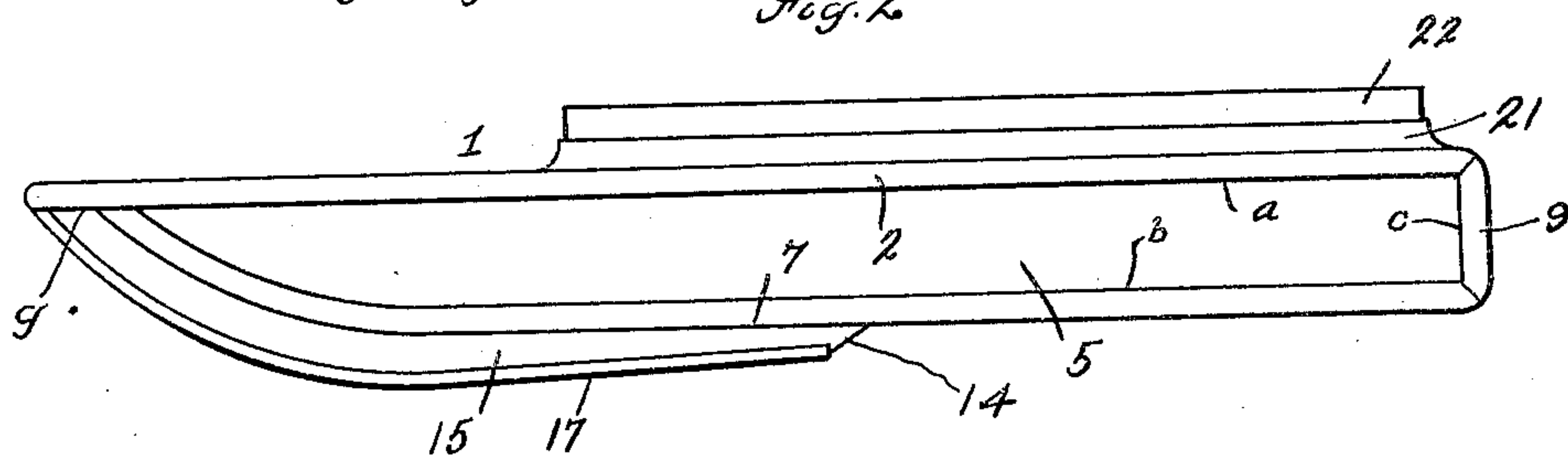


Fig. 3

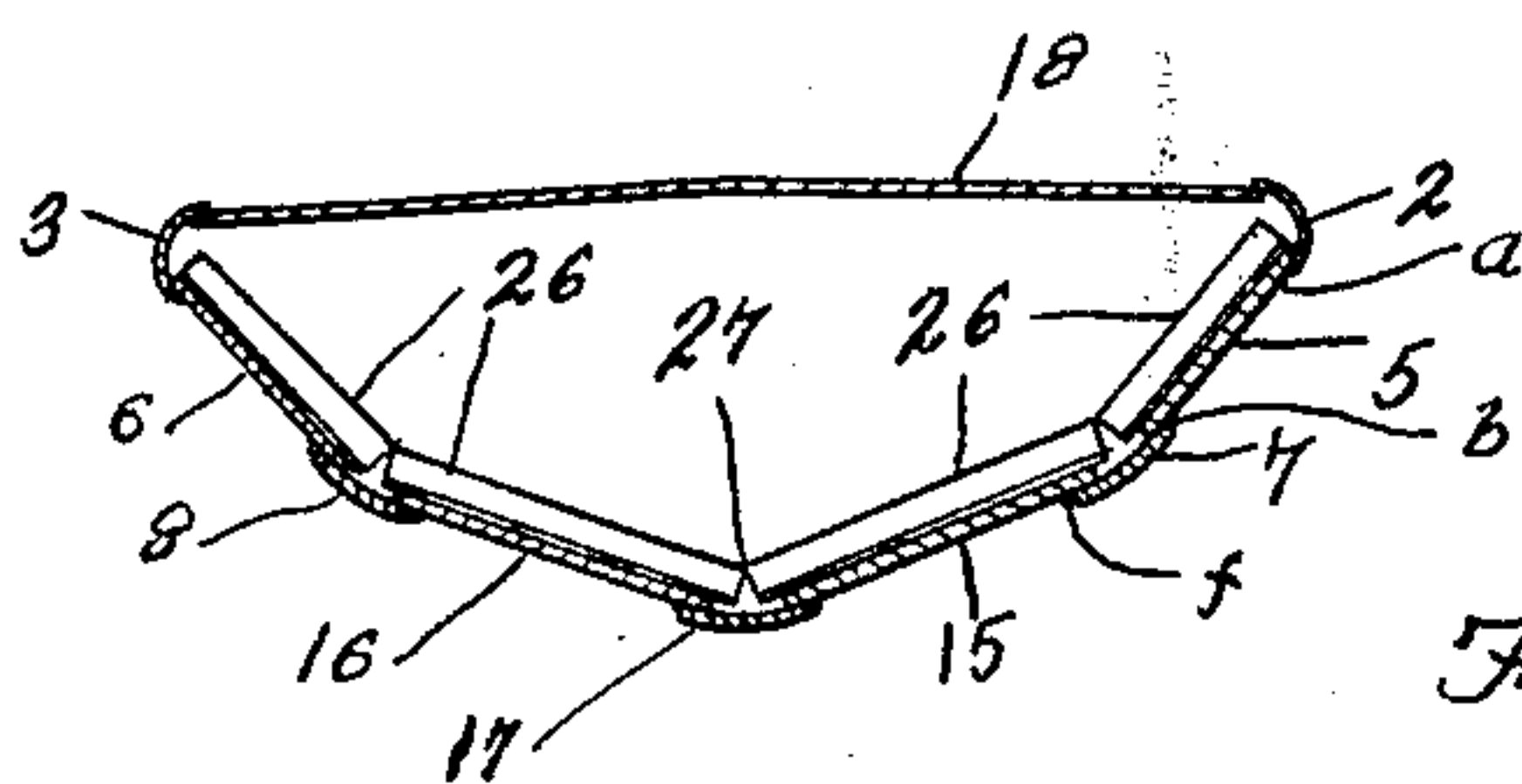


Fig. 4



Fig. 5

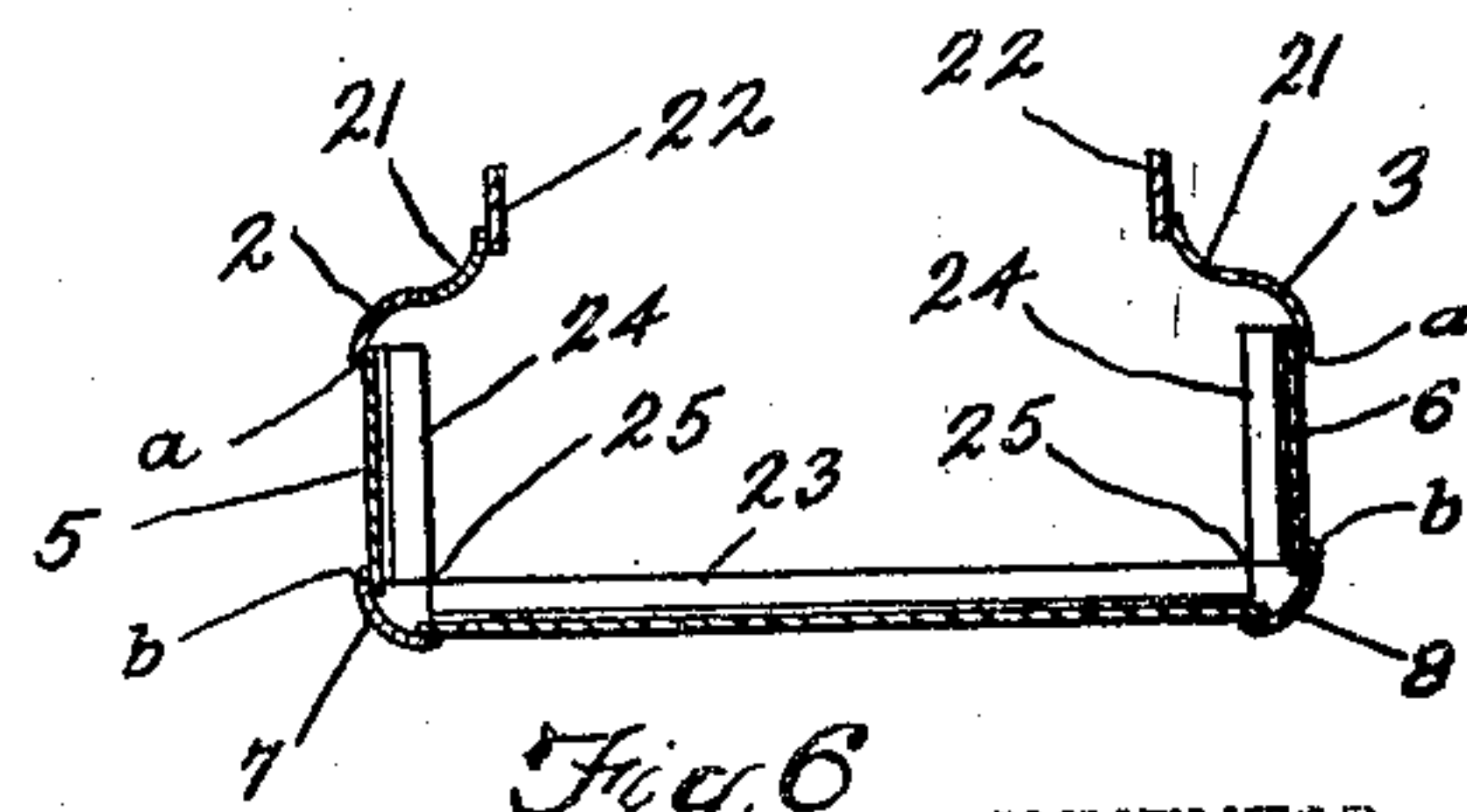


Fig. 6

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BOAT CONSTRUCTION

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This invention, as indicated, relates to a boat construction. More particularly it comprises a boat construction wherein metal side and bottom plates, preferably of steel, are united by means of frame members which also serve as outer portions of the hull. It also includes a construction wherein transverse stiffening members are provided at spaced points throughout the structure.

The principal object of the present invention is to simplify the art of boat construction and to provide a boat capable of withstanding severe service wherein the frame members serve as outer portions of the hull structure. Another object of the invention is to provide a structure of very great strength and of such shape that it is readily adapted for use not only in small craft of general utility, but also for power boats of various sizes adapted to be driven at high speed. Such boats are suitable for use with outboard motors as well as with standard built-in motors. Other and further objects of the invention will appear in the course of the following description. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a top plan view of a boat embodying the principles of my invention; Fig. 2 is a bottom plan view thereof; Fig. 3 is a side elevation of said boat; Fig. 4 is a rear elevation of said boat; Fig. 5 is a transverse sectional view through the forward portion of said boat; Fig. 6 is a transverse sectional view through the rearward portion of said boat; and Fig. 7 is an enlarged cross-sectional view of one of the strengthening ribs.

As is clearly shown in the drawing, the boat 1 is formed of longitudinally extending frame members, which also form part of the

hull structure, and of plates of sheet material united thereto. The preferred form of construction has in view the use of metal strips, and sheet metal plates welded thereto, but it is not intended to limit the invention to any particular material or means of securing the same together except as particularly specified in the claims. Thus it may be found that frame members of sheet steel strips with special composition sheets united thereto would serve certain special uses better than an all metal boat.

The frame members preferably comprise sheet metal strips of arcuate cross-section. The strips 2, 3, at the upper margins of the sides of the boat each extend from the bow to the stern. Said strips are straight throughout the greater portion of their length, but are bent toward each other adjacent the bow and are united to each other, preferably by welding, at the bow. At their rearward ends they are united preferably by mitred welded joints to the upper rear frame member 10.

The boat as shown is given somewhat of a stream-line outline being somewhat wider across the front portion than across the rearward portion.

The side portions of the boat are formed of sheet metal plates 5, 6, which are secured to the upper side frame members by overlapping the upper margins of said plates within the lower portions of said side frame members, as is shown more particularly in Fig. 5, and securing said sheets and frame members together preferably by outside welding along the line *a*.

The front portions of the side plates are bent slightly inward and their lower edges are cut away to present a pointed forward end. These lower edges are lapped over the upper inner faces of lower longitudinal frame members 7, 8, respectively, and are united thereto preferably by a continuous outside weld along the line *b*, shown in Fig. 5.

The rearward edges of the side plates are united in like manner by a continuous outside weld *c* to each respective end frame member 9, which, as shown in Fig. 3, is mitred at

its ends and welded to the adjacent upper and lower longitudinal frame members.

The forward ends of lower longitudinal frame members curve upwardly and are shaped to abut the upper longitudinal frame members, spaced slightly rearwardly of the bow, and are welded to said members at said points, respectively.

The stern, as is shown in Fig. 4, is formed of a rectangular plate 11, with its margins overlapping the inner faces of the vertical end frame members 9, and the horizontal end frame members 10, which are mitered and welded at the corners. The plate 11 is welded to said frame members by outside welds *d*.

The rearward portion of the bottom of the boat is formed of a single plate 13 of sheet metal overlapping the inner faces of the lower longitudinal frame members 7 and 8 and the lower rear horizontal frame member 10, and is united thereto by outside continuous welds *e*.

The forward end of the bottom plate 13 is bent downwardly at an angle and cut away toward each side from the center so as to provide a triangular step 14 at its forward edge, which preferably is positioned slightly rearward of the mid-section of the boat.

The forward portion of the bottom of the boat is preferably formed of a pair of complementary plates 15, 16, curved at their outer edges to engage within and overlie the lower longitudinal frame members 7, 8, being united thereto by continuous outside welds *f*. Said plates are bent upwardly at their forward portions and are united to the inner faces of the upper longitudinal frame members by outside welds *g* adjacent the bow. Said plates are united to each other by means of a frame member 17, which serves as a keel at the forward portion of the boat and which terminates at the step 14, being welded to the rearward bottom plate 13 at said point. The forward bottom plates overlie said frame member 17, and are united thereto by continuous outside welds *h*.

The rearward edges of the forward bottom plates are cut away to conform to the forward edges of the triangular step 14 and are welded directly thereto by what is termed a "washweld".

Thus it will be noted that the hull is formed of a shell of which the frame strips are a part as well as the sheet metal plates. The frame strips constitute corner members of the shell as well as frame or supporting members, and are, in themselves, water excluding structural elements, and have thus a combined function irrespective of whether cross-ribs are used in the structure or are entirely omitted.

The forward end of the boat is preferably of substantially semi-circular shape, the forward bottom plates being turned upwardly as described and cutaway on a suitable curvature to provide a rounded bow. A deck plate

18 extending substantially over the entire forward portion of the boat is preferably provided and united with the inner faces of the upper longitudinal frame members 2, 3, by means of continuous outside welds *i*. The rearward end of the deck plate is preferably formed of V-shape and a finishing strip or combing 19, may be welded thereto to form the forward end of the cock-pit 20, and if desired, a windshield of suitable material may be secured thereto. Rearwardly of the combing 19 the cock-pit is preferably formed by welding to the upper frame member, a strip 21 of substantially identical cross-section positioned in reverse direction so that the combined curvature of said strip and the top frame member will present an ogee curve in cross-section. To the combing at the sides and rear of the cock-pit, a wooden finishing strip 22 may be secured, said strip being of suitable height to serve as a protection against spray, for the occupants of the cock-pit.

The boat may be braced across its inner bottom portion by means of cross members or ribs 23 of preferably flanged inverted U-shaped cross-section, as shown in Fig. 7, which may be welded to the bottom plate by spot welds at suitable intervals. The side plates may also be braced by similar ribs 24 secured in like manner and preferably in alignment with the bottom ribs to which they are united at their meeting corners by means of suitable welds 25. The forward convex portion of the bottom is preferably braced by means of flanged inverted U-shaped ribs 26 which are cut partially through at their central points so as to permit them to be bent with each half-section suitably welded to the adjacent plate. The ribs may be welded to each other at their meeting corners by welds 27.

Provision may also be made for seats which may be in the form of plates provided with end flanges welded to the ribs of the respective side plates or may be cross bars welded to said ribs upon which wood or metal seats are supported.

The construction provides for a boat which is substantially free of internal frame members, the outside corner and bottom members serving as the principal parts of the frame structure and being of sufficient strength to maintain the plates in rigid relation to each other.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a boat construction, a hull formed of bottom, side and end plates secured to

frame members at the outer margins thereof, said bottom being formed adjacent its rearward portion of a single plate and adjacent its forward portion of a pair of plates forming a convex bottom as viewed from below, said forward plates being curved upwardly adjacent their forward ends and being united to the flat bottom portion by means of a step of triangular outline.

2. In a boat construction, a hull formed of bottom, side and end plates secured to frame members at the outer margins thereof, said bottom being formed adjacent its rearward portion of a single plate and adjacent its forward portion of a pair of plates forming a convex bottom as viewed from below, said forward plates being curved upwardly adjacent their forward ends and being united to the flat bottom portion by means of a step of triangular outline, straight transverse ribs across said rearward bottom section and V-shaped reinforcing ribs secured to said forward bottom section.

3. In a boat construction, a plurality of longitudinally extending frame members formed of sheet metal strips having angularly related lateral edges, vertical and transverse frame members of like cross-section at the stern of said boat, and sheet metal plates positioned between said frame members and having their margins overlapping and secured to the inner faces of said adjacent frame members.

4. In a boat construction, a plurality of longitudinally extending frame members formed of metal strips of angular cross-section, vertical and transverse frame members of like cross-section at the stern of said boat, sheet metal plates positioned between said frame members and having their margins overlapping and secured to the inner faces of said adjacent frame members to form the bottom, sides, and stern of said boat, a deck plate secured in like manner to the forward upper frame members, and a cock-pit provided with a combing formed of reversely curved strip members welded to the free edges of the adjacent frame members.

5. In a boat construction, a hull formed entirely of sheet metal, including a series of combined frame and corner elements comprising elongated sheet metal members bent to provide marginal portions in different planes, and sheet metal plates having an outline corresponding to the openings between said frame members and overlapping said frame members on their inner surfaces and united at their marginal portions on the outside of said hull to the marginal portions of said sheet metal frame and corner elements by seams of continuous water-excluding welds.

Signed by me this 9th day of July 1930.

ROY A. ERSKINE.