



Fast, safe, and easy riding for one to four passengers is possible in the "Torpedo," which can use motors with 10 to 30 hp.

USES: This runabout is designed for speedy transportation over protected waters. A streamlined plywood speedster, it is easily and inexpensively built with the latest and most improved water and profile designs. It is adapted to use with motors from 10 to 30 hp., providing fast, safe, and easy riding, with one to four passengers. It is designed to eliminate difficult joiner work and still retain all advantages of streamlining with the use of resin-bonded marine plywood as covering.

LENGTH.....13 ft. 6 in.
 BEAM.....4 ft. 6 in.
 DEPTH.....22 in. amidships
 WEIGHT COMPLETE.....200 lbs.
 SEATING CAPACITY.....4 Passengers
 CONSTRUCTION— $\frac{1}{4}$ " Super-Harbord marine plywood over sawed and longitudinal frames.

TYPE—Semi-vee-bottom streamlined speedster.



"TORPEDO"

A Fast 13 $\frac{1}{2}$ -Foot Runabout

Craft Print
Project No. 105

FAST, safe and comfortable is the "Torpedo"—a distinctive runabout that skims over the water at race-boat speeds and carries four passengers in a capacious hull that will remain leakproof and light in weight during a lifetime of usage.

Marine plywood is used to cover the sides, bottom and deck, and besides dispensing with considerable labor in construction, the use of this material provides a boat that is strong and inexpensive to build and run. If the larger outboard motors from 10 hp. up are used, high speeds with economy of operation will result with lower fuel cost per mile due to the highly efficient planing action of the hull. This runabout, with speeds rivaling any racing hull, is not necessarily confined to such usage. Its commodious accommodations permit it to be used as a day cruising craft afloat, comparable to the auto ashore.

To begin construction of the "Torpedo" runabout, select the 2" x 8" x 10' plank for the form, saw it to shape as indicated upon the drawings, but do not notch for frames until later. Mount this form upon legs similar to a sawhorse at a convenient working height.

Frames and Transoms

Draw full-size paper patterns of all frames and stem. As the material for the frames is merely

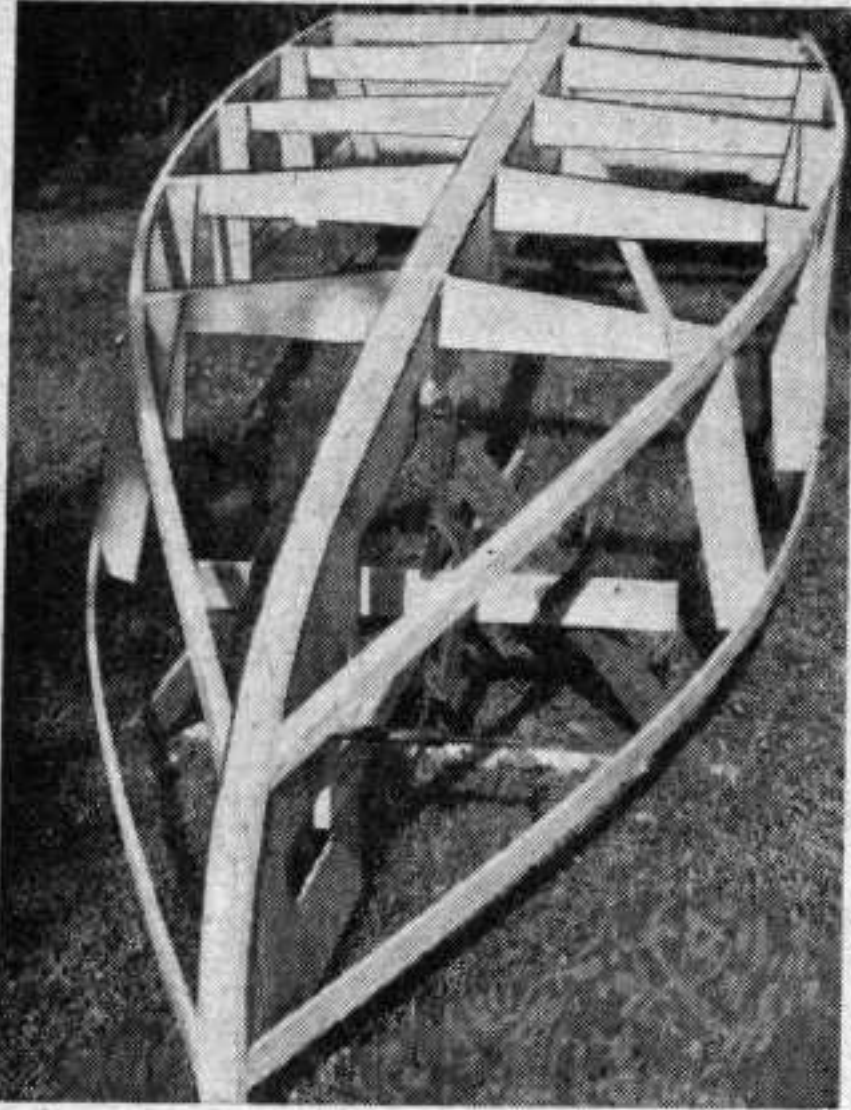
straight stock, these pieces are cut to conform to pattern outline. Return each frame to the pattern and secure each joint at chines with two $\frac{1}{4}$ " No. 8 f.h. screws. Before fastening, daub all adjoining surfaces with waterproof glue.

The transom is cut to shape and the transom frame is attached with $\frac{1}{4}$ " No. 8 f.h. screws. Construct the stem similarly, laying the stem material upon full-size pattern and fasten to each side of the stem a face piece of plywood, glued and screwed to the stem with 1" No. 6 f.h. screws.

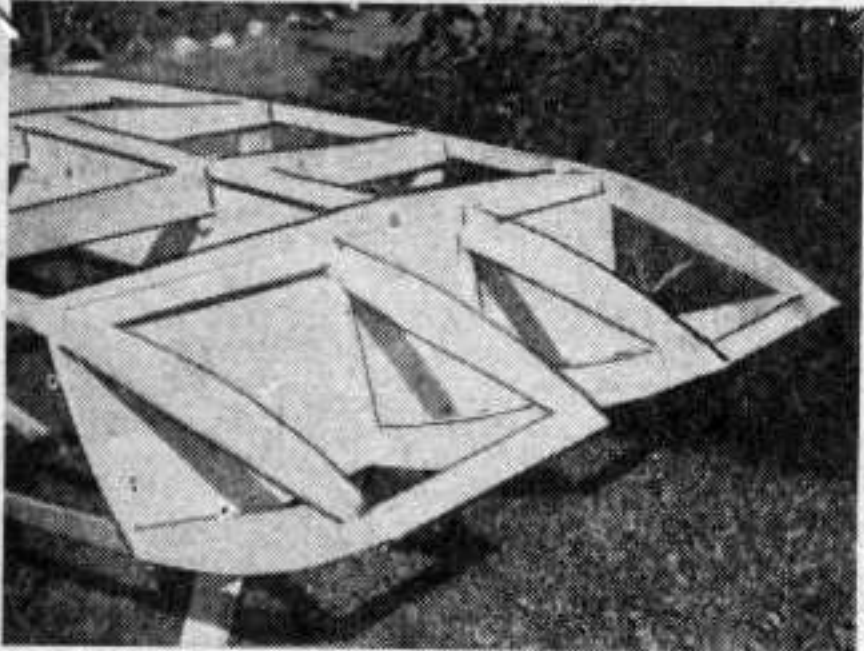
Assembling the Framework

The form upon which the hull is constructed is now notched for the frames. The notches measure $\frac{3}{4}$ " wide by the depth of each frame measured from top side to bottom of the keel notch. Assemble the frames on the form temporarily, wedging them in place with pieces of wood. The stem is held by strips of wood clamped to each side. With all frames in place including stem and transom, bend a light batten around frame edges and mark on each edge the bevel to be cut so the planking to be later applied lies evenly. Remove frames and bevel edges, and at the same time cut notches for chines, clamps, and keel. These notches follow the bevel of each frame. Notches are cut through frame only of the transom.

Reassemble frames on form adding brace pieces



Here's the framework of the "Torpedo," still in place on the form. Notice the different lines of the bottom pieces in the frames.



Details of tail construction are pictured here, upside down of course, as the framework is still on the form.

from the side pieces to the floor pieces to prevent twisting the hull out of shape. Spring the $\frac{3}{4}$ " x 3" keel into place to transom frame, frames, and keel notch on stem, fastening with two $1\frac{3}{4}$ " No. f.h. screws at each joint, three at the stem.

The $\frac{3}{4}$ " x $1\frac{3}{4}$ " chines are clamped in transom frame notch and both chines sprung simultaneously towards the stem to equalize strain and prevent a warped hull. Fasten chines to each frame with one $1\frac{3}{4}$ " No. 8 f.h. screw. Bevel chines to fit against stem and fasten similarly.

The $\frac{1}{2}$ " x $1\frac{3}{4}$ " clamps are sprung into their proper notches and fastened with one 1" No. 6 f.h. screw to each joint, beveling ends to fit against stem and fastening similarly.

Notching the framework for the $\frac{3}{4}$ " x 1" bottom battens is next, and these are fastened in place with one $1\frac{3}{4}$ " No. 8 f.h. screw at each joint.

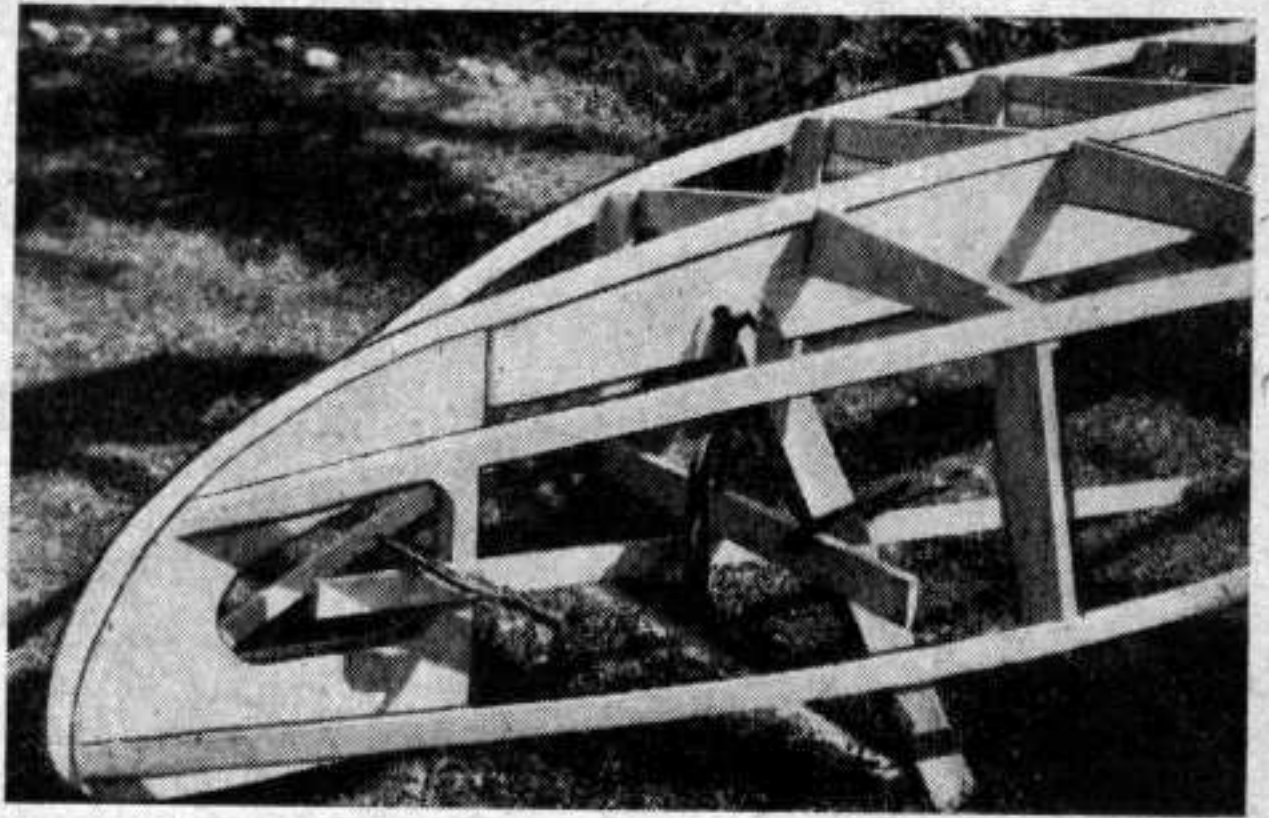
The deck beams are cut to shape now, but will not be put in place until later. The deck beam

LIST OF MATERIALS

Parts	Pieces	Finished Sizes
Inner Keel, spruce, fir, mahogany, yellow pine	1	$\frac{3}{4}$ " x 3" x 12'
Outer Keel	1	$\frac{3}{4}$ " x 1" x 11'
Chines	2	$\frac{3}{4}$ " x $1\frac{3}{4}$ " x 12'
Clamps	2	$\frac{1}{2}$ " x $1\frac{3}{4}$ " x 14'
Half Round Moulding	2	$\frac{3}{4}$ " x 1" x 14'
Bottom Battens	4	$\frac{3}{4}$ " x 1" x 10'
Side Frames	2	$\frac{3}{4}$ " x $3\frac{3}{4}$ " x 10'
Bottom Frames	3	$\frac{3}{4}$ " x $5\frac{3}{4}$ " x 12'
Deck Beams	3	$\frac{3}{4}$ " x $7\frac{3}{4}$ " x 10'
Carlins	2	$\frac{3}{4}$ " x $1\frac{3}{4}$ " x 8'
Stem	1	$1\frac{3}{4}$ " x 8" x 6'
False Stem	1	$\frac{1}{2}$ " x 1" x 4'
Stem Side Pieces	1	$\frac{1}{4}$ " x 4' x 6'
Planking:		
Sides and Bottom	1	$\frac{1}{4}$ " x 4' x 8'
Super-Harbord marine plywood	2	$\frac{1}{4}$ " x 4' x 12'
Deck and Flooring	3	$\frac{1}{4}$ " x 4' x 8'
Form, any rough lumber	1	$1\frac{3}{4}$ " x $9\frac{3}{4}$ " x 10'

FASTENINGS

6 gro. 1" No. 6 f. h. screws	1 gro. $1\frac{1}{4}$ " copper shingle nails
1 gro. $1\frac{3}{4}$ " No. 8 f. h. screws	3 oz. Marine glue

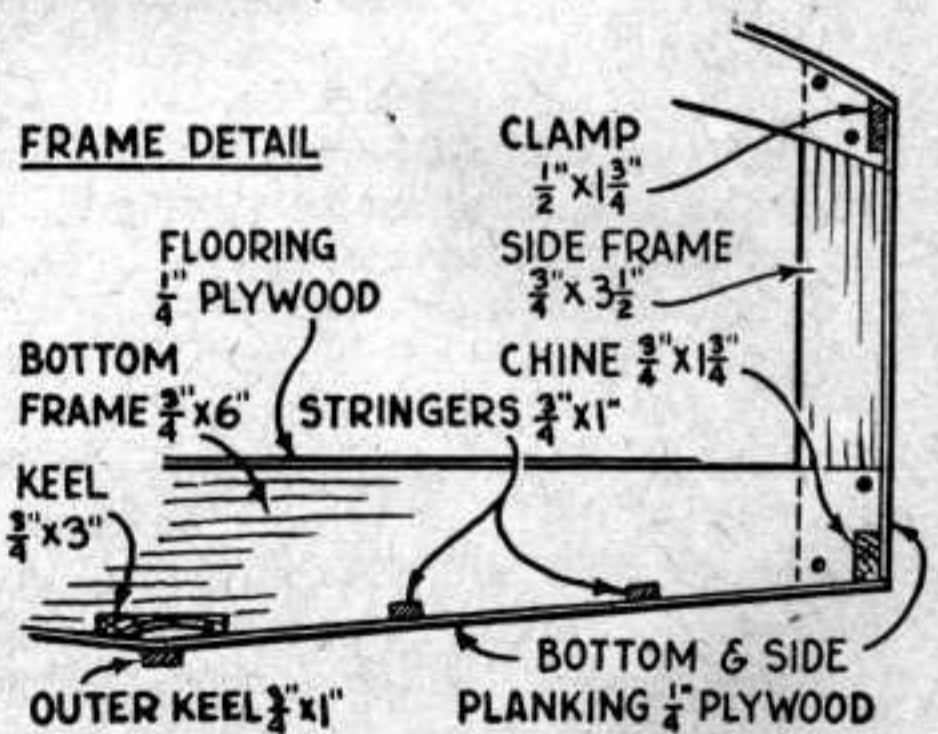
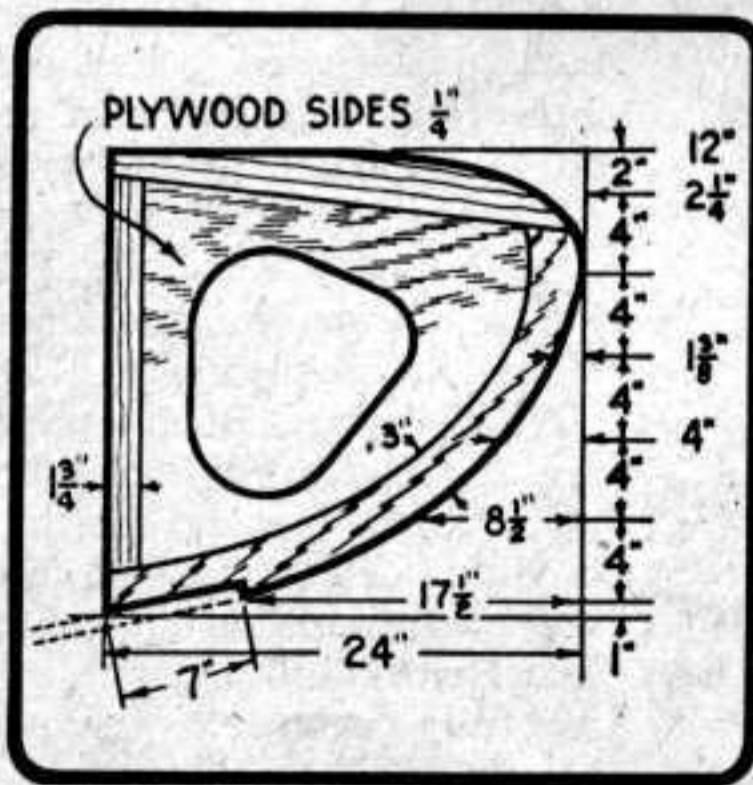
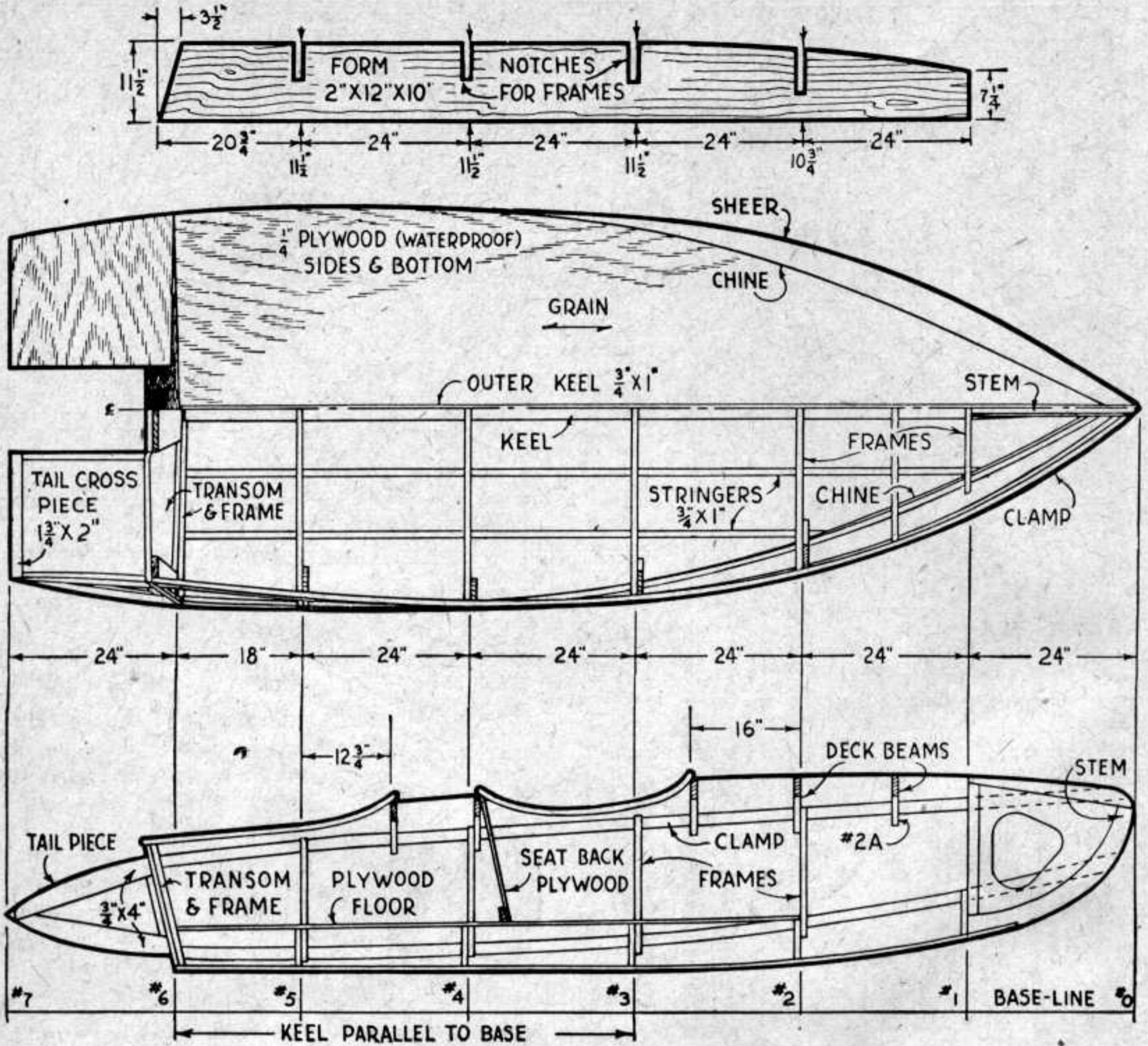


A close-up view shows the stem construction and how it is attached to keel, chines, and clamps.

curve is designed to lend a moulded, streamlined appearance to this boat, but in designing the curve a certain limitation of the deck covering material itself must be taken into consideration. Stated simply it is this: Plywood will bend and follow curves in one plane only. Compound curves cause plywood to buckle at the edges.

To illustrate: Bend a piece of cardboard in any arc of a circle. Now attempt to bend it at right angle to the arc and the cardboard buckles. The moulded deck curves of the "Torpedo" runabout are compromises, but take advantage of every bit of workability possible in using plywood. If carefully sawed to shape, ordinary plywood panels will fit without any steaming or showing bulges when in place.

The easiest way in which to find the proper curves for the deck beams is to saw to shape one main beam such as No. 2 or No. 3 and use this as a pattern for the others. Clamp this main beam in its proper position. As the beams progress towards the bow, their moulded ends fade out to nothing. Begin by bending a batten from

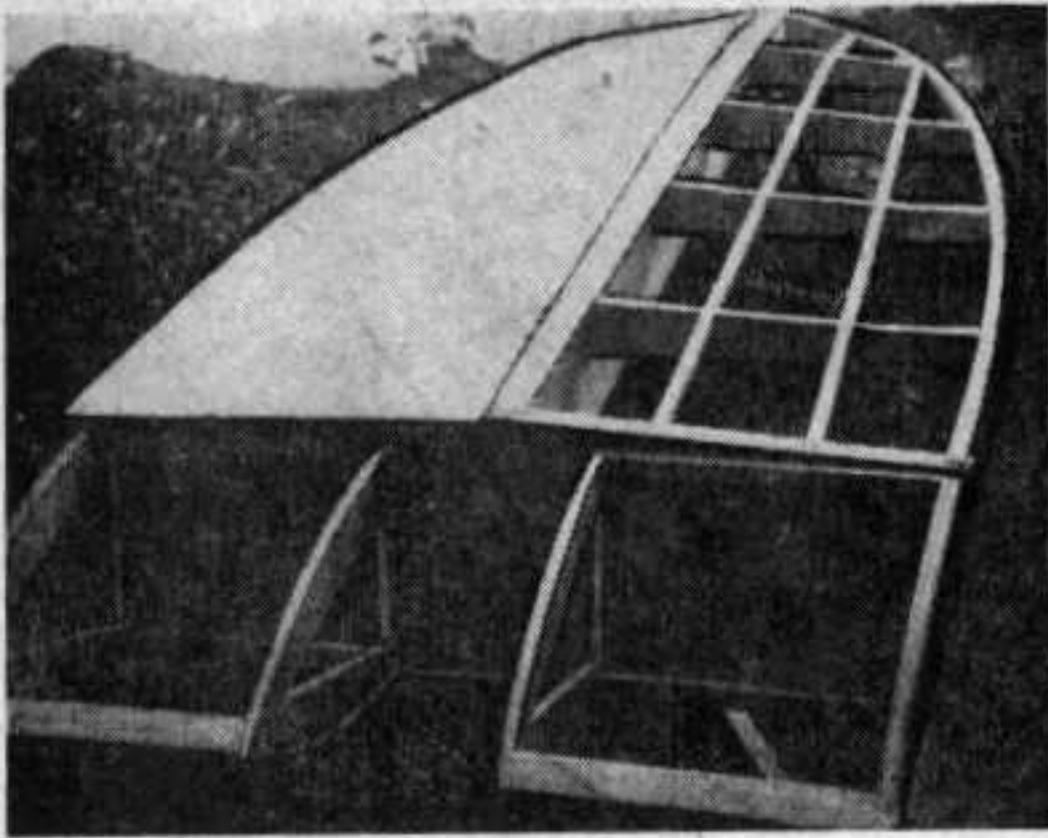


the main deck beam to the stem, letting this batten follow the curve taken by the center line of the deck. Now another batten is bent from the main beam forward and aft, but this batten is used to locate the point where the moulded ends of beam blend into the curve of deck beam. (See drawing.) This batten is run straight out and parallel with center line. By measuring up to battens and across, it is an easy matter to define the proper curves of each beam.

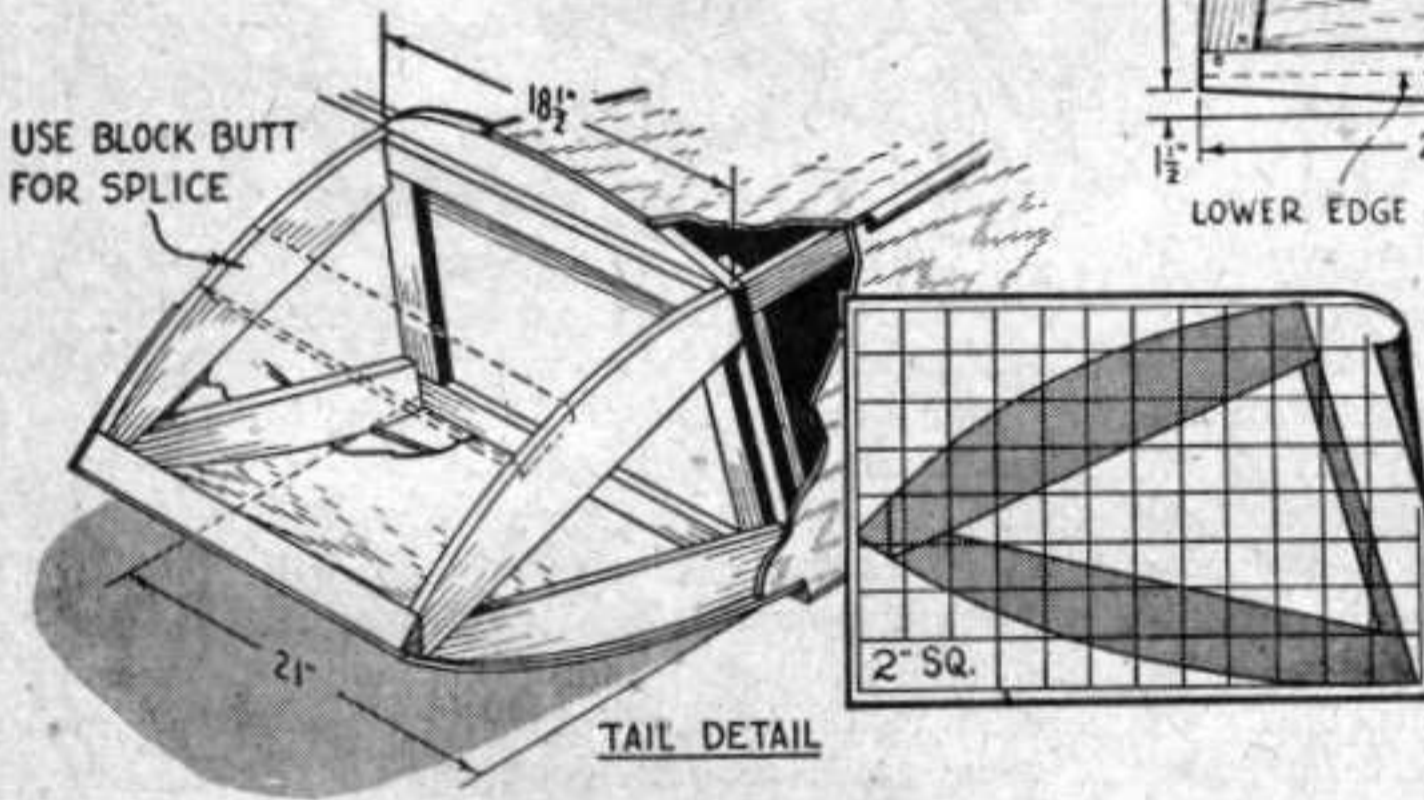
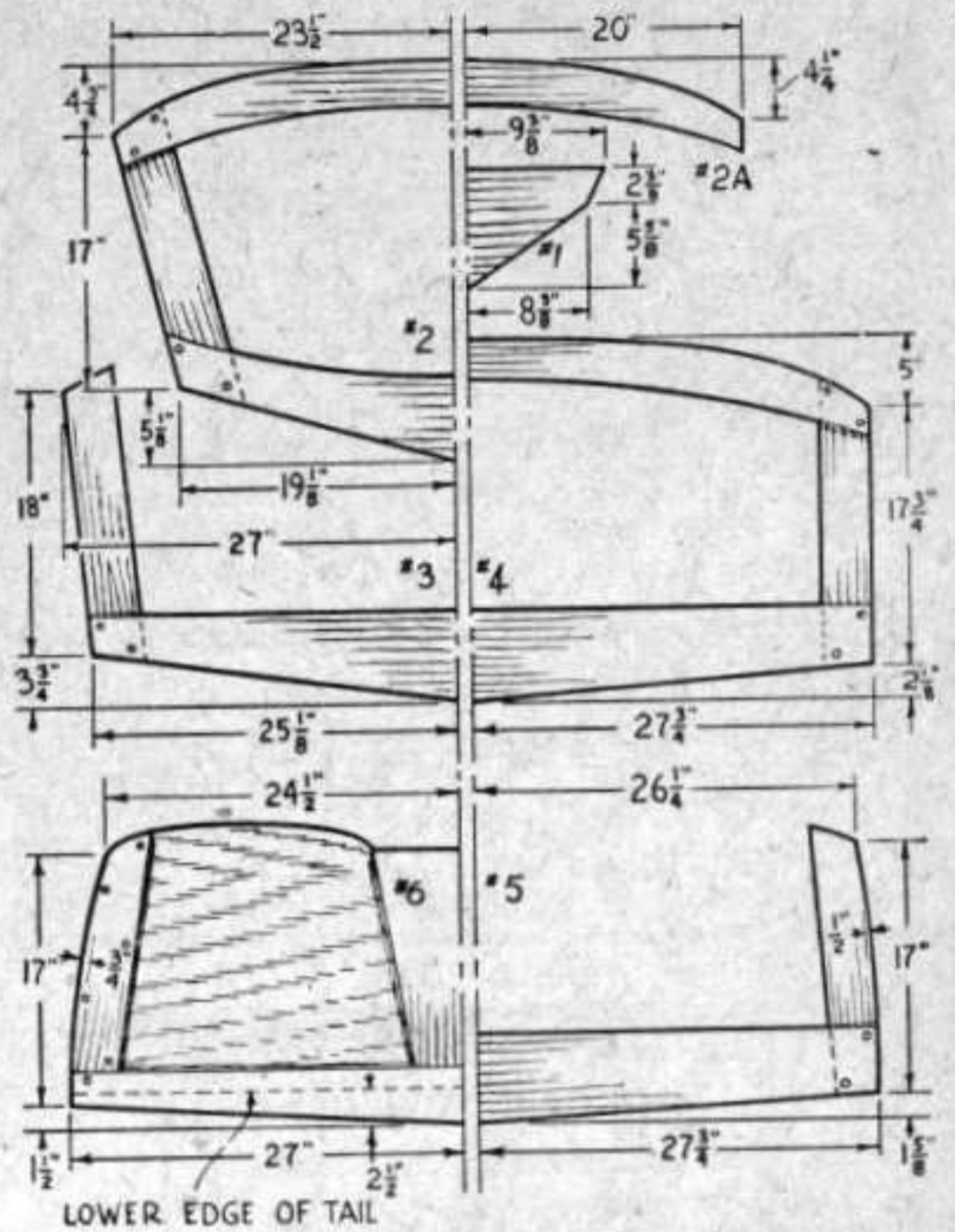
The waste from the deck beams will suffice to fabricate the tails, which are made as illustrated

and fastened to aft side of transom with 1 3/4" No. 8 f.h. screws. Allow 12-inch separation between tails for motor, gluing and screwing all joints solidly.

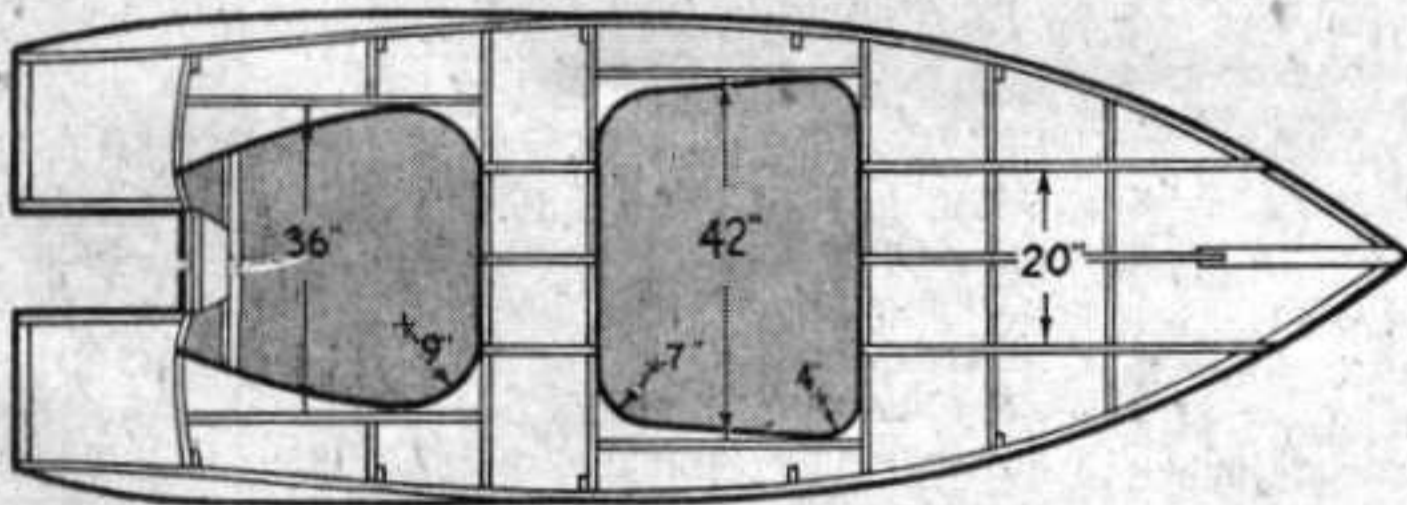
The entire framework is now trimmed and faired so plywood planking will lie evenly at all points. A light batten laid over joints will indicate any unevenness.



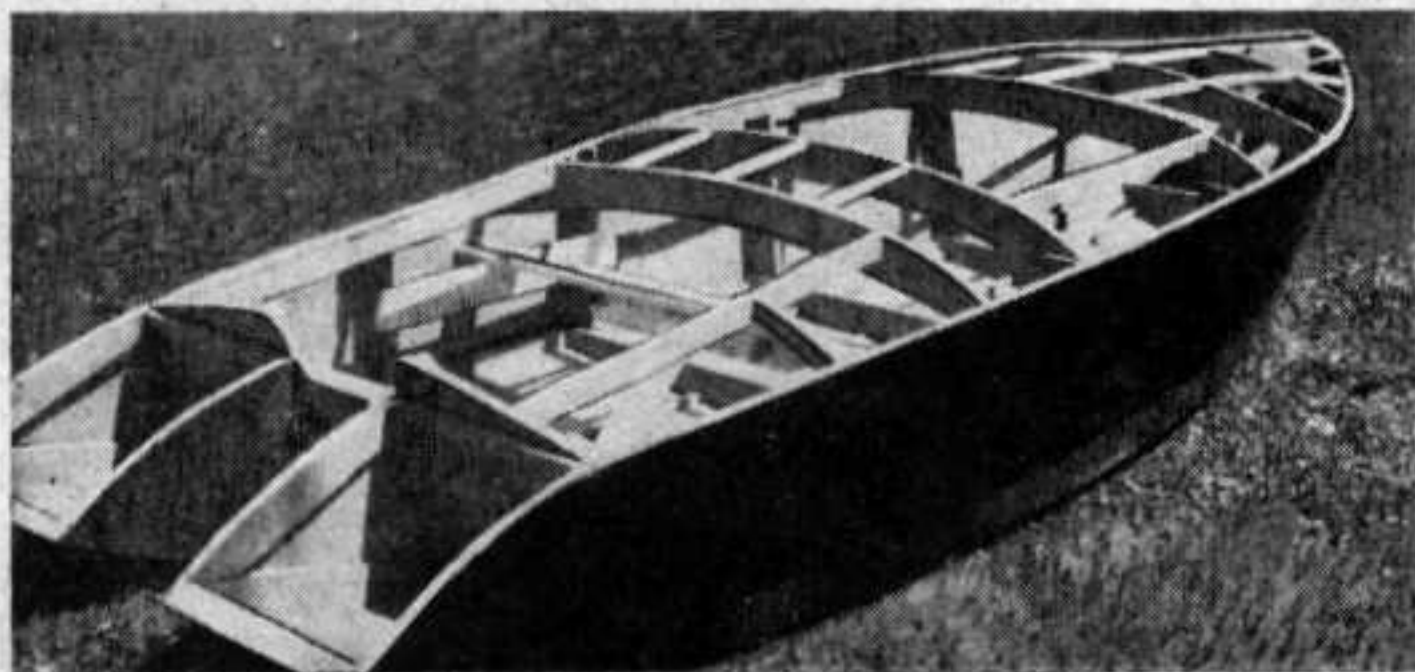
Battens, or stringers, have been screwed into notches in the frame bottom pieces and the transom. Planking covers one-half of the bottom. Tail pieces are ready for their plywood planking.



Lay out the material for the sides and bottom as illustrated to cover the entire boat with a minimum number of joints. The 4' x 8' piece of plywood should be used for the forward side planks, and the pieces remaining from the bottom are used to complete the sides. Clamp the side planks in place, mark and saw to shape. Be sure to cover tails with the planking. Clamp the sawed sides in place, drill lead holes for the screws and fasten in place with 1" No. 6 f.h. screws spaced two inches apart. For fastening side planking to clamps use 1 1/4" copper or galvanized shingle nails clinched on the inside of hull. Do a neat job of it.



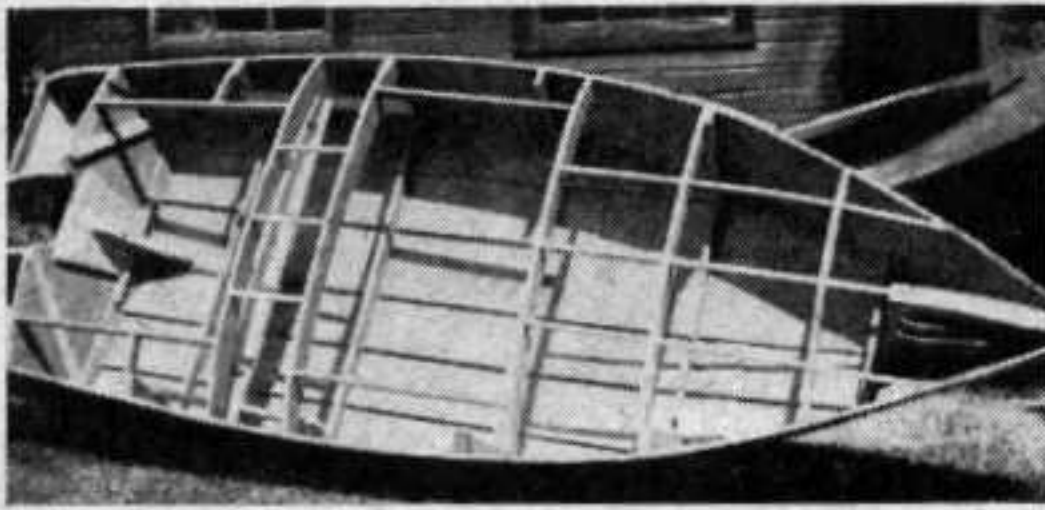
TOP VIEW SHOWING DECK SUPPORTS



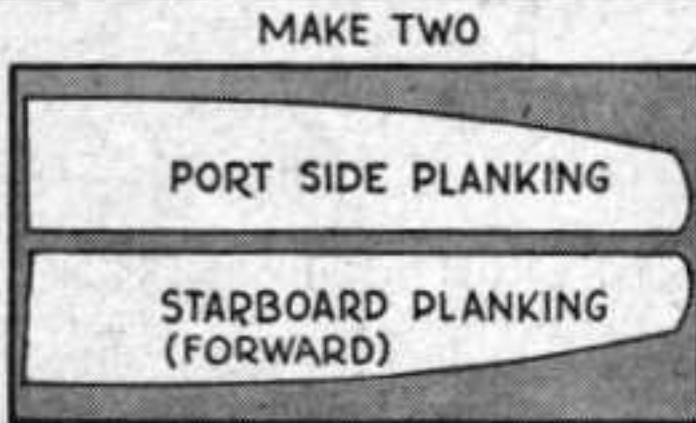
The surfaces where the sides join the stem, transom, and chines should be coated with marine glue to prevent leaking. After the sides are secure plane off the waste material so edges will receive the bottom evenly.

Clamp the bottom in position (one-half at a time), mark carefully and saw the shape. The bottom is attached in the same manner as the sides with 1" No.

Deck beams are made and placed in position, the boat having been removed from the form and set right side up after sides and bottoms were planked.



And now the deck framework is completed and ready for its covering. Notice the cockpit spaces and the braced motor board on the transom.



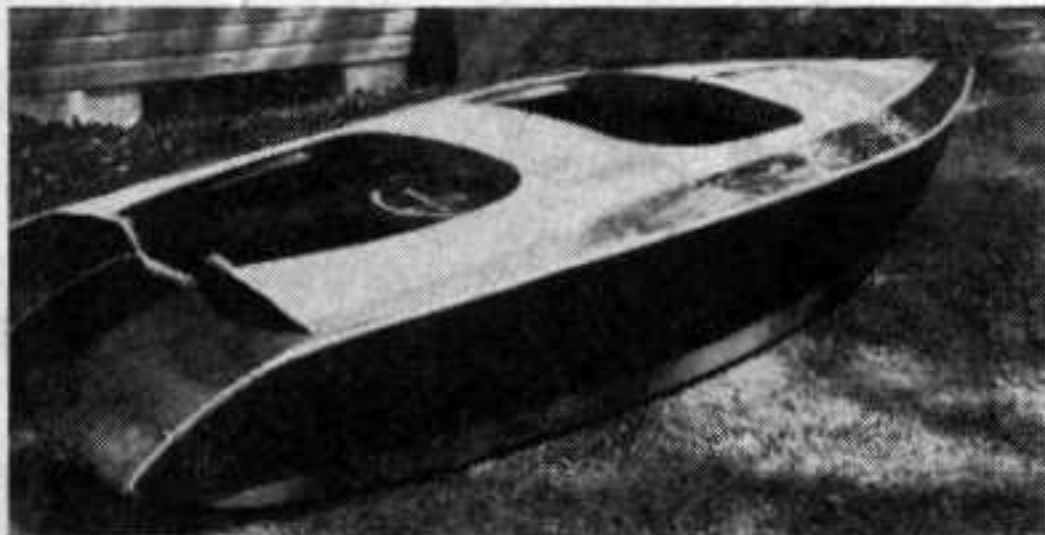
6 f.h. screws. Be sure to coat all joints with marine glue.

To cover the exposed portion of plywood at the stem, a false stem of hardwood is softened with hot water and bent around stem edges, fastening with 1 3/4" No. 8 f.h. screws every two inches. Now secure the outer keel in place so it joins the false stem evenly. Use one 1 3/4" No. 8 f.h. screw every three inches.

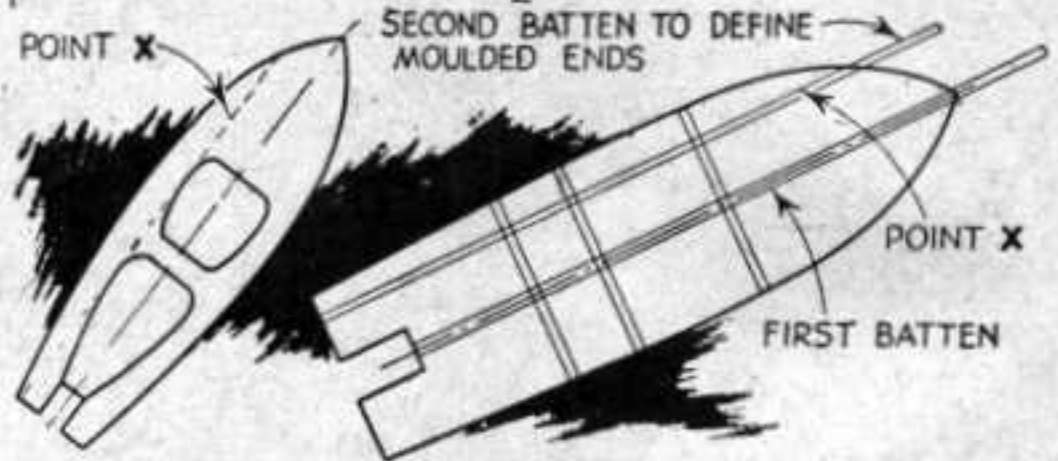
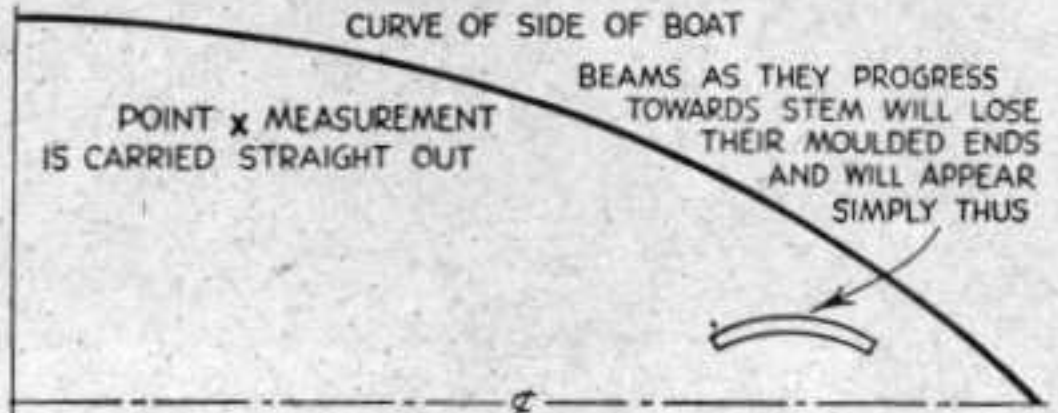
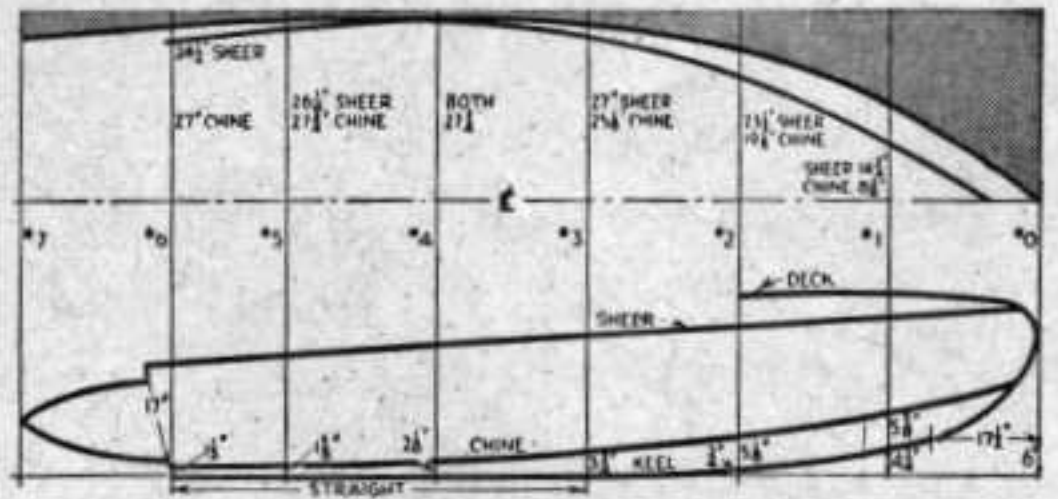
The hull is removed from the form, and the entire outside and inside are given one or two coats of equal parts linseed oil and turpentine.

Deck Beam Installation

The various deck beams are fastened to frames and clamps with 1 3/4" No. 8 f.h. screws. The 3/4" x 1 3/4" deck carlins, which outline the edge of the cockpits, are similarly attached using 1 3/4" No. 8 f.h. screws and the 3/4" x 1" deck battens notched into beams and screw fastened. As the deck



At last! Deck's covered, also tail pieces. It's painted and varnished, and ready to "hit the water." Let's go "Torpedo"!



beams are not drawn to a true arc of a circle but with moulded sides, it may be necessary to add curved filler pieces to the deck carlins to maintain a smooth, even deck.

The deck plywood pieces are clamped in position, marked and cut to shape. Reclamp the deck plywood in place and fasten with 1" No. 6 f.h. screws, spaced about two inches apart. The edges of the cockpit may be trimmed for protection with artificial leather rolled around cotton wadding and tacked in place.

The waste from the various plywood pieces may be used for flooring in each cockpit.

Finishing Touches

The inside of the hull is painted any desired color before putting in the flooring. Attach 3/4" x 1" mouldings to the sheer with a 1" No. 6 f.h. screw every five or six inches apart starting at stem and running back to transom. The hull is now complete with the exception of outside trim.

To simulate a planked deck (wherein the plywood is lined by numerous seams) score the surface slightly with a hand electric or table saw.

For a permanent leakproof job the bottom should be canvas covered. The canvas should be cemented in place with canvas cement and painted. A fancy streamlined paint and varnish job will add much to the boat's attractiveness. Gadgets such as delight the hearts of sailors, like steering wheels, a windshield, metal mouldings, lights, cushions, and a score of other items will go far to give such a boat a smart appearance.

● Craft Print No. 105 in enlarged size for building the "Torpedo" is available at 25¢ each. Address Craft Print Dept. B-48, SCIENCE AND MECHANICS, 49 East Superior St., Chicago 11, Ill.

