



Action photo of the boat powered with a 4½ H.P. Johnson Stream-lined Twin.

A WINTER evening project for the sportsman who wants his own boat for next summer's outings— inexpensive—easily built—a safe and satisfactory performer.

An All-Purpose Portable Boat

Craft Print Project No. 3

BY WILLIAM JACKSON

SPEEDS of from five to thirty-five miles an hour, trolling speeds that delight the fisherman to speeds rivaling racing craft, are possible with the water ways companion described here. For these speeds it requires only from one to ten horsepower, and it may be carried atop an auto for sport in any location. It offers a general purpose boat that fulfills every small-craft need. Weighing 125 pounds, the hull is not only easily loaded and transported atop the auto, but, due to its efficient design and seaworthy proportions, it travels farther and faster on less gas and rows with a minimum of effort. The canvas covered hull is permanently leak proof, so that the boat is always ready for instant use. It is especially well adapted to home workshop construction. The job of building is easy and the cost of materials should not exceed \$18, especially if firm red wood or yellow pine is used. The hull is planked with ¼-inch waterproof plywood, with one sound face side. Since plywood is offered in short lengths, it will be necessary to piece the sheets to cover the entire boat, but this will in no way detract from total strength or appearance.

To begin the construction, saw the form to shape from any rough lumber, and notch for mold frames, mounting this form upon legs similar to a saw horse, at a height convenient to work on. Make full size paper patterns of the transom and

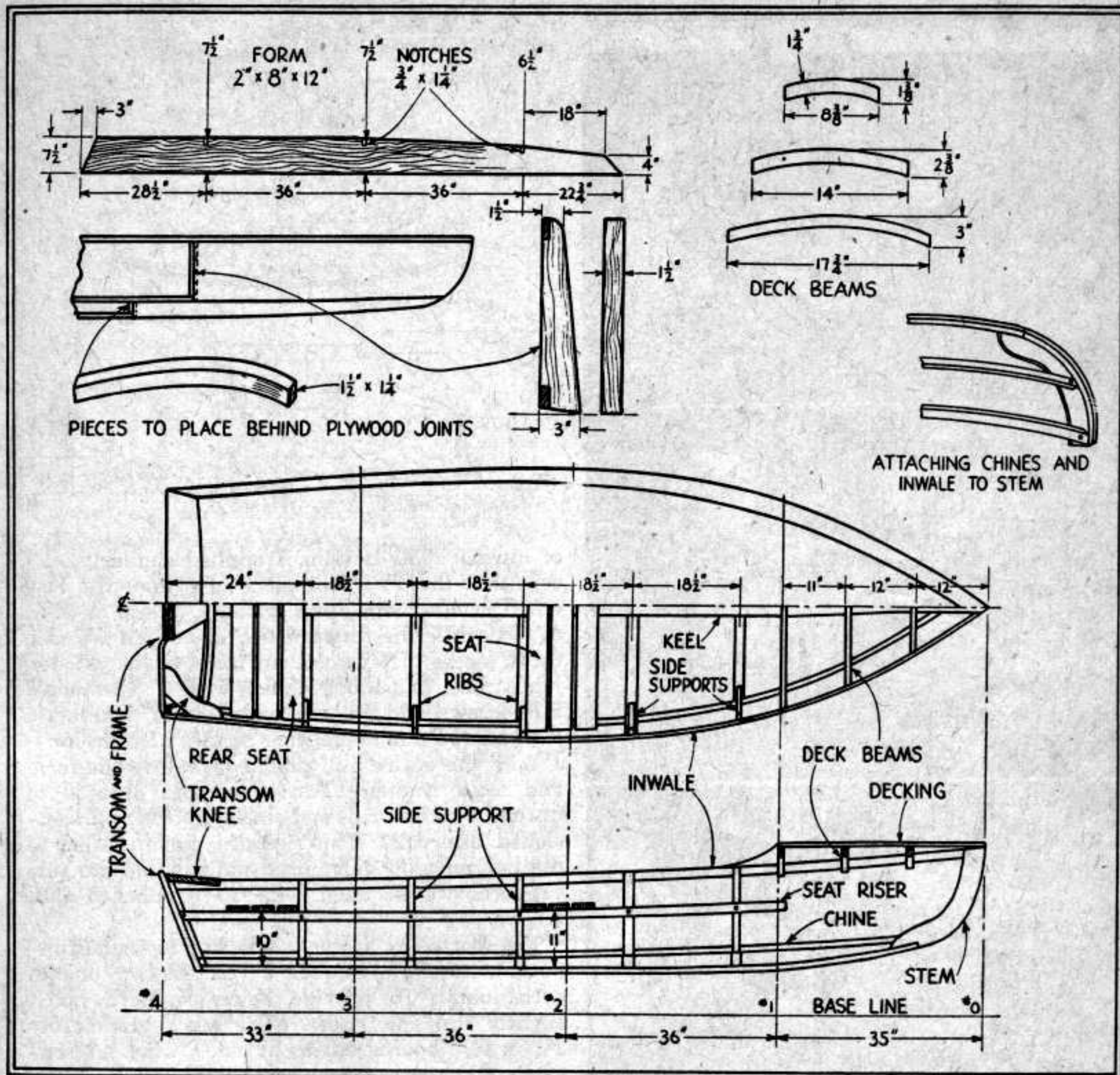
FASTENING AND FINISHING MATERIALS

- ½ Gross ¾" No. 8 Flat Head screws
- 3 Gross 1" # 8 F.H. screws
- 3 Gross 1¼" # 8 F.H. screws
- ½ Gross 1¾" # 10 F.H. screws
- 1 Doz. 2¼" # 10 F.H. screws
- 1# Galvanized shingle nails
- 8 Oz. ⅜" tacks, galvanized, or copper.
- 4 Yds. 8 or 10 oz. double filled canvas 48-inches wide.
- 5 Yds. 8 or 10 oz. double filled canvas 30-inches wide, slit in two pieces.
- 1 Gallon Ferdico Canvas Cement
- 2 Qts. Porch & Floor Enamel
- 1 Qt. Spar Varnish
- 1 Pair 6-foot oars.

BILL OF MATERIALS

Chines	2 Pc.	¾" x 1½" x 12'	
Keel	1 Pc.	¾" x 3" x 12'	
Outside keel	1 Pc.	¾" x 1" x 10'	—spruce, white or red
	1 Pc.	1½" x 6" x 4'	—cedar, white pine
Inwale	2 Pc.	½" x 1½" x 12'	—cyprus, red wood, fir or yellow pine
Seat risers	2 Pc.	¾" x 1¼" x 10'	
Deck Beams	1 Pc.	¾" x 8" x 40"	
Transom	1 Pc.	¾" x 10" x 8"	
Transom Frame	1 Pc.	¾" x 6" x 4"	
Seats	2 Pc.	¾" x 3¾" x 12'	
Molding	2 Pc.	¾" x 1½" x 12'	
Side Supports	1 Pc.	¾" x 3" x 10'	
	1 Pc.	1½" x 3" x 30"	
Floor Boards	10 Pc.	¾" x 2" x 8"	
Transom Knees	2 Pc.	¾" x 10" x 18"	—oak or yellow pine
Stem	1 Pc.	1¾" x 8" x 26"	—oak or yellow pine
Mold Frames	Any rough lumber		
#1, 2, or 3 Forms	Any rough lumber		
Planking, Bottom	1 Pc.	¼" x 48" x 96"	—fir plywood
Sides, deck, etc.	2 Pc.	¼" x 48" x 84"	—face side sound

the mold frames. It will then be an easy matter to lay the material on the patterns so as to conform to outline and to fasten them together. Mold frames Figures 1, 2, and 3 are merely nailed together to be later removed when the hull is planked; but Figure 4 transom and frame



should be solidly fastened together with 1 1/4" Number 8 F. H. screws, forming a permanent part of the boat. Attach cross pieces to the tops of mold frames to prevent misalignment. The transom and all mold frames should be notched for the keel, chines, and inwale, notching only through the frame of the transom. A few nails or screws will hold the transom temporarily to the form while the mold frames are wedged into the notches.

Saw the stem to shape as indicated upon the drawing and bevel the forward edge of the stem to receive the planking. The stem is now temporarily attached to the form. The 3/4" x 3" keel is fitted to the transom notch and then the stem notch, fastening with 2 1 3/4" Number 10 F.H. screws to each joint. Taper the keel from mold number 1 to fit at the stem notch and drill lead holes for all fastenings to prevent splitting.

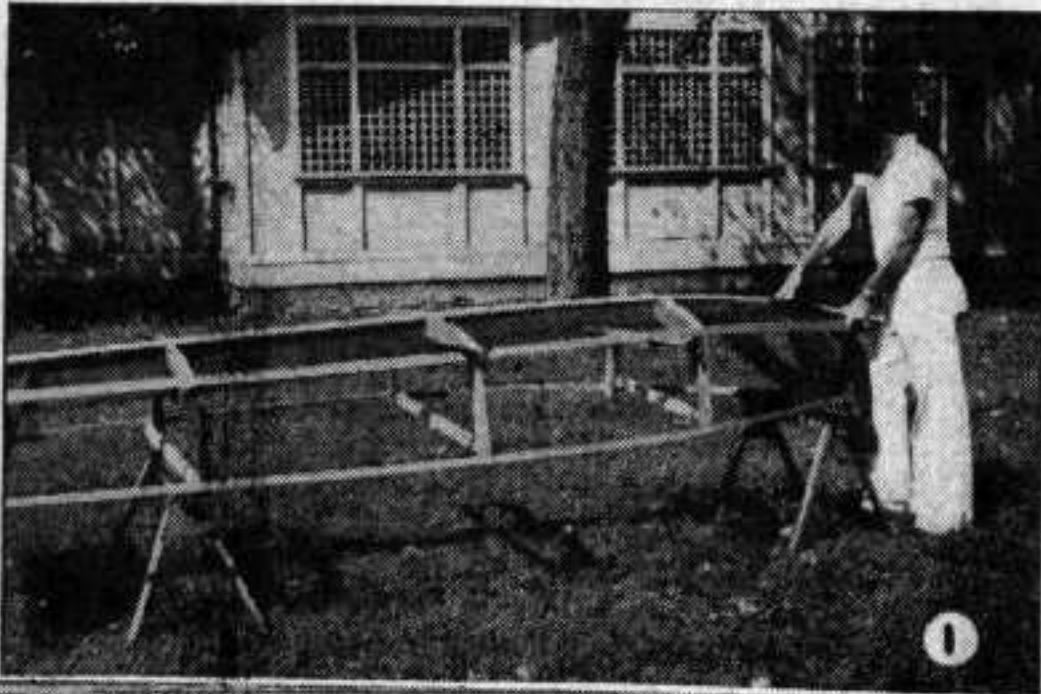
Fasten both chines simultaneously with screws to prevent pulling frame out of shape, attaching chines to the transom notches and bevel-

ing to fit against stem, fastening with 1-1 3/4" Number 10 F.H. screws to each joint. Fasten inwales similarly, using 1-1 1/4" Number 8 F.H. screw, to transom and stem joint.

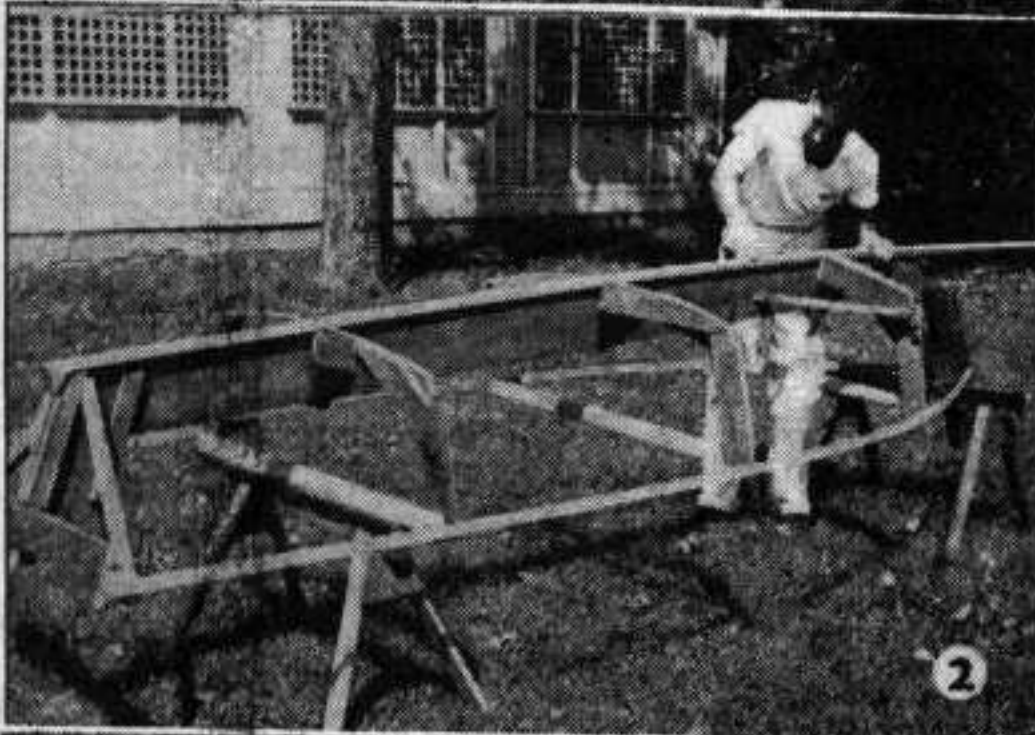
Planking

With the frame finished, flair and trim all joints so that the planking lies flush and even without humps, and prepare to attach plywood. Mark off on keel and chines the relative position of bottom ribs and side supports. The joints in the plywood fall on one of these ribs and side supports, a thicker piece as showing being used to secure plywood joint.

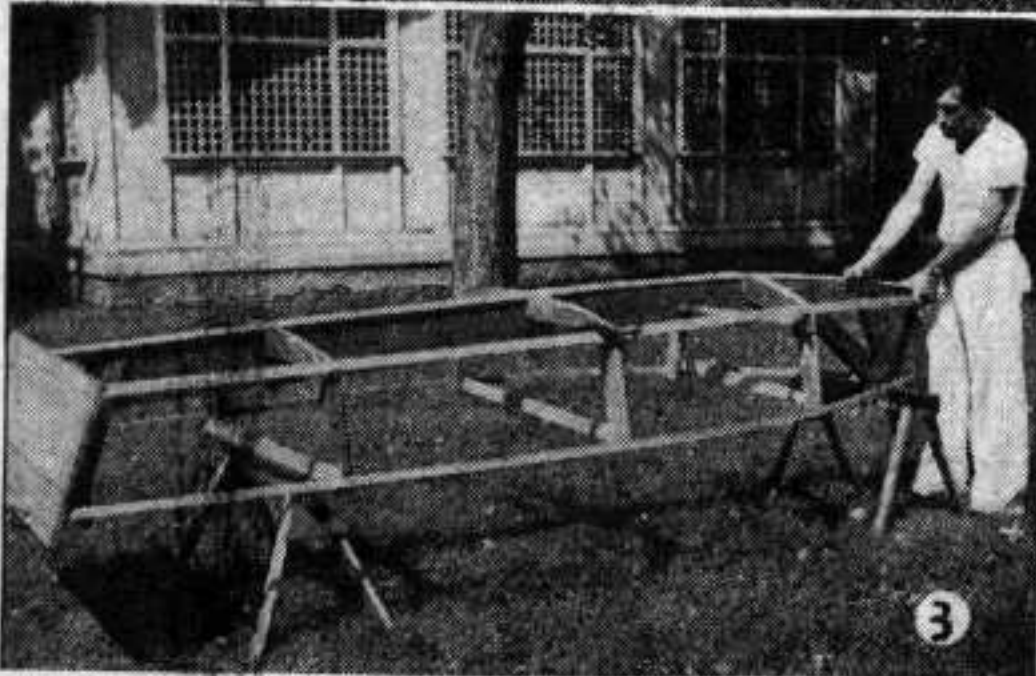
Plank the sides first by placing plywood against sides, marking and sawing to shape. Fasten the pieces to the chines and the stem with 1" Number 8 F.H. screws. Use 1 1/4" Number F.H. screws to secure the plywood to the transom, spacing screws 2 inches apart. Fasten the plywood to inwales with galvanized shingle nails, first drilling lead holes, and clinch the nails on the inside



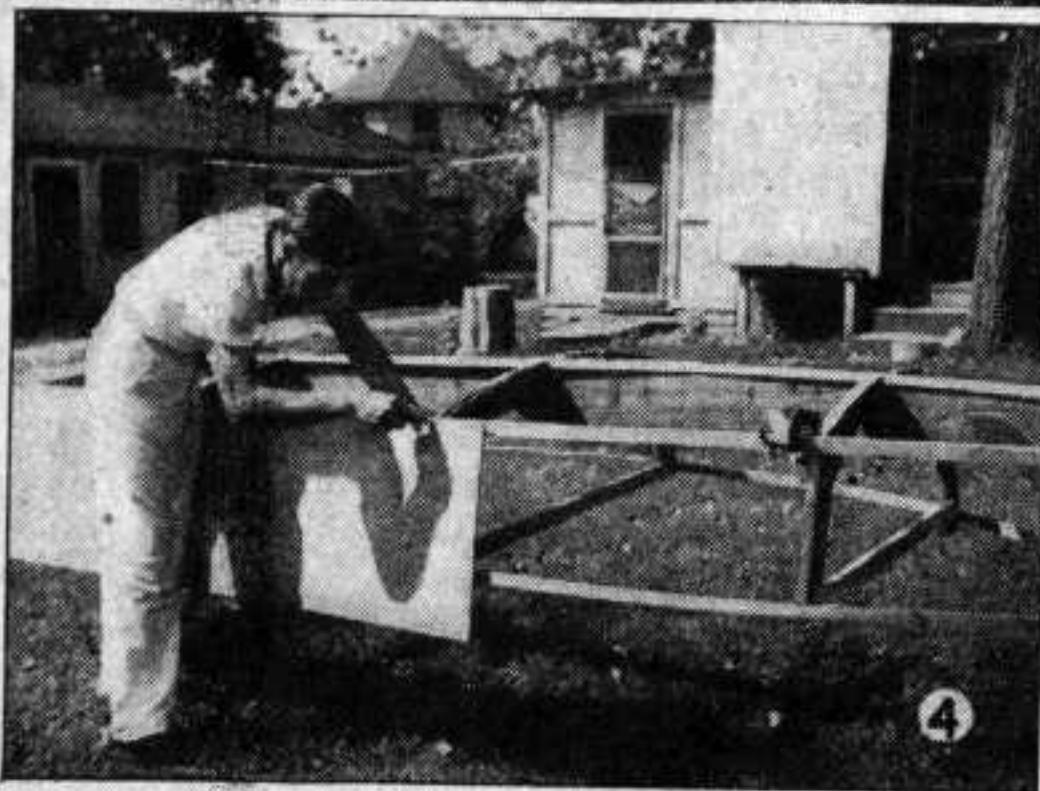
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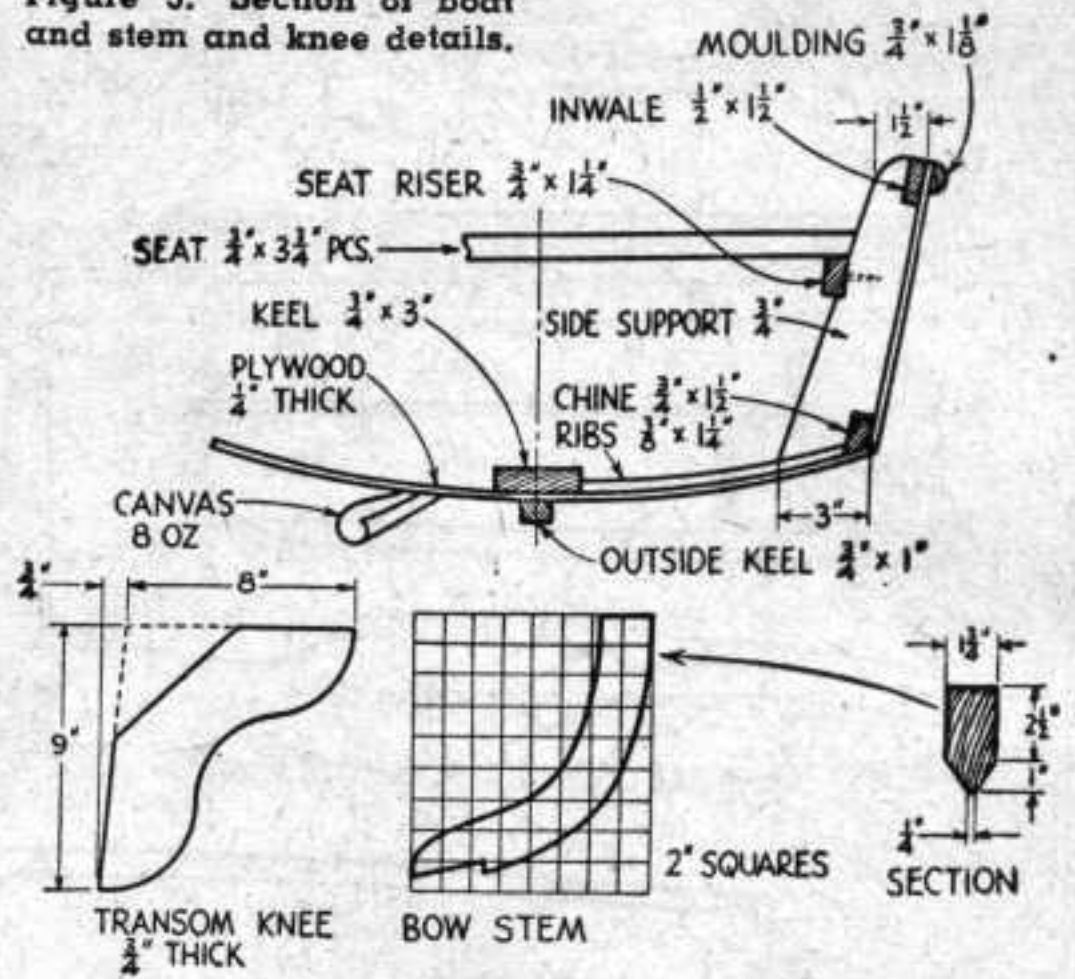
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4

1. Fitting the chines to the stem.
2. Fitting keel in mold frame notches and on form.
3. Completed form ready for planking with plywood.
4. Attaching the plywood to the frame.

Figure 5. Section of boat and stem and knee details.



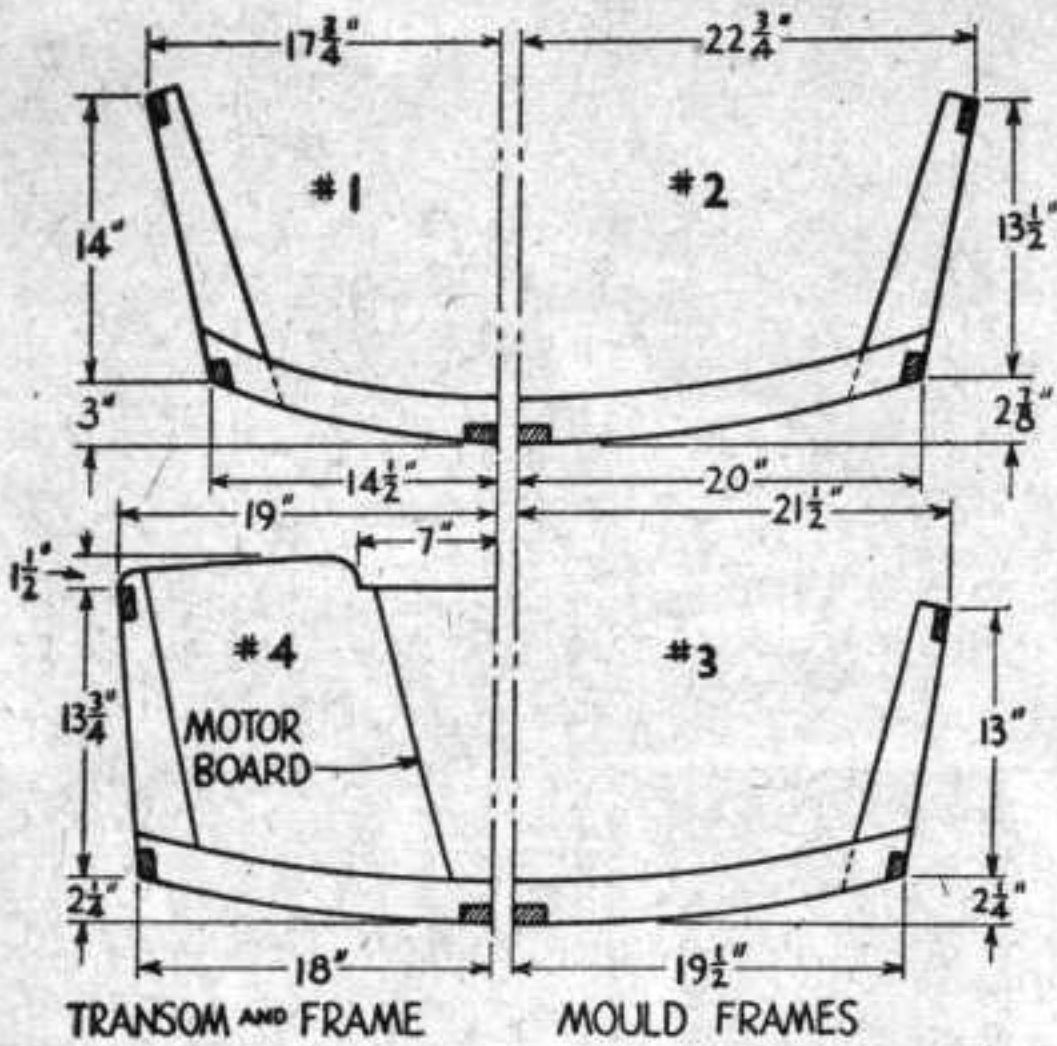
of inwale. The bottom is applied similarly, except that the 4 x 8 foot piece of plywood is fastened in one piece, from transom to end or joint at rib, while the forward end of bottom is made up of pieces of plywood cut from waste. Fasten joints, keel and along chines with 1" Number 8 F.H. screws, and the transom with 1 1/4" Number 8 F.H. screws double spacing screws at transom.

With the entire hull planked, remove the form and mold frames. Turn over and proceed to fasten in bottom ribs and side supports at dimensioned intervals. The ribs are clinch-nailed to the bottom with galvanized nails, while the side supports are fastened with 1" Number 8 F.H. screws.

The seat risers are next attached to frame supports with 1 3/4" Number 8 F.H. screws, one to each joint. To provide better support, notch slightly for seat risers. The seats are merely 3 3/4" x 3 3/4" boards cut to fit sides, with 1/2" separation between boards, fastened to seat risers with 1 3/4" Number 10 F.H. screws. Transom knees are sawn to shape and fastened with 6-2 1/4" Number 10 F.H. screws to each knee. If a deck is desired, the beams are sawn to shape and cut to fit against inwale, and fastened with 1-2 1/4" Number 10 F.H. screws to each joint. Either the waste plywood or composition board may be used for decking. It is applied in two pieces with a joint in the center of the deck. A piece of wood 1/4" x 1 1/4", notched into beams, secures the deck edges, which are fastened with galvanized nails clinched on the inside. Decking along inwales is fastened with 1" Number 8 F.H. screws.

Covering

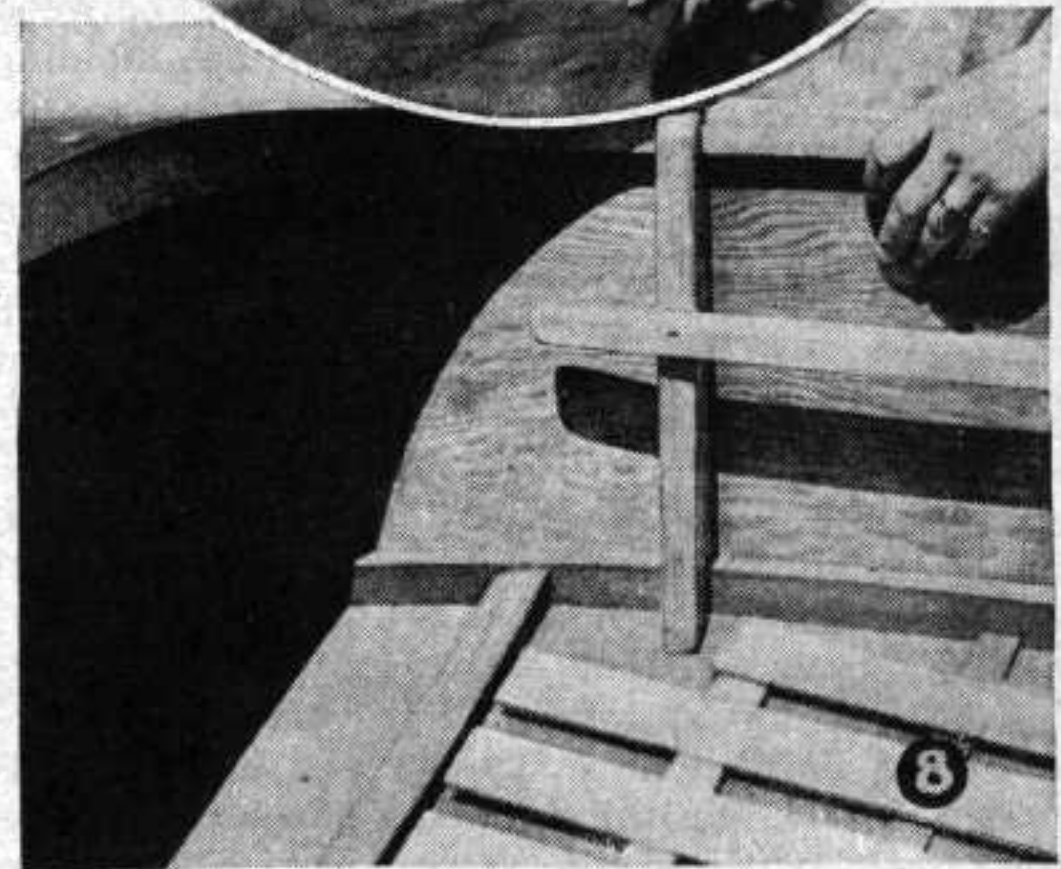
Sand the entire hull smooth and fill joints and screw heads with plastic wood. Round off the chine and transom edges to prevent wear of canvas along these edges. The canvas is applied in three pieces, one piece for the bottom and a piece for each side. The 30-inch width of canvas is slit into two pieces so as to have one piece for



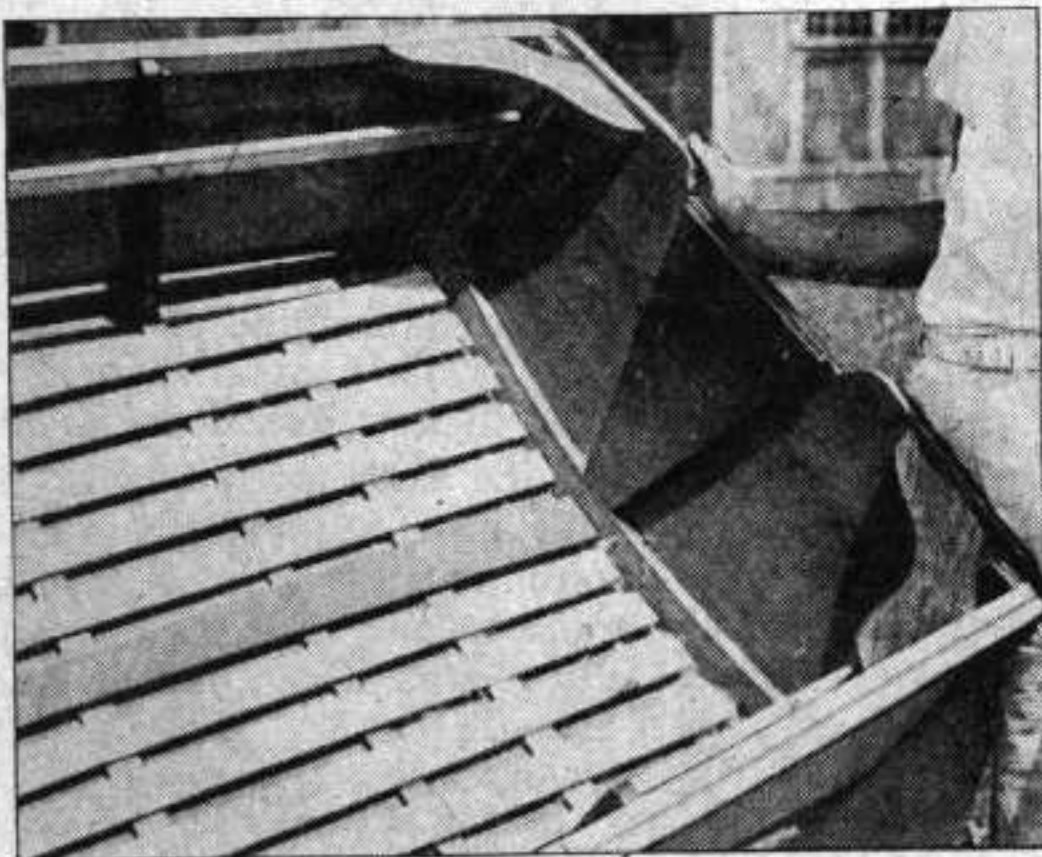
each side of the boat. Apply the bottom first, lapping canvas over chine edges and transom and bringing up along the sides about two inches. Stretch the canvas on the bottom temporarily, then roll it back and proceed to apply a coat of canvas cement to an area three or four feet square. Lay the canvas in place and rub the surface with a pad to insure complete adhesion of cement, cloth and boat. Continue forward—cementing, applying canvas, and rubbing surface—until bottom is completely covered. The two-inch lap over the edges or sides and at the transom is cemented carefully and tacked where necessary. An old paint brush should be used to apply cement. Proceed to cover the sides, cementing similarly and bring side canvas to within $\frac{1}{4}$ " of the chine edge. Cover transom with a separate piece of canvas, applying it so that the lapped edges of the sides and bottom are neatly concealed.

Finishing

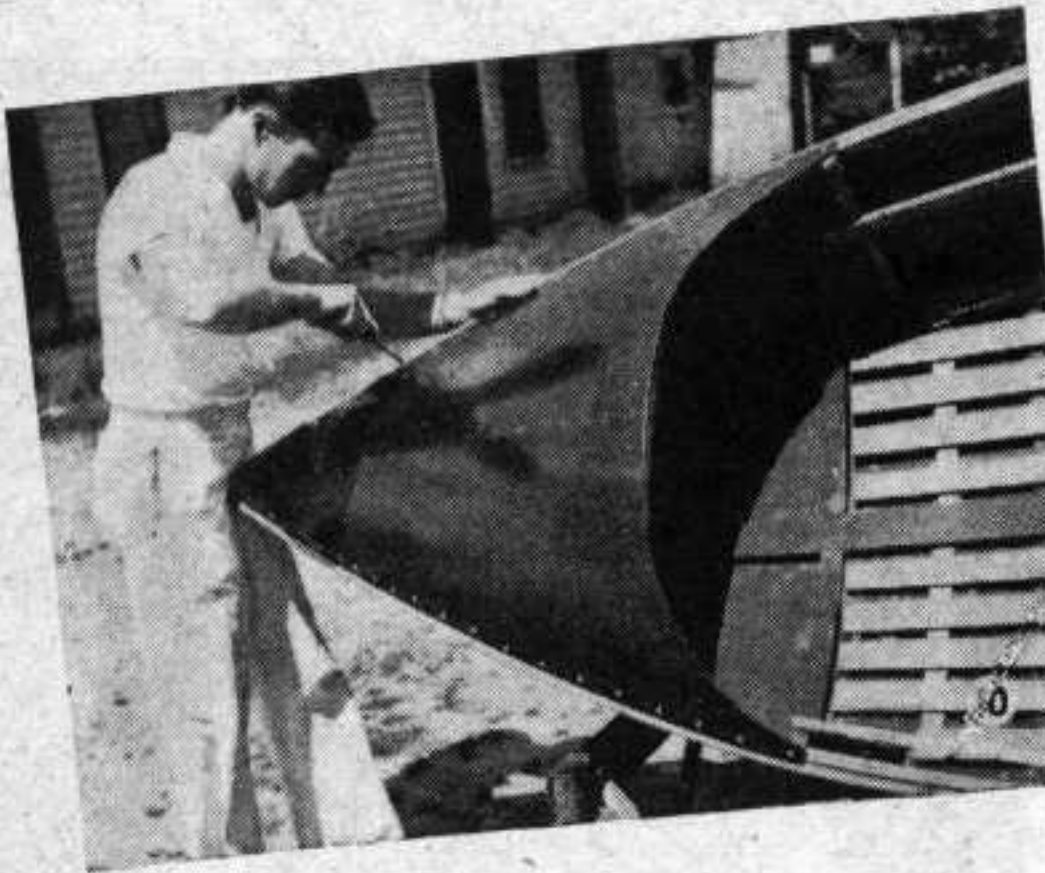
To make a smooth finish the canvas weave must be filled. This is done by thinning the ce-



- 6. Canvassing the bottom.
- 7. Filling the surface of the canvas with thinned canvas cement.
- 8. Showing the side support and bottom rib that secures the plywood joints at bottom and sides.



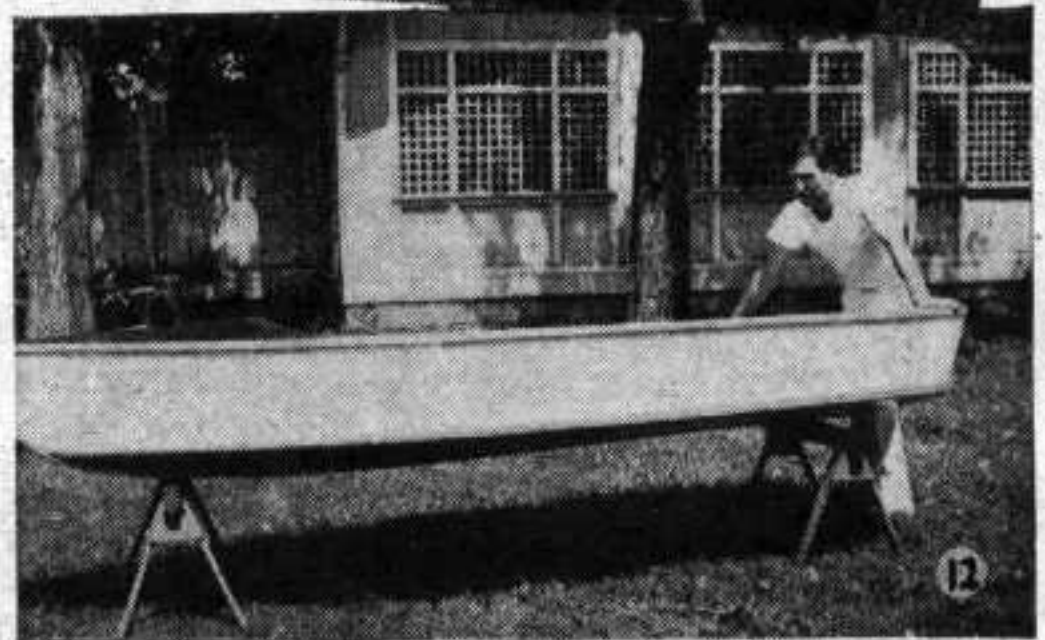
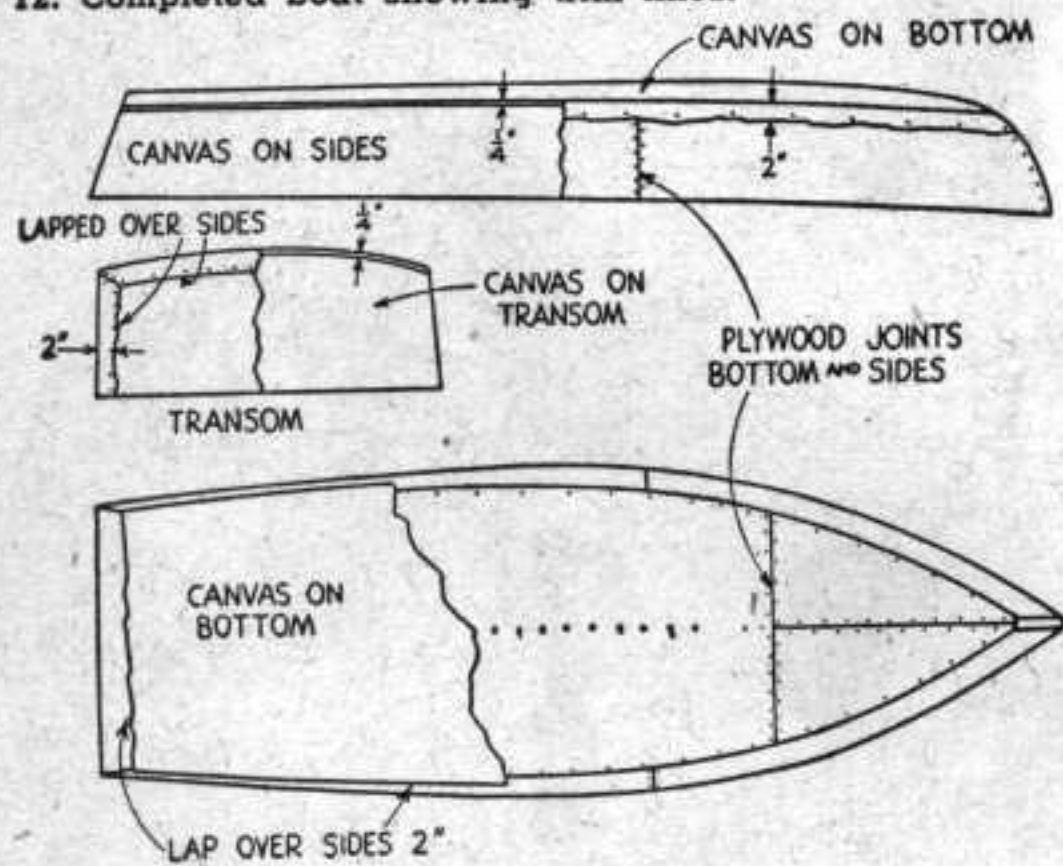
9. Transom details, showing the motor board, knees and transom frame.



10. Fastening the deck which may be either plywood or composition board. Deck is applied in two pieces.

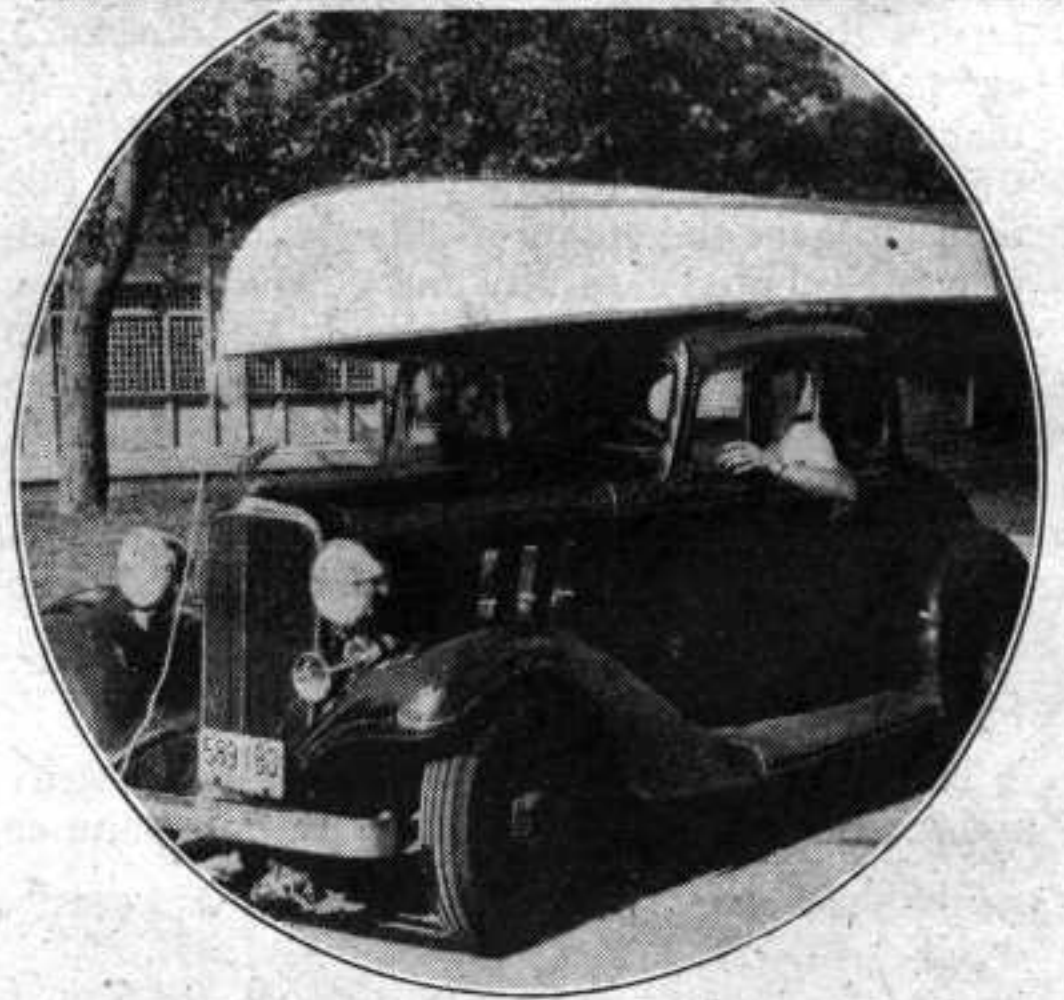
11. Boat showing completed interior.

12. Completed boat showing trim lines.



ment with wood alcohol to the consistency of paint and applying two coats to the canvas surface, allowing ample time for drying between coats, and sanding each smooth. Attach molding strips to upper edges, rounding off edges neatly. Fasten with $1\frac{1}{4}$ " Number 8 F.H. screws. A $\frac{3}{4}$ " x 1" keel strip is attached to the exact center of the bottom, to prevent wear and assist in maintaining a straight course, with $1\frac{1}{4}$ " Number 8 F.H. screws. A piece of metal or wood is bent around the stem to protect this point and attached with screws.

Finish hull by applying three coats of porch and floor enamel to the outside, sanding all but the last coat lightly. If a brilliant finish is desired follow with one or two coats of spar varnish. The inside is painted or varnished as desired, a varnish finish being very trim and attractive. The finishing touches consist of attaching floor boards with $\frac{1}{2}$ " separation. Short strips are inserted between the bottom ribs to support the floor evenly, boards being secured to ribs with $\frac{3}{4}$ " Number 8 F.H. screws. A pair of galvanized or bronze oar locks attached to the sides, an eye bolt at the stem to moor the ship, and a pair of six-foot oars complete the equipment.



13. Portable boat loaded atop a coupe with pad carriers.

To secure the boat to the automobile make four pads, each about 18" long and 4 or 5 inches thick, the covering to be canvas and the inner padding of cotton batting. The boat is secured to the auto top by placing these pads where the hull touches and tying to the auto fore and aft. To insure rigidity of hull, insert an eye bolt in each side through the molding of the boat. A piece of flexible wire rope and turnbuckles attached to these eyes will rigidly secure the hull to the auto.

● Craft Print No. 3 for the All-Purpose Portable Boat, in enlarged size, are available at 25c each. Address: Craft Print Dept. B-48, SCIENCE AND MECHANICS, 49 East Superior St., Chicago 11, Ill.

