

# **SKEETO SKI BOAT**

Designed by William D. Jackson, N.A.





**W**ATER-SKI enthusiasts, who rate their pleasure in mph, learned early that towing skiers behind an ordinary runabout is something like running the family jalopy in a sports car race. Their next step was to design a craft especially suited for their use and that's how SK runabouts came to be.

The first requirement was that SK's be able to convert hp to mph in a way that runabouts never learned to do. Secondly, they had to be able to take the beating a ski-tow boat regularly gets, and, of course, the SK had to have clean lines, safety, and comfort.

**Sawn Frames.** Begin construction by laying out the transom (Fig. 2F) full-size on the poorest or c-side of the  $\frac{3}{4}$ -in. plywood, drawing in the location of the lumber frame pieces. The curved lines are all true arcs and can be drawn most easily by locating the end and mid points and using the arc drawing jig (Fig. 5). When finished, bandsaw the transom to shape and clamp stock for the bottom and side frame pieces in place, using the locating lines as a guide and tracing the outline of the plywood on the stock. Next mark the location of the lap joints between the 2x4 cross member and the side pieces.

Now saw the frame pieces to shape and attach to the plywood with glue and #8 x 1½-in. fh woodscrews spaced 2 in. apart in a staggered double row. Next notch the 2x4 stock, trim its ends to allow the side battens to be attached later, and also make up the transom knee (Fig. 3D). After checking the fit of these parts, drill locating holes for screws through the plywood in the centers of their outlines. Then coat the contacting surfaces with glue and assemble the parts with #12 x 2¼-in. fh woodscrews spaced 4 in. apart.

The motorboard and the remainder of the framing can now be cut, fitted, and attached in the same way. Frame #3 (Fig. 2C) can be made up as was the transom, laying it out directly on the ¾-in. plywood bulkhead, but a full-size drawing on heavy paper must be made for Frame #2. Using one of your sheets of plywood stock as a table, draw in the base line and centerline, then follow dimensions in Fig. 2B to complete the layout. Transfer the outline by placing stock under the layout and running a toothed tracing wheel along the lines.

When all parts are marked, cut them to shape and test their fit by trial assembly.

Then attach gussets to the side members with glue and 1-in. ringed nails and go on to assemble the frame, working directly over the pattern to ensure accuracy.

When the glue has dried, set up your bandsaw to bevel the lower edge of the transom and also to "relieve" the lower edges of frames #2 and #3. Relieving consists of cutting back the edges ¾ in. as in Fig. 2B to eliminate notching for individual stringers.

**Stem and Sheer Plate.** Next make a full-size drawing of the stem assembly (Fig. 4A). To draw the curved lines, drive finishing nails partway at each of the reference points, bending a ¾-in.-sq. lumber batten along them. Be sure the batten makes a fair curve without flat spots, then use it as a guide to draw the line. When finished, transfer the shape of the lower stem to 2x10 stock. Cut this out and attach temporarily to the keelson upright with ¼-in. carriage bolts.

The upright should by this time have been ripped to 2 in. for all except 16 in. of its length as in Fig. 4A.

Mark the shape of the fore end of the upright and saw it to shape after removing the bolts. Now reassemble the stem and keelson with glue, cutting the bolts to length as necessary and countersinking the heads along the lower edge. Next trace this assembly on ¼-in. plywood and cut it out, trimming it flush with the aft end of the stem. Use this piece as a pattern to cut an identical piece and then attach one to each side of the assembly with glue and evenly-distributed 1-in. ringed nails.

Follow this by cutting and beveling the upper stem (Fig. 4C) and attach it to the fore edge of the assembly with glue and three woodscrews. When the glue has dried, remove the screws temporarily while you fair the lower end of the beveled stem to match the curve of the assembly. Then replace the screws, countersinking their heads deeply to allow further fairing later. Now is a good time to rip the 2⅜-in.-wide keelson and attach it to the upright (Fig. 3B), fairing its fore end to follow the curve of the stem.

A somewhat reverse of the technique to make the stem is used to make the sheer plates (Fig. 4B). After drawing a full-size pattern, transfer its shape directly to ¼-in. plywood. Saw it out, then use it as a pattern for the remaining sheer plate and lumber cores. Assemble the cores and facings with glue and ringed nails, then back up the joints between the lumber parts with plywood plates. Join the halves of the plate by attaching the breasthook (Fig. 3E).

**Bow Subassembly.** Your next step is to attach frame #2 to the keelson-stem assembly, butting the fore side of the floor member against the aft end of the stem. Check the fit of the frame to be sure it sets square with the keelson, then attach it with glue and #8 x ¾-in. fh woodscrews driven through the floor plate and at angles through the lower frame members into the keelson upright. The final step in securing this frame is to attach the reinforcing block at its aft side (Fig. 3C).

When the glue has dried, set the sheer plate in place and notch the frame beam to fit it. Coat the contacting surfaces with glue and attach the plate with two #8 x 1¾-in. fh screws at each side and two countersunk, #12 x 3-in. fh screws into the stem assembly at the bow. Draw up tight.

Now make a cardboard pattern of the area inside the joint between the upper stem and the breast hook and use this as a guide to cut the stern knee (Fig. 3C) from 2x8 stock. The knee should be cut slightly oversize to allow trimming to a close fit.

Next layout and cut beam #1 from 1x6 stock and notch it to fit the sheer plate as in Fig. 2A. The exact shape of the ends of this beam will be determined when fairing the framework prior to planking. Use a piece of 1x4 stock for the centerline deck stringer (Fig. 3A), tapering the fore end to fit the joint between the sheer plate halves. Glue in stock about ¾-in. thick as a filler block beneath the fore end of the stringer and trim it away as necessary to allow the stringer to curve smoothly, yet provide ample support for the deck. Mark the position of the stringer on the beams, then cut notches and secure it.



While the assembly is right side up, measure back along the keelson upright and mark the locations of frame #3 and the transom. Set up these frames in the same way as you did #2 frame and then attach 1/4-in. plywood gussets to each side of the transom knee and the upright support for #3 frame. Before turning the framework, rip 1 1/4-in. wide stock and install the sheer clamps.

Begin by securing the clamps at the sheer plate notch (Fig. 3A) with three screws, then fitting them into notches at frame #3 and the transom. Trim the sheer clamps flush with the aft face of the transom, before turning the framework to trim the keelson assembly in the same way.

**Framework Setup.** Set up the framework by clamping strips of lumber to the beams to raise it to a comfortable working height. Adjust the length of each support so the keelson is level between the transom and frame #2 and the frames, plumb and square.

Take time now to rip an 84-in. length of clear lumber for use as a straightedge and set the ripped edge along the aft bottom of the keelson. Sight along the joint between them for gaps and trim the high spots with a plane. A 1/8-in gap here can mean the difference between a smooth-riding boat and a horsepower-wasting, porpoising tramp.

Next make up the chine knee as in Fig. 4D and install it on top of the stem (Fig. 3C). Then notch the transom for the chine strips and clamp both strips there while springing them into place along the frames and into the chine knee. Work the strips simultaneously to prevent wringing the framework out of shape. As the chine strips are sprung, fit them into notches at each frame, cutting and beveling the notches to match the curve of the chine line.

When the strips are almost seated, clamp them in place and run a hand saw in the notch alongside each one to do the final fitting. Fasten the strips with glue and one #8 x 1 3/4-in. *fh* screw to each frame and two screws driven at the chine knee.

There are ten bottom stringers in all to provide a bottom that can take the punishment a ski-tow boat gets when running wide open. Begin by installing a tapered 8-ft. length of 1x4 stock (Fig. 3B) with its outer edge approximately parallel to and 25-in. from the centerline. Then add three 10-ft. stringers between this and the keelson, being sure they are evenly spaced. The outboard stringers are ripped and spaced as in Fig. 3B.

**Fairing and Planking.** Before attaching plywood planking to the framework, all surfaces must be faired or trimmed to provide maximum contact with the plywood and present a structure over which planks can be attached smoothly. To do this, use a 48-in. length of 1/4-in. plywood as a fairing batten, bending it over the framework from keelson to chine. Use a wood rasp, sander, or portable planer to trim away the high spots and bevel the stringers. After checking and fairing at each frame, repeat the process holding the batten at an angle to check between frames.

Begin planking by shaping the aft edge of two panels as in Fig. 7B. Then clamp one panel in place (Fig. 6A) with the pencil line at the aft edge of the transom outer frame and one 8-ft. edge aligned with the keelson centerline. Clamp the panel in place and then reach under the framing to trace the outlines of the stringers on it. Fit the opposite aft bottom plank, butting the edges along the keelson centerline.

Now remove the panels and drill 3/32-in. locating holes at 12-in. intervals in the centers of the outlines and connect the holes with a pencil line on the outside of the panels. Coat the contacting surfaces of the panels and stringers with glue and replace them, driving 1-in. ringed nails through the locating holes, then drilling pilot holes and driving #8 x 1 1/4-in. *fh* screws at 2-in. intervals, staggering the screws along the bottom stringers.

At the fore end of the installed planks, glue in filler strips of 3/4-in. softwood, fairing the strips, (Fig. 1) lengthwise so the fore bottom planks can lap the aft planks. Then make a pattern for one fore plank (Fig. 6A) from cardboard, check its fit on each side of the centerline, and transfer its shape to plywood, being sure that you have a pair with the best side of the plywood outside. Use the same technique for installing these as you did for the aft planks, but soak the fore ends with water to make them pliable enough to be drawn in place.

When using screws to draw the panels in, place washers or tabs of wood under the heads to prevent damage to the panel. A hot electric iron should be run over the wet plywood at the very tip to make it easier to work. When both panels fit, attach them with glue and screws along the stringers and with bedding compound and 10–24 x 1-in. *fh* brass machine screws at the lap joint. Peen the ends of the screws after nuts and washers are drawn up snug.

**Side Planks.** Now fair the area to be covered by the side planks (Fig. 6A) in the same way as you did the bottom. Due to considerable flare toward the bow, you'll have to glue filler pieces to the sides of the chine strip from #2 frame forward (Fig. 6), and trim away the excess stock while fairing. Also measure back 48 in. from the bow to locate the transition joint (Fig. 6D) at which the seam between the bottom and side planks changes from a lap joint to a butt joint. Trim the bottom planks flush with the chine aft of this point. Forward, draw the chine line on the outside of the plank, then trim along it with a circular saw set at 1/2-in. depth. Determine the angle necessary for the butt joint by testing with a piece of 1/4-in. plywood.

Next cut two 4x8-ft. panels of 1/4-in. plywood lengthwise to form the four panels needed for side planking. Attach the first to the aft side, then fasten 4-in. strips of 3/4-in. plywood to the fore end of the panel as a butt joint batten (Fig. 6E). Coat the contacting surfaces with bedding compound and use bolts to secure the batten to the panel. Now fit and attach the fore side panels, butting their aft edges on the centerline of the battens.



When finished, trim the seams and fore edges of the side planks and install and shape the outer stem (Fig. 6F). While the hull is upside down, apply glass cloth and tape to the bottom planks and seams. Follow the, manufacturer's directions closely, then paint the bottom with a resin-based paint such as Polypoxy. The hull is now ready to be turned (with help from a good many friends) and set on well-padded cradles while you continue construction.

**Topside Framing.** Begin your work topsides by marking the location of beam #4 (Fig. 3C) and make a cardboard pattern of the area from the sheer to the side stringer. Then lay out and cut the beam and knees, shaping the ends according to the pattern.

Next make another pattern by tracing the outboard end of the beam of frame #2 and use this as a start to lay out the dashboard beam (Fig. 10B). When this is ready, clamp 1x2 stock to the beams, locating as in Fig. 3A and fitting them in notches so they form a fair curve. Decide whether you'll have your steering wheel port or starboard, then allow the deck stringers to extend on that side to carry the dashboard.

The seats and well assembly (Figs. 8 and 9) should be made up and installed now before the carlins are in place. Then clamp carlin stock to the deck beams, locating as in Fig. 3A, and sight along them to make sure they are fair. Re-adjust as necessary, then cut notches and secure with glue and screws. Rigging of steering cables (Fig. 10C) completes all work necessary before fairing for decking.

**Brightwork Decks.** Follow this by cleaning the sawdust from the interior of the hull with a vacuum cleaner and ap-

plying four coats of sealer and one of varnish, carefully avoiding areas to be glued. Clamp your first deck panel to the center bow section so the edges land on the centerlines of the outboard deck stringers. Mark this as you did the planking panels, including cutouts (Fig. 7A) for the cockpit. Cut the panel to shape and then go on to fit and cut the remaining deck panels. Use the larger cut-off pieces to make facings for beams #2 and 4, and for the exterior of the transom, making paper patterns to ensure accuracy.

Now coat contacting surfaces of the deck panels and stringers with glue and attach with ringed nails spaced at 4-in. Drive the nails to within 1/16-in. of the surface, then go back and set them 1/32-in. below with a nail set. Fill over the nail heads with wood putty that has been stained to match the plywood. When this has dried, trim the fills flush with the surface and go on to smooth the entire deck with *medium* and *fine* grades of abrasive paper.

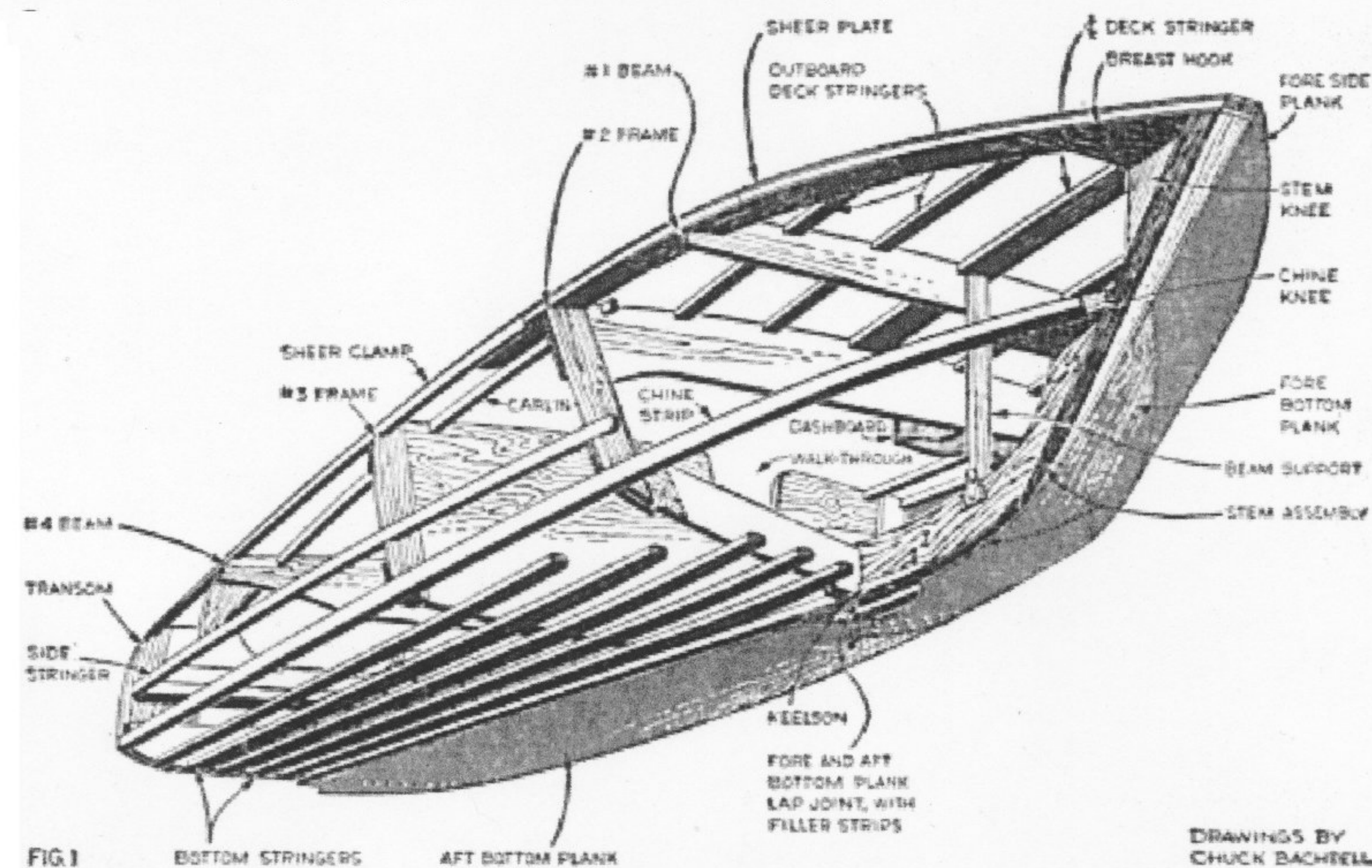
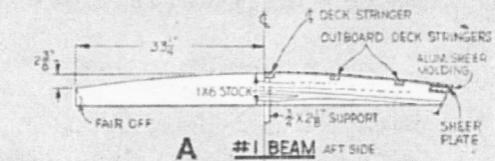


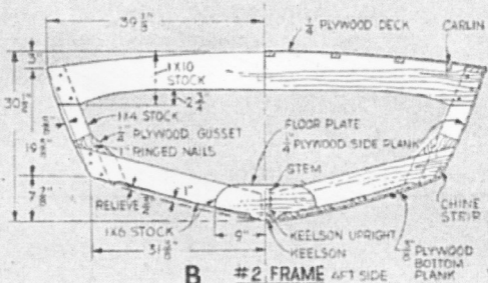
FIG. 1  
DRAWINGS BY  
CHUCK BACHRELL



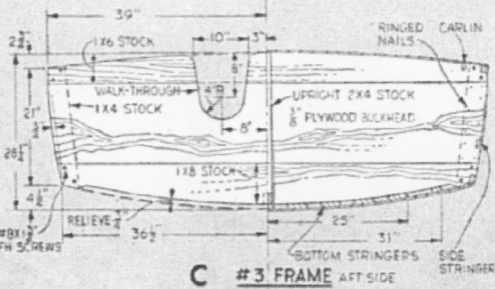
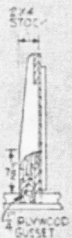
FIG 2



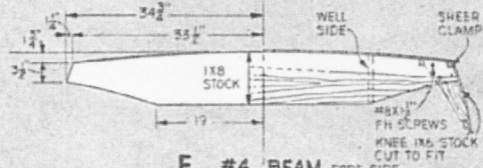
**A #1 BEAM** AFT SIDE



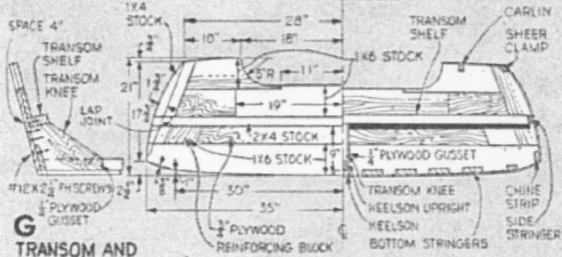
**B #2 FRAME** AFT SIDE



**C #3 FRAME** AFT SIDE



**E #4 BEAM** FORE SIDE



**F TRANSOM** FORE SIDE

**G TRANSOM AND KNEE ASSEMBLY**







## MATERIALS LIST—SKI-TOW BOAT

Amt. Req.	Size and Description	Use
<b>AFRICAN 5-PLY MAHOGANY OR FIR EXT, A-C PLYWOOD</b>		
5	1/4" x 4' x 8'	sides, deck, transom and beam facings
1	3/8" x 4' x 7'	#3 bulkhead, seat bottoms seat backs
1	1/8" x 3' x 4'	
Mahogany plywood and finishes available from Harbor Sales Co., 1501. Warner Street, Baltimore 30.		
<b>FIR 3-PLY EXTERIOR A-C PLYWOOD</b>		
3	3/8" x 4' x 8'	bottom planks, accessories
1	1/4" x 4' x 8'	sheer plates, gussets, breasthook
1	3/4" x 2' x 7'	transom

### LUMBER

1	(2x10) x 60" hemlock	lower stem
1	(2x8) x 36" hemlock	chine and transom knee
1	(2x6) x 6' hemlock	stem knee, upper stem
2	(2x4) x 12' spruce, fir	keelson upright, framing reinforcing blocks
1	(1x10) x 12' spruce, fir	beams, well sides
2	(1x8) x 8' spruce, fir	beams, dashboard
7	(1x6) x 10' spruce, fir	beams, framing, sheer plates
15	(1x4) x 10' spruce, fir	stringers, carlins, sheer clamps, keelson
2	3/4 x 2" x 14' oak	chine strips, outer stem

Amt. Req.      Size and Description

### FINISHES AND FASTENINGS

1 1/2 qts.      epoxy-base marine paint

1/2 pt.	epoxy-base trim paint
1 gal.	<i>Firzite</i> plywood sealer
3 qts.	spar varnish
3 qts.	mahogany paste filler
Above available from Pettit Paint Co., Belleville, N. J.	
1 qt.	Stay-Tite neoprene bedding compound
3 lbs.	Weldwood plastic resin glue powder
4 gr.	#8 x 1 1/4" fh woodscrews
1 gr.	#8 x 1 1/2" fh woodscrews
1 gr.	#8 x 1 3/4" fh woodscrews
3 gr.	#8 x 1" fh woodscrews
4 doz.	#12 x 2 1/4" fh woodscrews
12	#12 x 3" fh woodscrews
1 gr.	10-24 x 1" fh brass machine screws
2 lbs.	14 ga. x 1" Anchorfast ringed nails

(Everdur or h.d. galv.)

### FITTINGS

1	15" steering wheel w/22° mount
35 ft.	1/4" dia. nylon-covered steel cable
4	2" "S" hooks
2	7" cable tensions
2	2" dia. swivel pulleys
5	2" dia. fixed yoke pulleys w/mounting strap (bow light, bow handle, ski-tow hooks, transom handles, 24" stern light)
Above items are available from Crest Marine Hardware Co., Inc., 2222 So. Figueroa, Los Angeles, California.	
1	Hy and Dry dash compartment. Available from Tempo Products Co., 2062 E. 70th, Cleveland, O., \$14.95.
1	12 x 65" sportshield
24 ft.	1/4" aluminum U-shape molding
35 ft.	aluminum sheer molding
15 yds.	4" fiberglass tape w/resin
10 yds.	38" fiberglass cloth w/resin
Available from Herter's Inc., Waseca, Minnesota.	



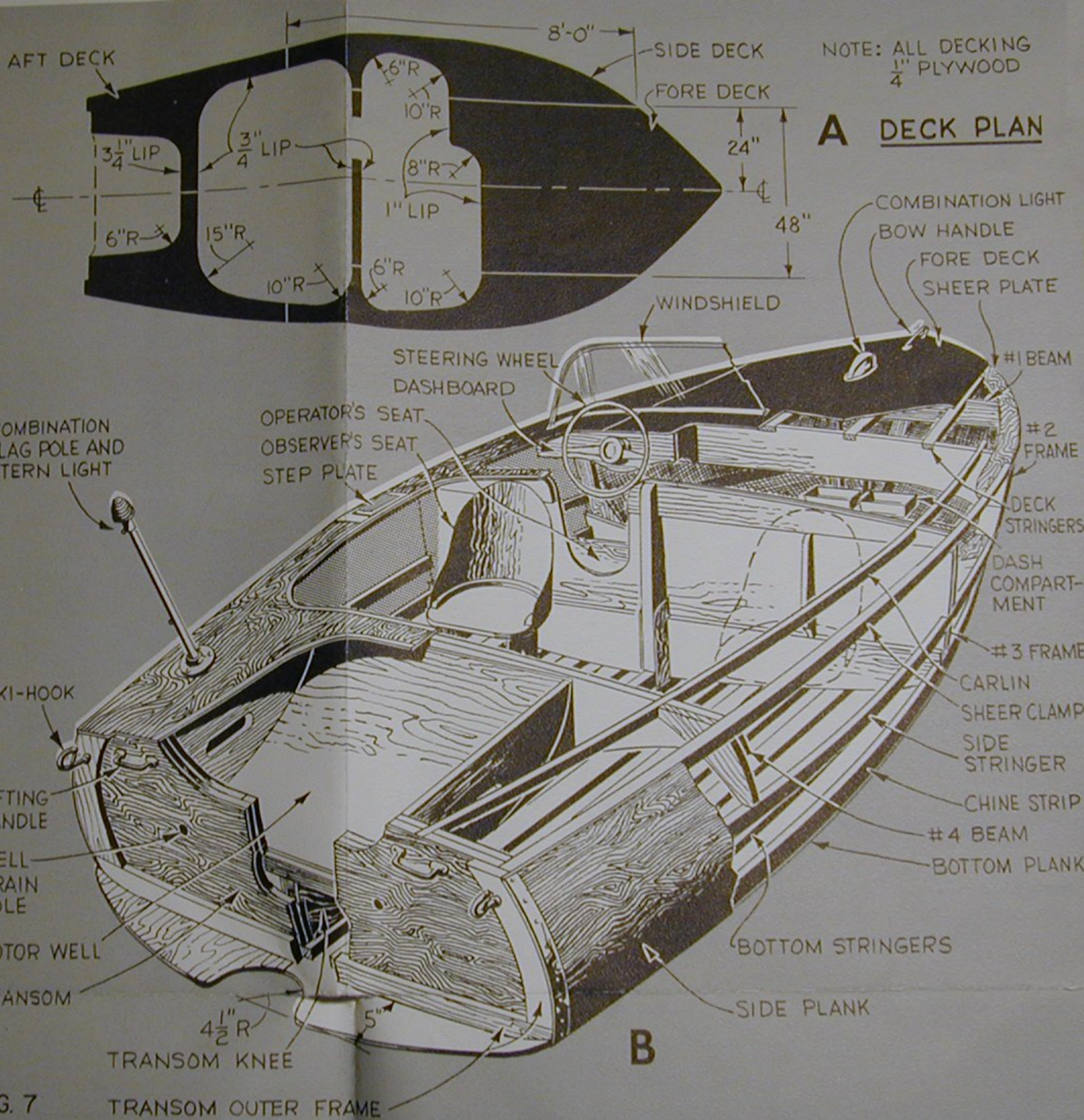


FIG. 7

TRANSOM OUTER FRAME



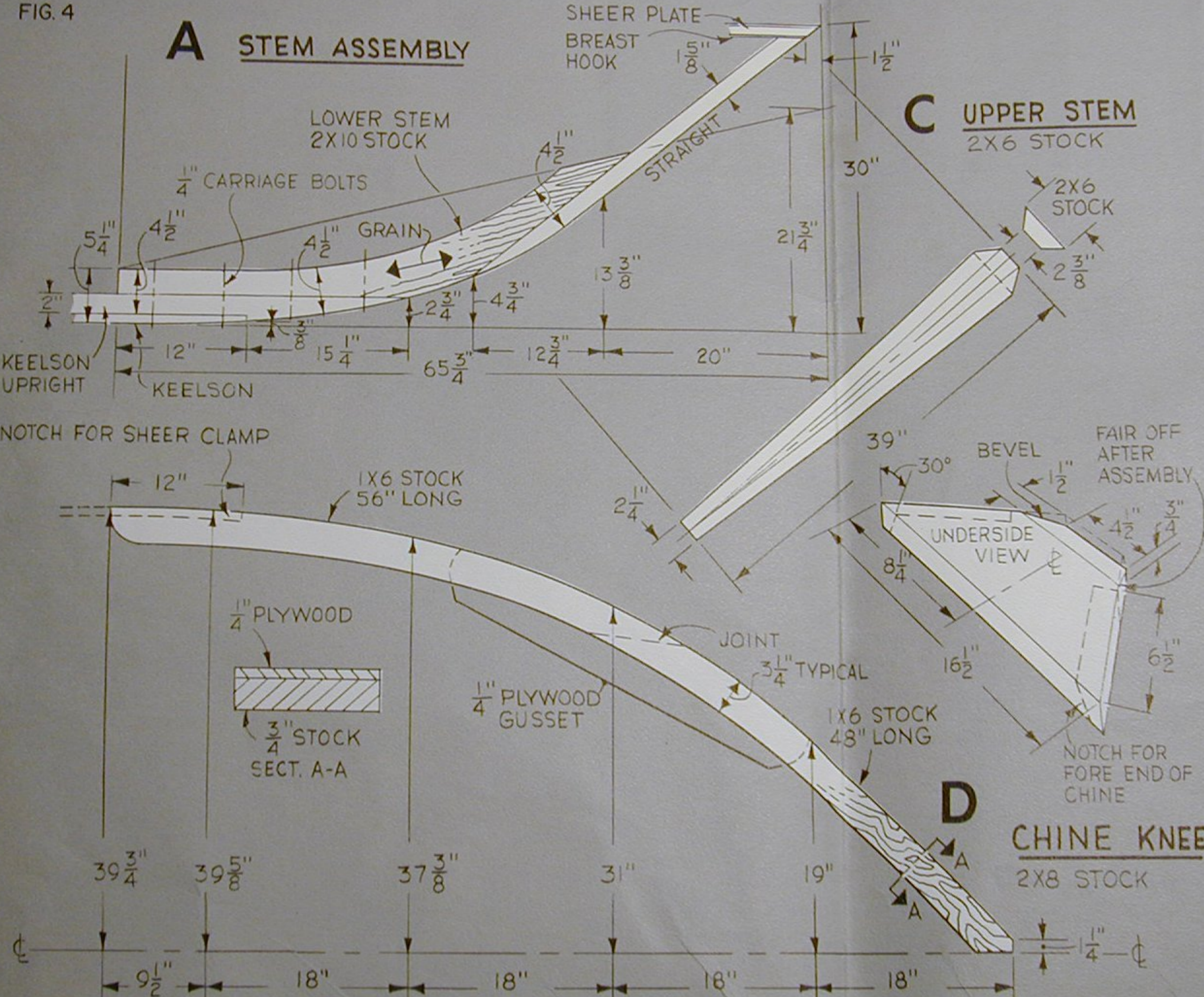
FIG. 4

**A** STEM ASSEMBLY

SHEER PLATE  
BREAST  
HOOK

LOWER STEM  
2X10 STOCK

**C** UPPER STEM  
2X6 STOCK



**B** SHEER PLATE



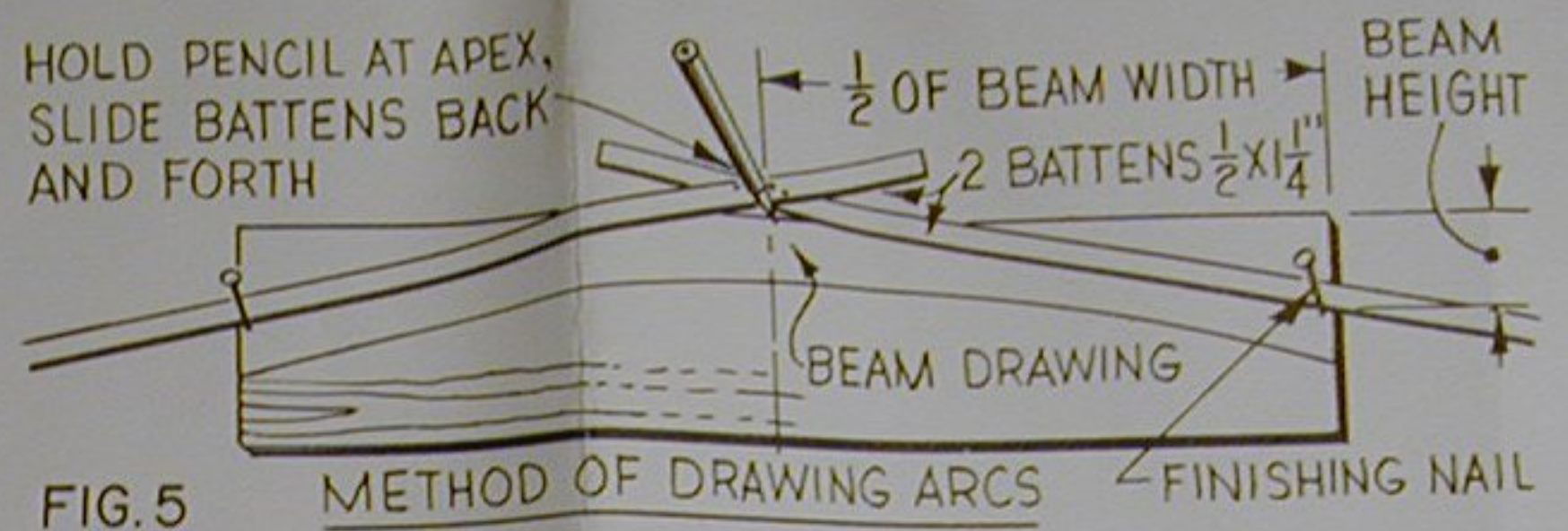


FIG. 5 METHOD OF DRAWING ARCS

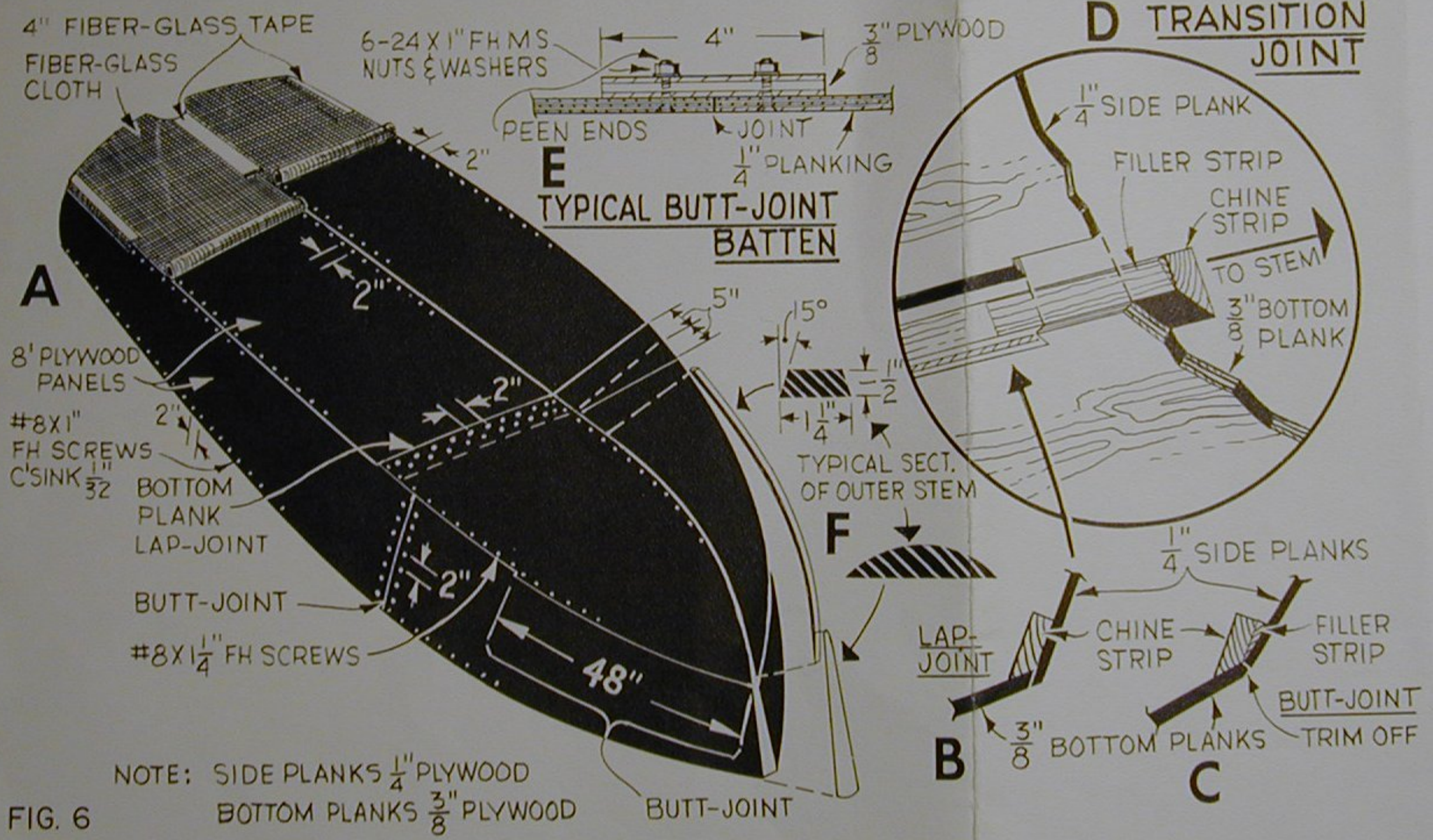
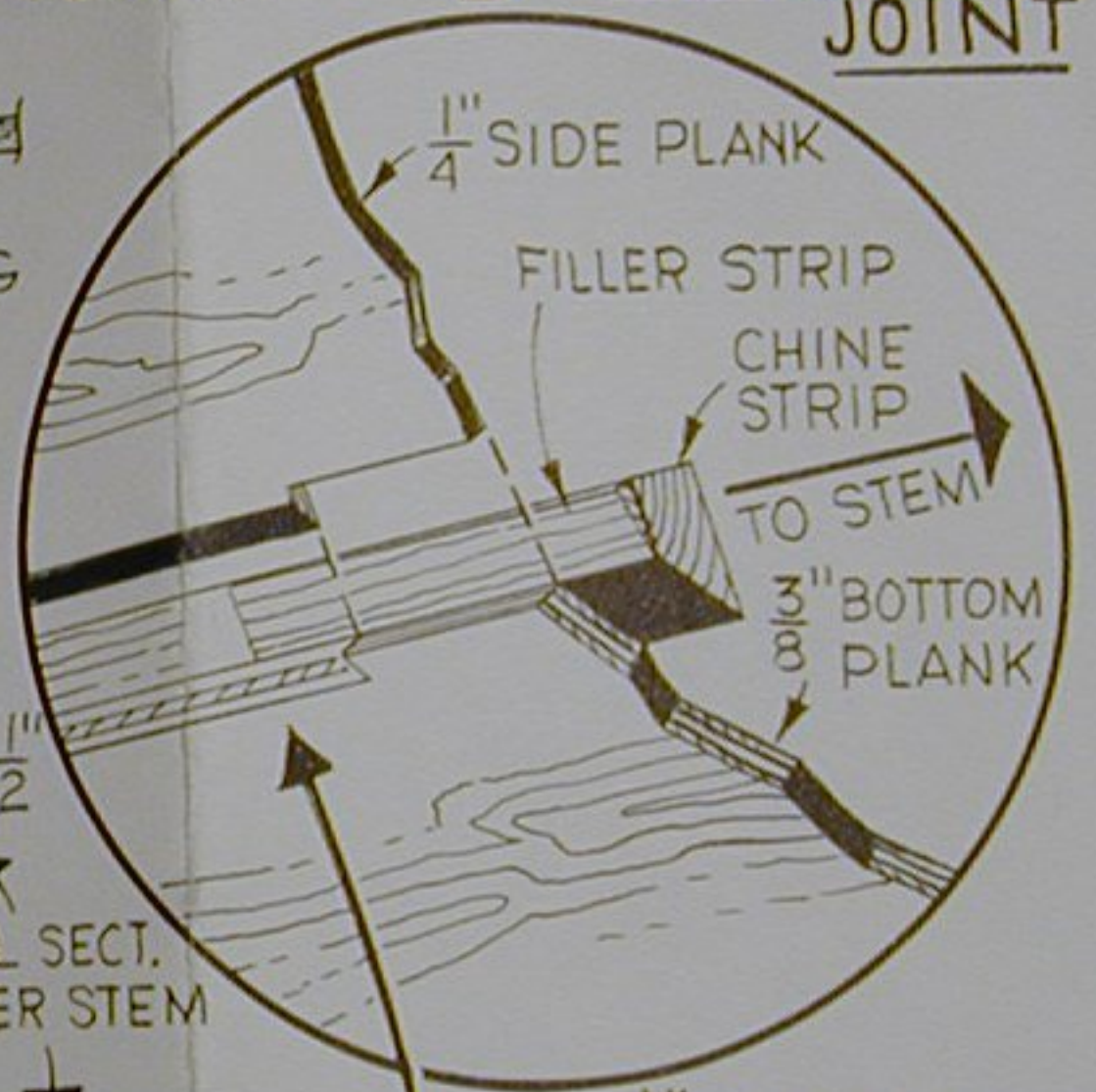


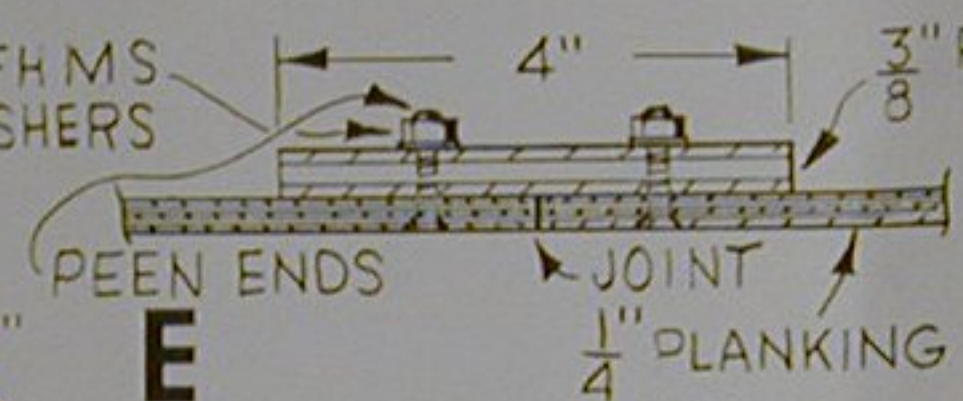
FIG. 6

NOTE: SIDE PLANKS  $\frac{1}{4}$ " PLYWOOD  
 BOTTOM PLANKS  $\frac{3}{8}$ " PLYWOOD

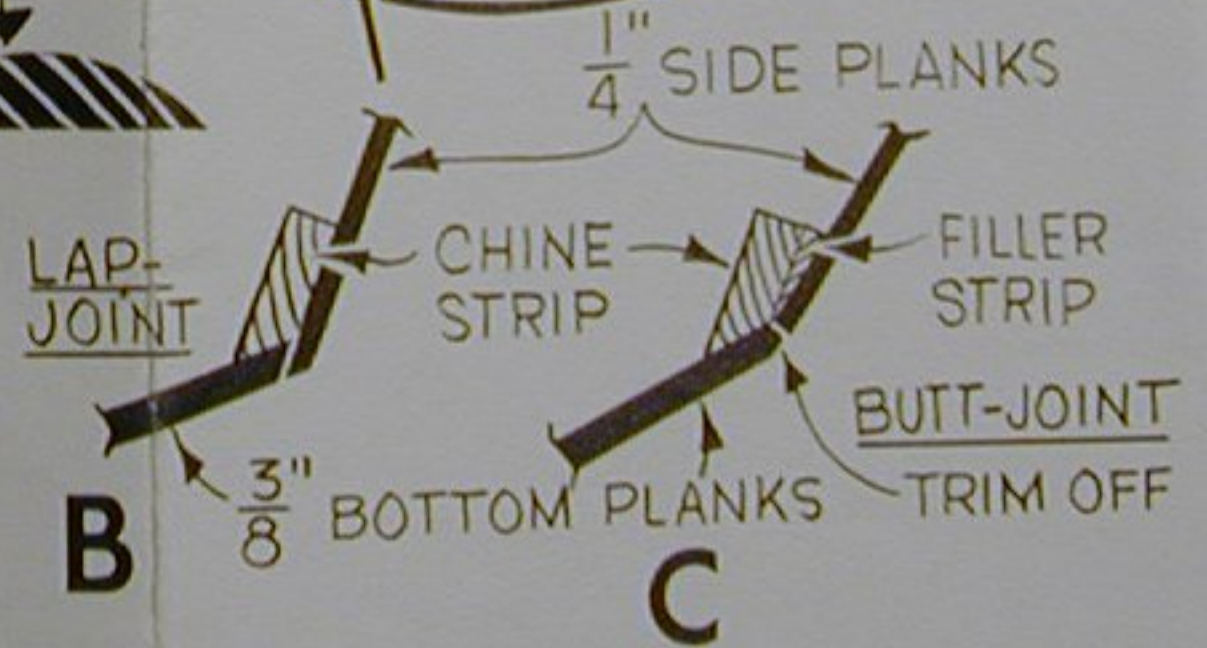
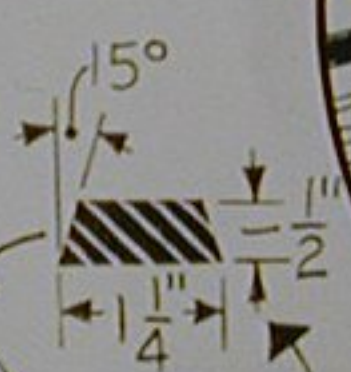
**D** TRANSITION JOINT



**E** TYPICAL BUTT-JOINT BATTEN



**F** TYPICAL SECT. OF OUTER STEM



**B**

**C**



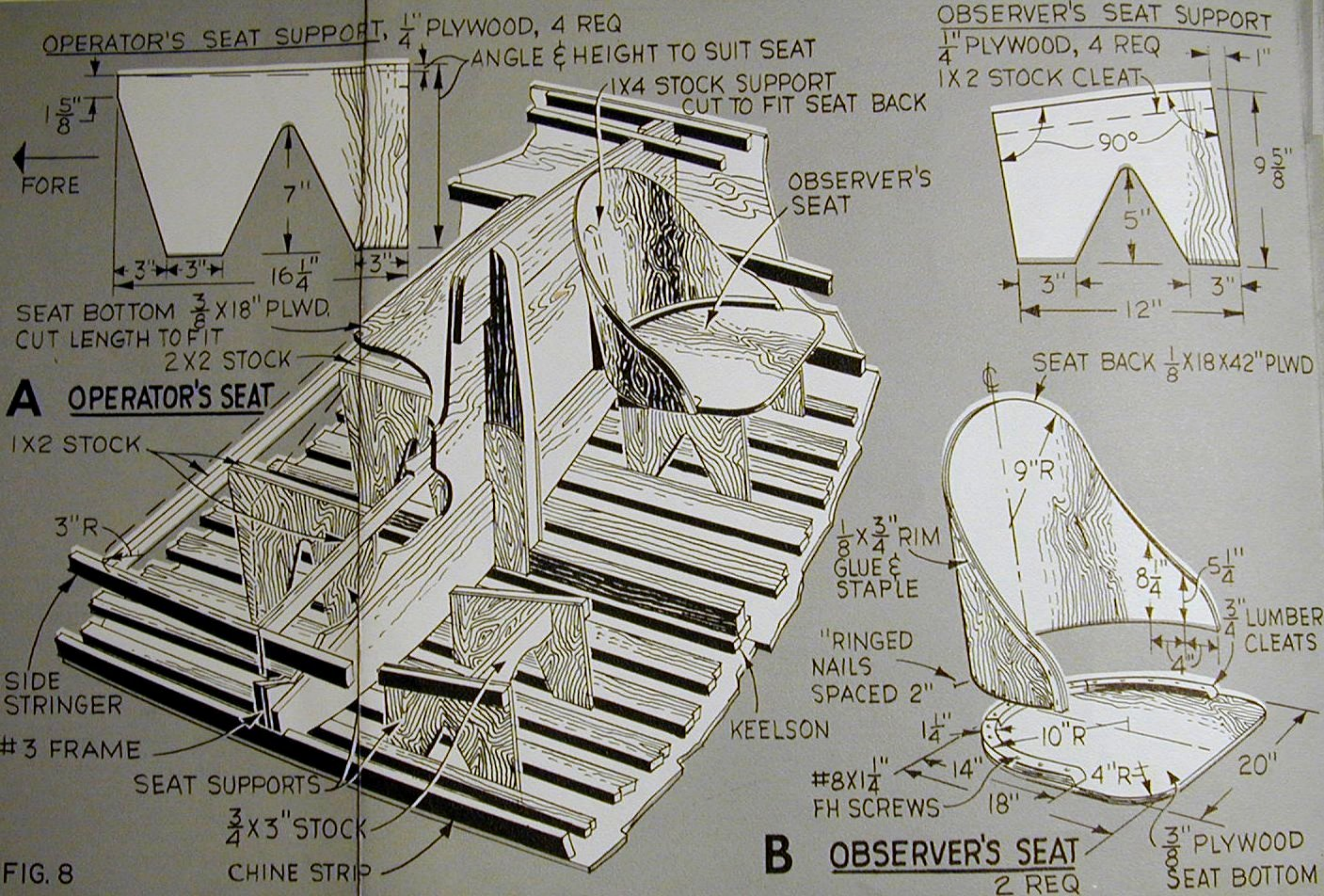


FIG. 8



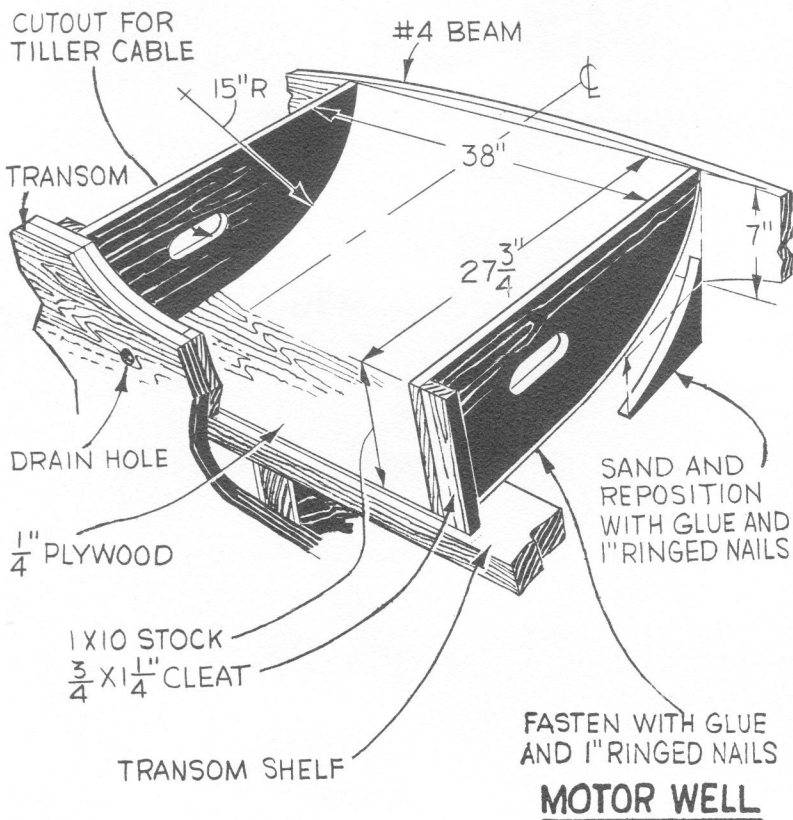


FIG. 9

# NEW BOAT PLANS CATALOG

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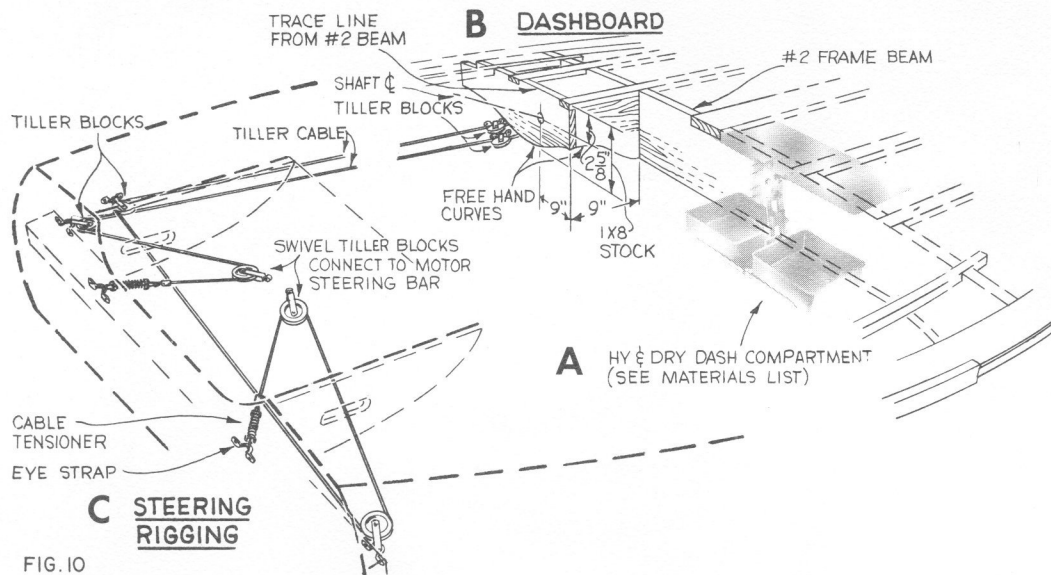


FIG. 10