

# SEA FURY

## A 15-ft. Three-Point Hydro Runabout



Sea Fury puts every bit of power in the largest motors to good use and will continue to do so as larger motors become available.

By **WILLIAM D. JACKSON**

Naval Architect

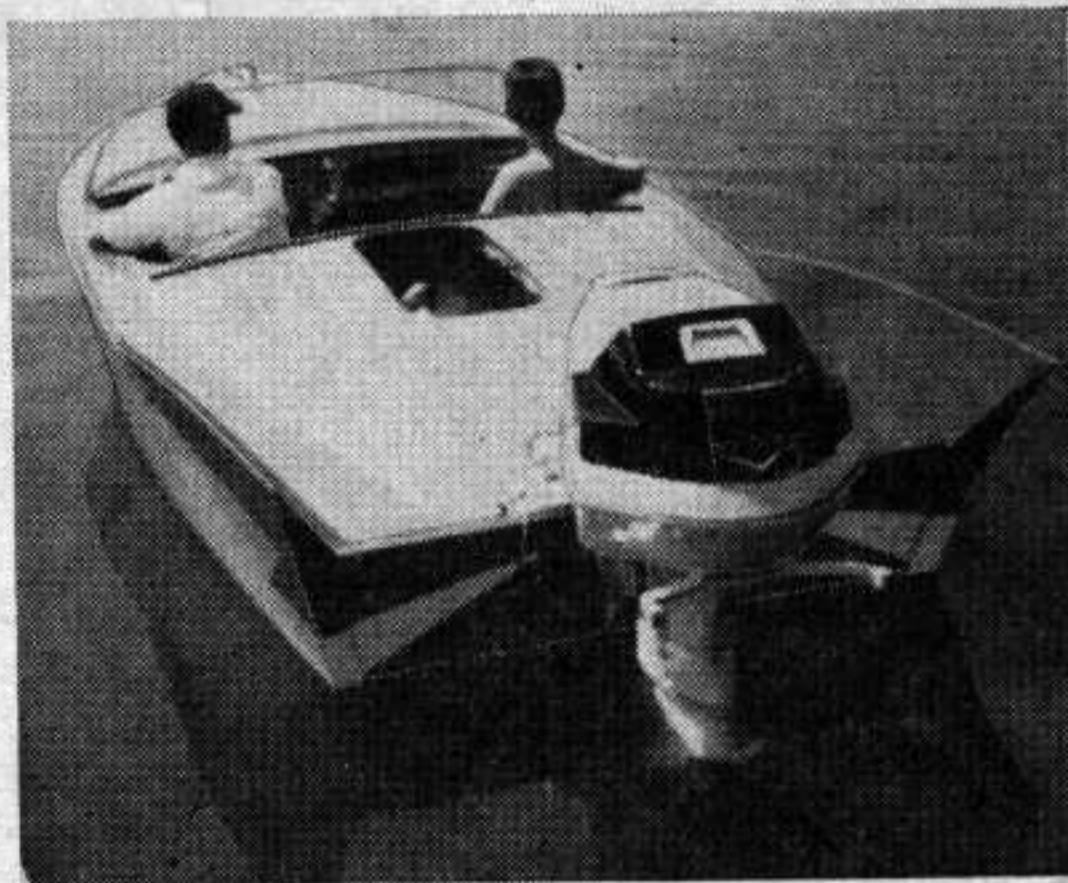
**Craft Print Project No. 313**

**N**OW, for the first time, you can build a sleek sports runabout, using a three-point racing-type hull similar to those that have captured championship trophies in hydro-class competition year after year. And your total outlay for materials will be about \$150.

With ordinary 35-40 hp motors, *Sea Fury* will begin to plane in her own length and becomes practically air-borne at speeds of 45-50 mph. This, along with the full-length hard chines to dig in on turns, make *Sea Fury* an exciting boat to handle and a money saving project for the back-yard boat builder.

**Transom and Framing.** Begin construction by laying out the transom (Fig. 2A) on 3/4-in. plywood and sawing it to shape. Then, starting at the bottom of the poorest side of the plywood, clamp each of the 3/4-in. lumber framepieces in place and trace the edge of the transom on them. Bandsaw the frame to shape and then notch the side framepieces to fit the 4-in. wide motorboard.

Next, with the frame temporarily clamped in place, fit the transom shelf below the top framepiece. Be sure all parts fit well and then remove and reassemble them permanently with glue and screws. Drive all



screws through the framing into the plywood, except for those holding the shelf, which are inserted from the outside of the transom. Then bevel the lower edge of the transom and cut notches for the keelson and bilge stringers, beveling the bottom of these notches to

### STATEMENT OF USES

**TYPE:** Three-point outboard hydro runabout for ski towing and other high-speed water sports

**LENGTH:** 15 ft. 4 in.

**BEAM:** 79 in.

**DEPTH:** 27 in. forward, 16 in. aft

**WEIGHT:** 425 lbs.

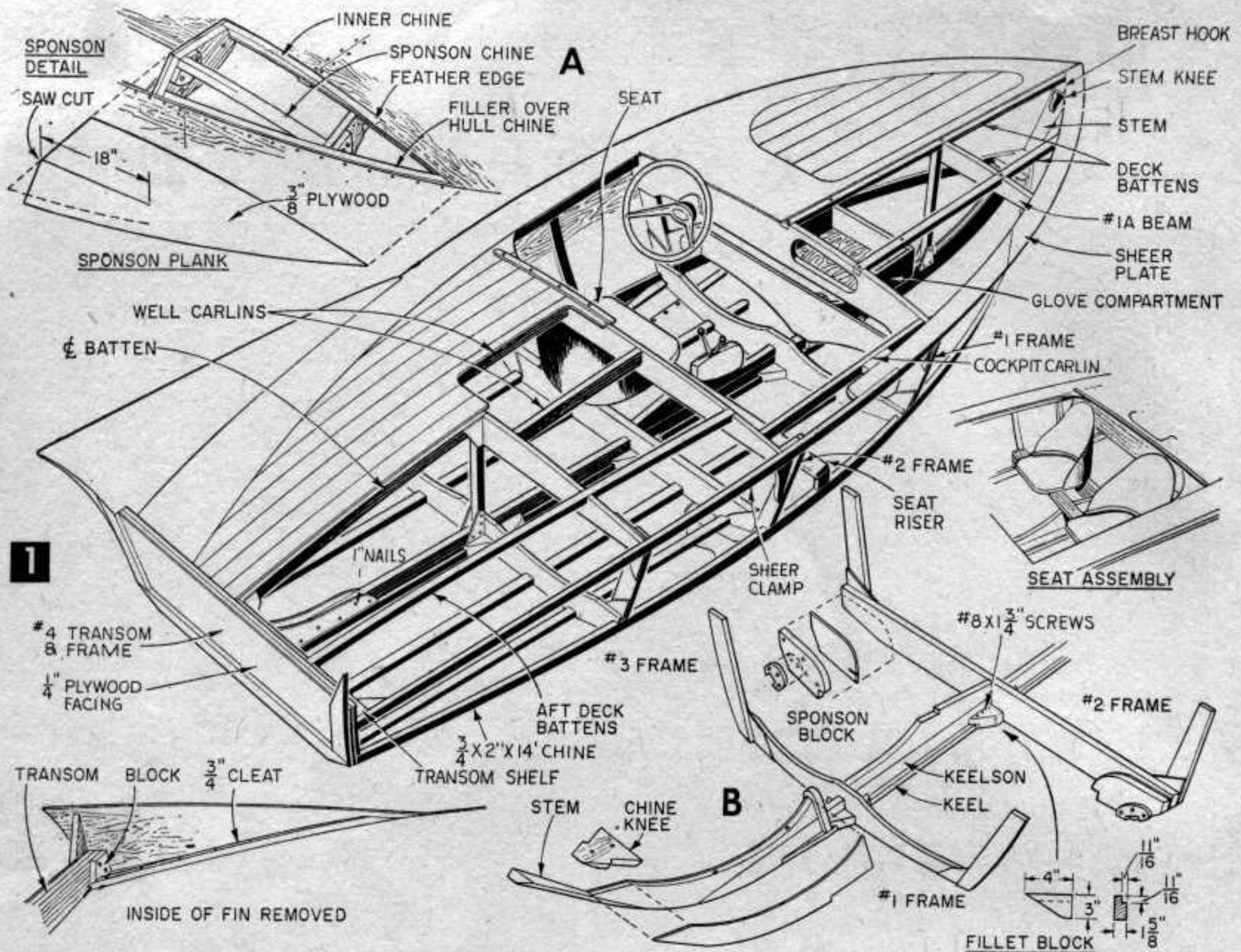
**SEATING CAPACITY:** Three persons

**PERFORMANCE:** Planes at 35-40 mph with 45 lbs.

per hp load, 65 mph plus at 10 lbs. per hp

**COST:** Approximately \$150





match that of the transom edge.

Now lay out and bandsaw the  $\frac{3}{8}$ -in. plywood knees (Fig 2E) and their  $1\frac{5}{8}$ -in. cores to shape. Notch these parts to fit over the lower transom framepieces and see that they fit snugly against the underside of the shelf. Then temporarily clamp the cores in place and trace their outlines on the transom. Remove them and drill three  $\frac{1}{16}$ -in. lead holes in the center of each outline. Fasten the center core in place with glue and screws and space the outboard cores  $10\frac{1}{2}$ -in. on each side of it. (Fig. 2A).

**Frames.** Lay out the bottom framepiece (Fig. 2B) of frame #2 on  $1\frac{5}{8}$  x  $5\frac{5}{8}$ -in. lumber and bevel the top edge  $10^\circ$ . Also lay out the side framepieces and the  $\frac{1}{4}$ -in. plywood gussets. Then make a full size pattern of the frame assembly on building paper and assemble these parts directly over the pattern, gluing and nailing the gussets between the bottom and side framepieces. Now lay out and cut the plywood and lumber parts for the spouson blocks (Fig. 4) and beam knees (Fig. 2B) and assemble these to the frame, locating them according to the full size pattern. Make up frames #1 and #3 by drawing patterns for the assembly and laying out the shaped members directly on the lumber.

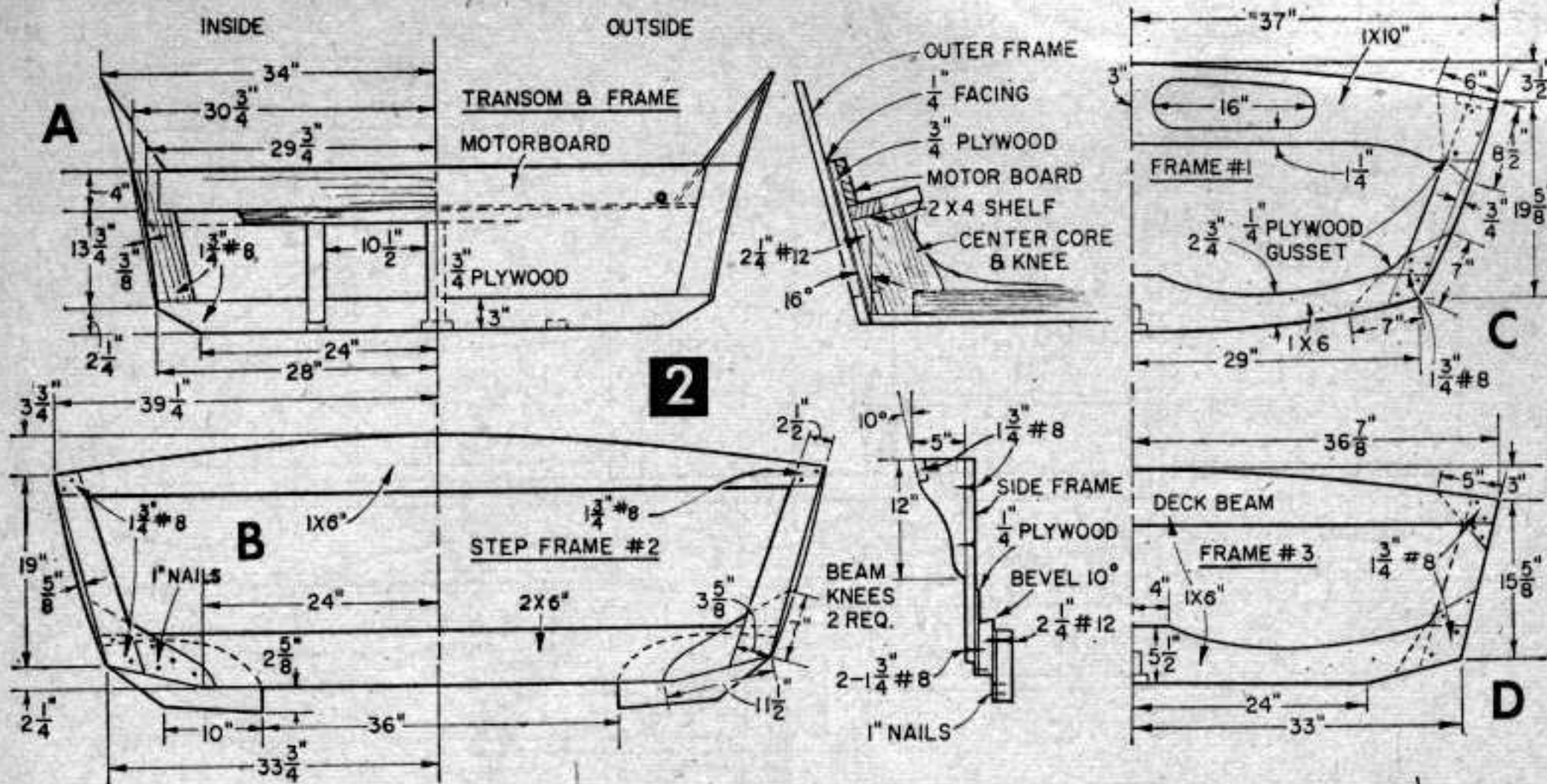
Lay out and cut the gussets and frame members and assemble them on the pattern.

**Keelson Assembly.** Cut the keelson longeron (Fig. 3) from a  $1\frac{5}{8}$  x  $3\frac{5}{8}$ -in. piece of stock and rip it to a  $2\frac{1}{4}$ -in. width for all except 18 in. of its length. Then lay out and cut the lower stem as in Fig. 3 and position its after end on the upper side of the longeron, 10 in. behind the end of the notch. Clamp the parts together and fair the longeron to meet the curve of the stem. Assemble these parts with glue and screws and then trace their outline on  $\frac{1}{4}$ -in. plywood.

Make a plywood facing (Fig. 1B) for each side of this stem core and then fasten it to the core with glue and 1-in. nails. Taper and bevel the upper stem piece as in Fig. 3F and glue and screw it to the lower stem piece. While the glue is drying, cut and bevel the chine knee (Fig. 3H) and check its fit before fastening it in place. Then, when the glue has completely dried in these joints (about 4 hrs.), remove the screws, fair the stem line as in Fig. 3 and replace the screws.

Next fit the keelson into the notch in the forward end of the longeron and assemble it with screws and glue along the entire length. Bandsaw, bevel and notch the footrest plate



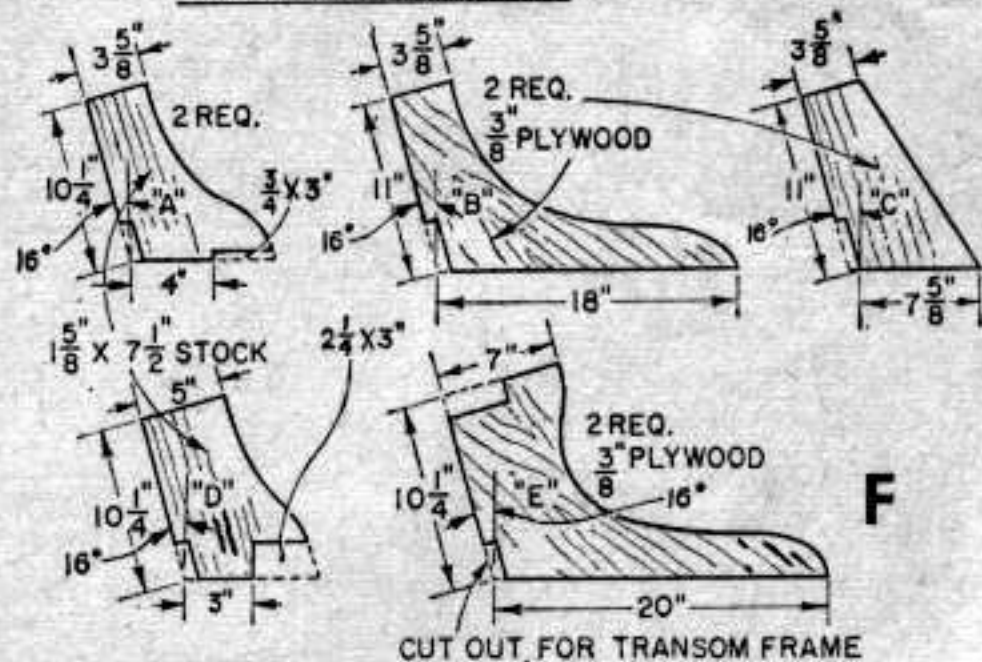
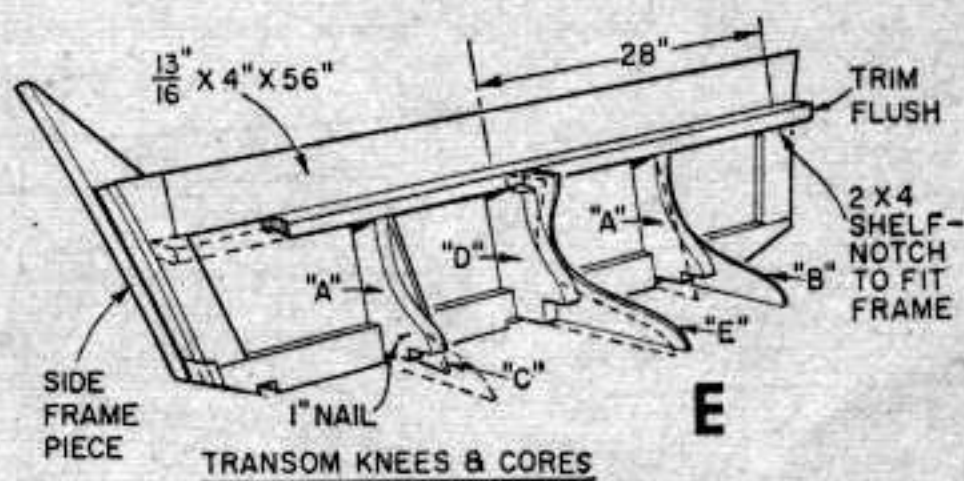


(Fig. 3A) and fit it over the keelson longeron at the after end of the stem (Fig. 1B).

**Assembly.** Next notch frames #1, #2 and #3 to fit the keelson assembly and check their fit at the positions shown in Fig. 3. Mark this location on the keelson and then cut and rabbet four fillets for each frame (Fig. 1B). Beginning with #1 frame, assemble them to the keelson with glue and screws. The side pieces of each of these frames are set at 90° to the upper surface of the keelson longeron. Locate the after end of the keelson assembly and cut and bevel it as in Fig. 3C. Set up the transom, knees and keelson temporarily to check the 16° stern angle (Fig. 2) and then assemble them with glue and screws, nailing the plywood center knees to the longeron.

Now make the center seat support by laying it out (Fig. 3E) directly on 1 5/8-in. lumber and bandsawing it to shape. Cut a notch for the 3/4-in. crossbrace and cut lightening holes in it with a 1/4-in. electric drill and a hole cutter. Be sure the sloped section of the seat support matches the bevel of the lower member on #2 frame and that its forward end fits snugly against the #1 frame. Then permanently assemble it with glue and screws, countersinking these screws deeply so they do not interfere with the installation of the seats later. The assembly this far should appear as in Fig. 1B.

**Deck Beams and Framing.** Lay out full size patterns for the deck beams directly on the stock and then bandsaw them to shape. Each frame has its particular 1/4-in. plywood gussets that are to be inserted between the beam and the side frames. Coat the contacting surfaces of the side frames, gussets and beams with glue and fasten them together with two #8 x 1 3/4-in. screws to each joint. Beam #2 is supported at an angle by a pair

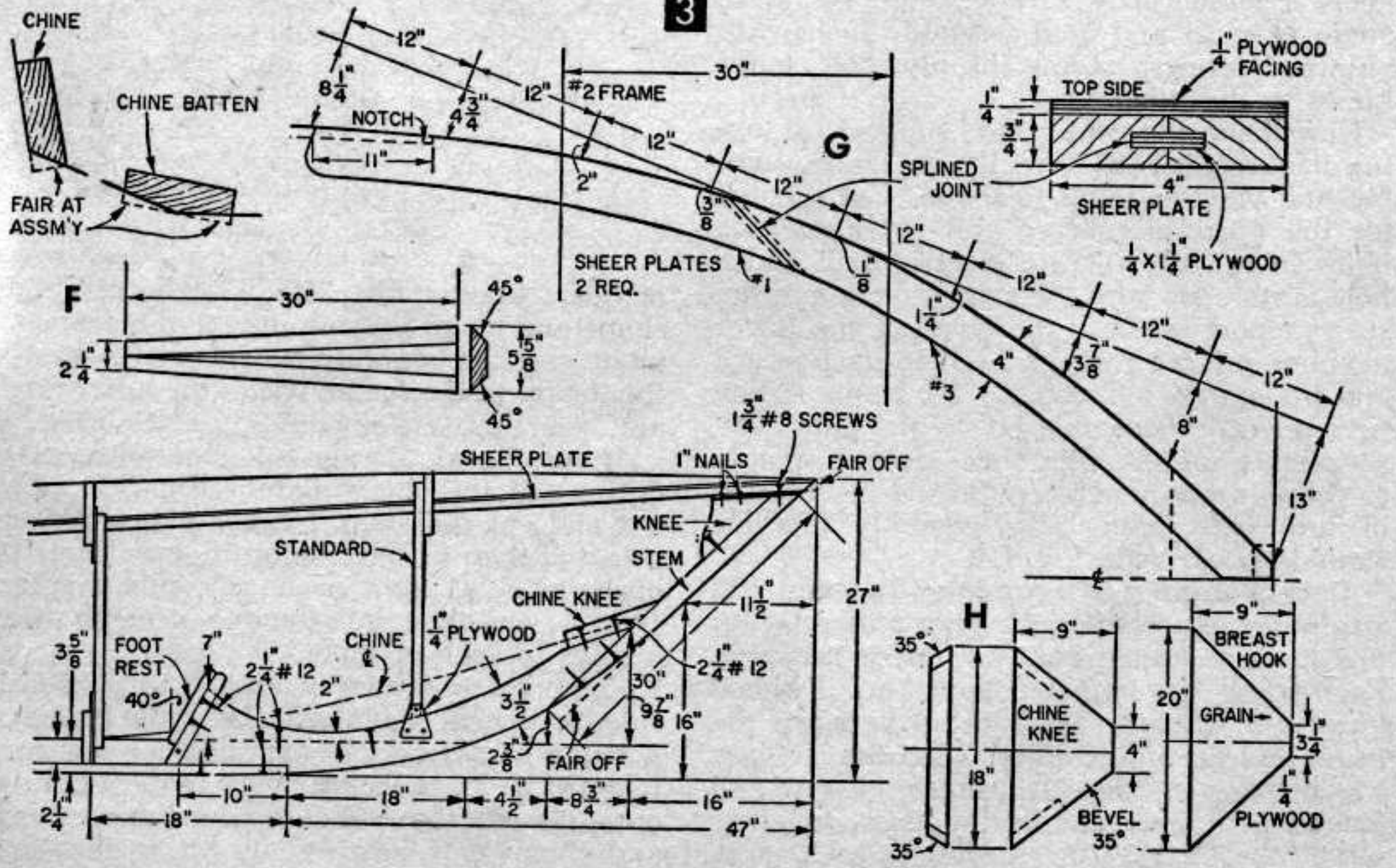
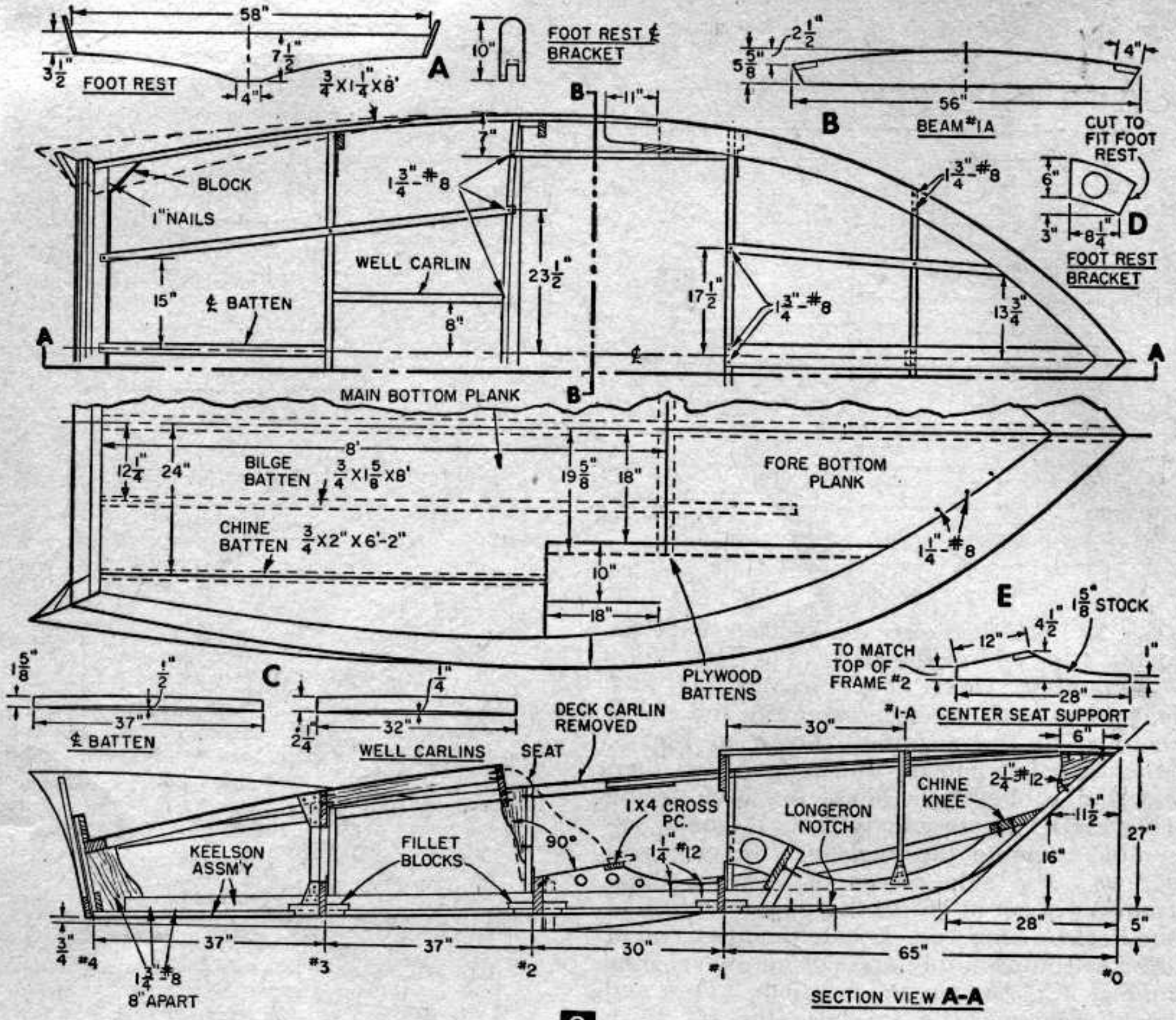


of beam knees (Fig. 2B). Cut beam #1 to shape and make the cutouts for the compartment and the steering wheel shaft. Fasten this beam to the frame with glue and screws and insert gussets as you did on #2 beam.

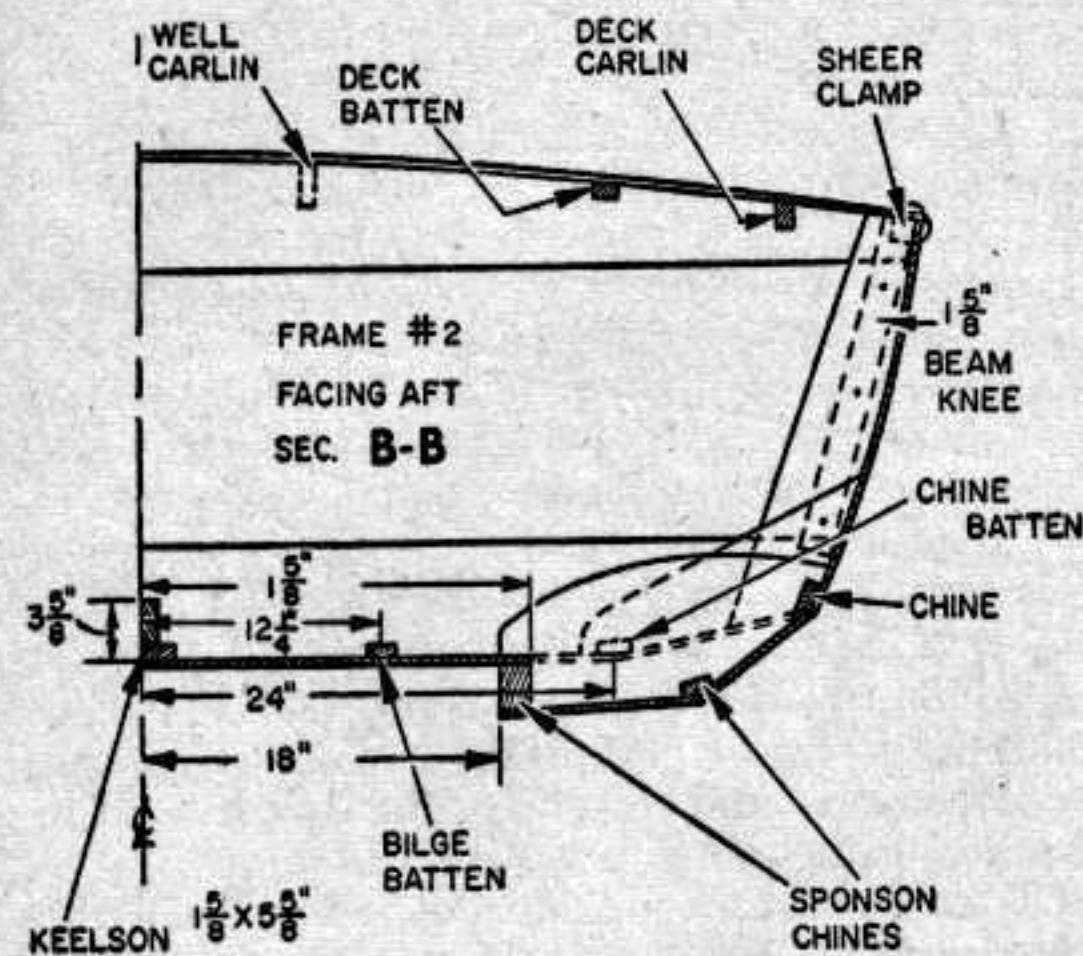
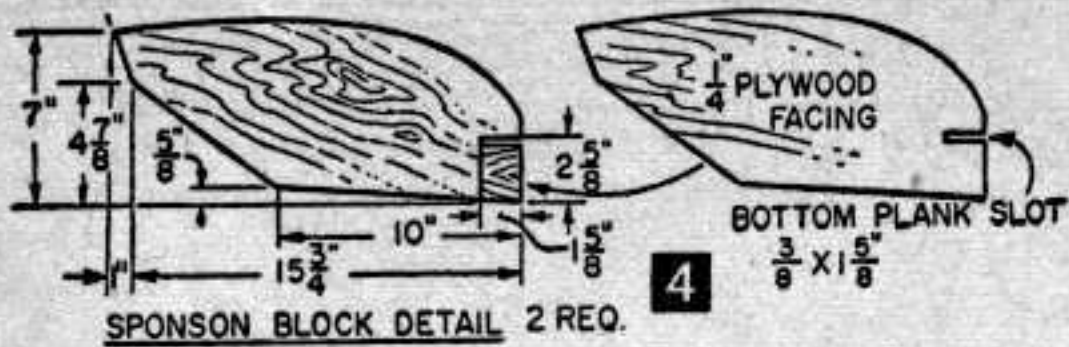
**Sheer Plates.** Draw full size patterns of one set of the sheer plates (Fig. 3G). Lay out and cut the 3/4-in. lumber plates for one side and then trace them on the stock for the opposite side. Join each set with a spline (Fig. 3) and then glue the one-piece plywood facings to each of them.

Notch #1 and #1A beams 1 x 4 in. on each side for the sheer plates. Clamp the plates in position on #1 deck beam and then measure forward 30 in. to locate the #1A beam. Lay out and cut the 1/4-in. plywood breasthook and clamp it in place while fitting the stem and sheer plates (Fig. 1) at their forward









ends. Then layout and cut the 1 5/8-in. stem knee (Fig. 3) and fit it against the stem just under the sheer plates and breasthook.

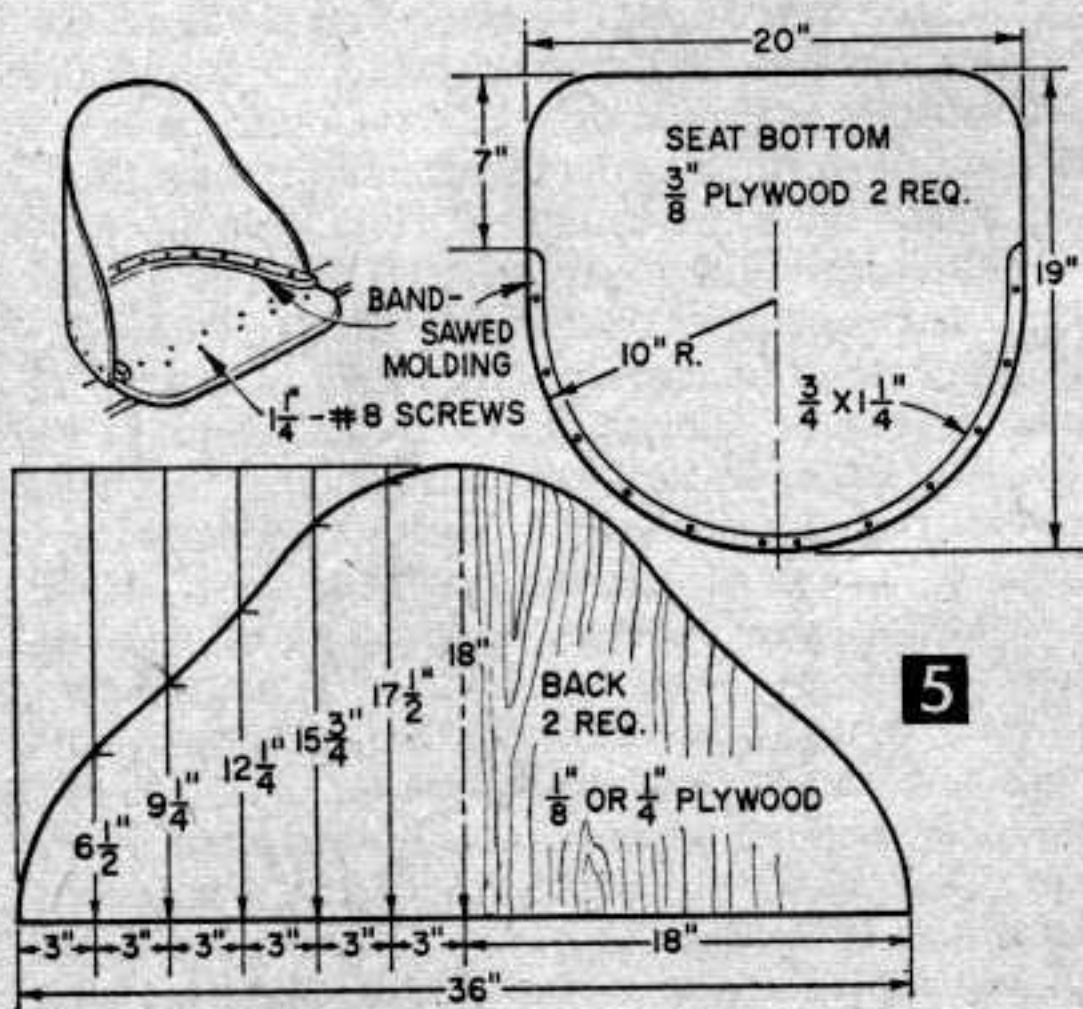
Also cut and fit a 3/4-in. standard under the center of #1A beam. Coat the contact surfaces of the sheer plates with glue and fasten them to beams #1 and #1A with two screws to each joint. Then secure the standard to beam #1 with two screws and glue and nail the lower end to the stem with 1/4-in. plywood tabs (Fig. 1). Glue the breasthook to the sheer plates, fasten the plates through the breasthook into the stem with screws and then nail the breasthook from underneath to the sheer plates. Now glue the stem knee to the breasthook and nail it with four 1-in. nails. Also attach the knee to the stem with

one #12 x 2 1/4-in. fh screw deeply countersunk in the knee (Fig. 3).

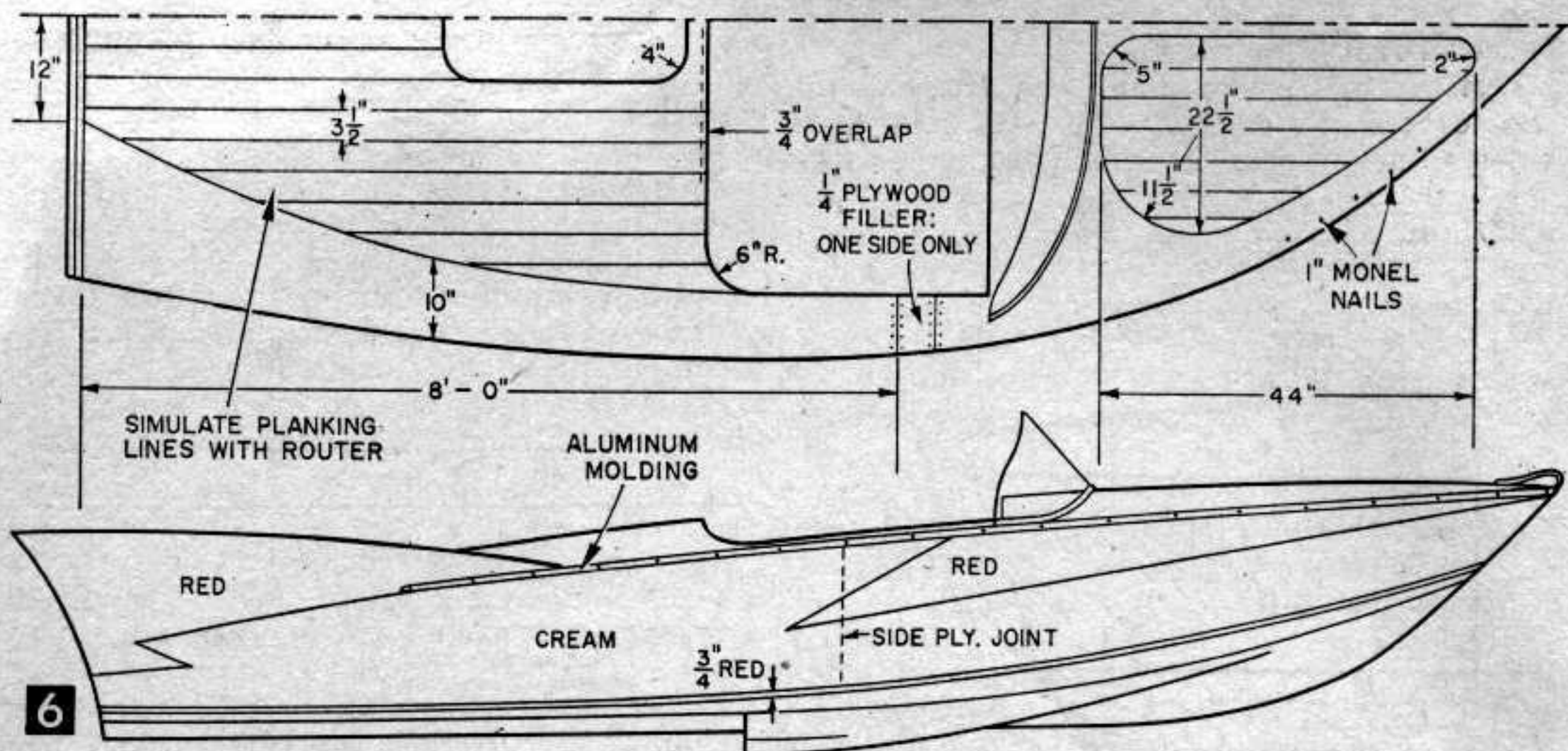
**Deck Framing.** Notch beams #1 and #1A so the forward center deck batten (Fig. 3) fits flush in them. Taper the forward end of the batten to fit the sheer plate joint, using a 1/4-in. plywood fillet between the breasthook and the deck batten to bring the batten flush with the surface of the sheer plates. Glue the batten in place and fasten it with two #8 x 1 3/4-in. fh screws to each joint. Now notch the beams #1 and #1A for the two remain-

**MATERIALS LIST—SEA FURY**

Amt. Req.	Description and Size	Use
<b>PLYWOOD</b>		
6	1/4" x 4' x 8' African or Philippine mahogany. (Available from Harbor Sales Co., Inc., 1501 S. Warner St., Baltimore 30, Md.)	decking, transom facing
1	1/4" x 4' x 8' exterior fir	spoon, stem, sheer plate, facings, seat backs, breasthook, gussetts, foot rest, planking battens
3 1/2	3/8" x 4' x 8' exterior fir	bottom planking, seat bottoms, transom knees
1	3/4 x 20 x 62" exterior fir	transom, battens
<b>LUMBER</b>		
1	1 5/8 x 9 1/2" x 8' oak, ash or hard fir	transom knees, stem core, beam knees, chine knees, stem knee
1	1 5/8 x 7 1/2" x 8' oak, ash or hard fir	spoon knees, stem, fillets
2	1 5/8 x 5 5/8 x 8' oak, ash or hard fir	seat support, spoon chines, step frame, foot rest
1	1 5/8 x 3 5/8" x 12' oak, ash or hard fir	keelson longeron
1	1 5/8 x 3 5/8 x 10' oak, ash or hard fir	transom shelf, fillets, well carlines
1	3/4 x 9 1/2" x 8' oak, ash or hard fir	beams
1	3/4 x 7 1/2" x 8' oak, ash or hard fir	sheer plates, foot rest
1	3/4 x 5 5/8" x 14' oak, ash or hard fir	chines, deck framing
8	3/4 x 5 5/8" x 8' oak, ash or hard fir	beams, framing, carlines, deck battens, sheer clamps.
1	3/4 x 3 5/8" x 10' oak, ash or hard fir	keelson
7	3/4 x 3 5/8 x 8' oak, ash or hard fir	framing, battens, standard
<b>FASTENINGS</b>		
1 lb.	#14 x 1" Anchorfast Monel nails. (Available from Steel Sales Corp., 3348 So. Pulaski Rd., Chicago 23, Ill.)	
1 lb.	#S211A. 1" ringed, zinc-dipped nails. (Available from W. H. Maze Co., Peru, Illinois)	
3 gross	#8 x 1" fh cadmium-plated steel or monel woodscrews	
5 gross	#8 x 1 1/4" fh cadmium-plated steel or monel woodscrews	
1 gross	#8 x 1 3/4" fh cadmium-plated steel or monel woodscrews	
4 doz.	#12 x 2 1/4" fh cadmium-plated steel or monel woodscrews	
3 lbs.	glue powder	
1 pt.	neoprene sealer	
<b>MISCELLANEOUS</b>		
11 yds.	36" heavyweight Chrome Glas	
2 gal.	Resinote (above available from Herter's Inc., Waseca, Minn.)	
35 ft.	1/4" nylon-covered, stranded-steel steering cable	
6	2 1/2" dia. sheave pulleys with brackets	
1	15" steering wheel	
1	remote control unit to suit outboard motor.	
1	steering bar, clamps, springs	
1	combination bow light	
2	lift handles (above available from Crest Marine Hardware Co., Inc., P.O. Box 436, Pasadena, Calif.)	
1	#64S 12" sports shield. (Available from N. A. Taylor Co., Inc., Gloversville, N. Y.)	
2	16-ft. lengths, #74B, 3/4" aluminum molding. (Available from Nautalloy Products, Inc., Auburn, N. Y.)	
1 qt.	spar varnish	
1 gal.	sanding sealer (Firzite, etc.)	
1 pt.	mahogany filler	
2 qt.	epoxy resin paint (above available from Pettit Paint Co., Belleville 9, N. J.)	







ing deck battens (Fig 1). Shape the forward ends of these to fit against the sheer plates and then fasten them with one screw to each joint. Make up and install the compartment box (Fig. 1) at this time.

**After Deck Framing.** Cut and shape the 37-in. long after deck batten (Fig. 3C) and fit its after end to the transom knees and the fore end to beam #2, where it is secured with two 1/4-in. plywood gussets. Coat the contacting areas with glue and fasten the fore ends to the beam with one screw driven through the beam into the batten. Nail gussets on each side. Fit the upright (Fig. 3) in place and secure it with gussets at top and bottom. Then fasten it to frame #3 with one screw driven through the beam into the upright. Finally, glue and nail the after end of the batten in position at the transom.

Cut and fit the two well carlins (Fig. 3C) 8 in. on each side of the centerline, so their forward ends land on beam #2 and the after ends on beam #3. Then fasten them with glue and one screw to each joint. Next cut two battens to extend from notches in the transom through beams #2 and #3. Secure these with one screw to each joint. Connect the deck beams #1A and #2 with two cockpit carlins (Fig. 1). Notch the beam #2 for the after ends of these carlins and butt the fore ends against the sheer plates, fastening the carlins with glue and screws.

**Stringers.** Cut two 8-ft. sheer clamps (Fig. 4) and set the after ends of these in notches cut in the transom shelf so the clamps butt against the transom. Fasten the clamps to the shelf with glue and screws and then reinforce this joint with a 1 5/8-in. triangular block on each side, fastening the block with glue and nails to the shelf and sheer clamps. Notch frames #2 and #3 and also cut an 11-in. notch in the after ends of the sheer plates to receive the sheer clamps. Fasten the sheer

clamps in the sheer plate notches with one screw each, and then secure them to the frames with two screws to each joint.

Turn the frame upside down to install the chines (Fig. 1). You will need a helper or two to avoid wrenching the frame at this stage of construction. Notch the frames and transom all the way through so the chines fit flush in them. Also fit the fore end of the chines flush in the chine knee (Fig. 3). With all the notches cut, bend the sheer clamps into position and clamp them temporarily. It may be necessary to run a hand saw along the chines at each notch to seat them properly. When everything fits well, secure the chines in place with glue and one #8 x 1 3/4-in. screw to each joint and two screws at each side of the chine knee.

The 74-in. chine battens extend from the transom to #2 frame only (Fig. 3). Notch the transom and frames so the battens fit flush and are spaced 24 in., center to center, on each side of the keelson. Secure them with glue and one screw to each joint. Next install the bilge battens as you did the chine battens, spacing them 12 1/4-in. outboard of the chine batten centerlines to be assembled with the transom knees.

**Transom Outer Framing.** The original boat's transom was covered with a 1/4-in. mahogany plywood facing (Fig. 2A) and a 3/4-in. outer frame. The plywood facing may be omitted for economy as the outer framing will cover the exposed ends of the battens and keelson. If you wish to use the facing, sand the batten and keelson ends flush, clamp the plywood in position, mark it to shape and saw it out. Glue the contact surfaces of the transom and facing and clamp them, using wood pads under the clamp jaws to prevent marring the surface. Saw the outside transom framing to shape (Fig. 2A) and glue it in place, fastening it with #8 x 1 3/4-in. screws,



spaced about 4 in. apart.

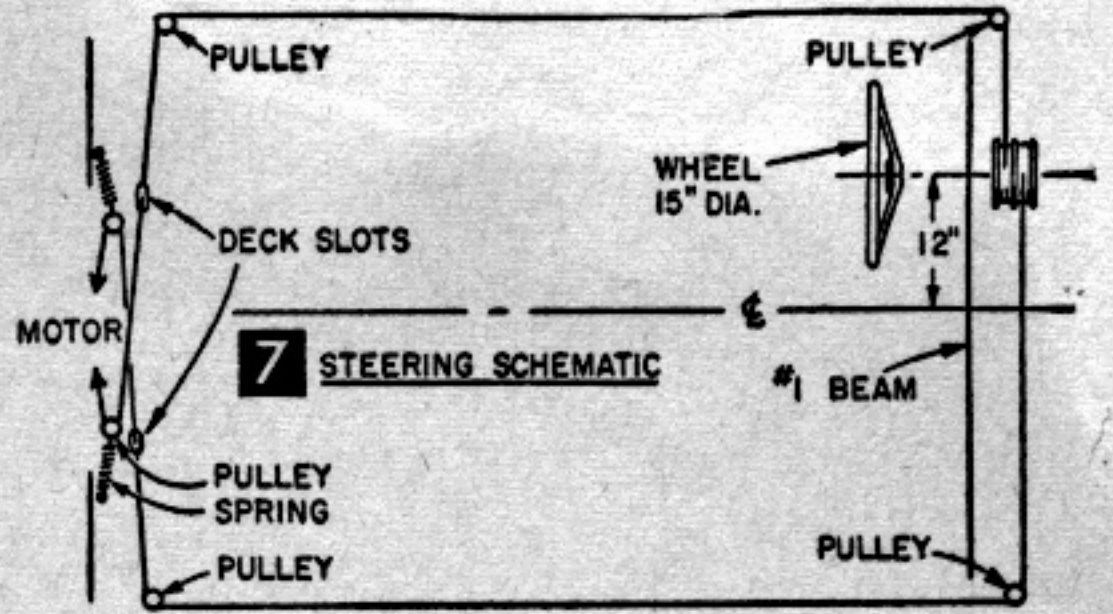
Cut the footrest to shape and attach it to the footrest plate (Fig. 3A) with glue and screws. Secure the outer ends to the frame #1 with two 1/4-in. plywood brackets. Glue and screw the fore end of the brackets to each side of the footrest and to the frame with three screws to each joint. At the same time, secure the seat riser (Fig. 1) to the chines with a 3/4-in. block and a 1/4-in. gusset.

**Planking.** Now, with the hull upside down, clamp the main bottom plank (Fig. 3) in place and draw the outlines of the frames, chine, keelson and battens on the underside of the plank. Drill lead holes in the outlines to locate the frames from the outside of the plank. Use a neoprene sealer at the chine, transom and stem joints and then secure the plank, starting at the centerline along the keelson and working outward. Glue the unsealed joints and use #8 x 1 1/4-in. screws, spaced 3 in. apart.

Glue and clamp a batten made up from two pieces of 1/4-in. plywood (Fig. 3) to the forward edge of the main bottom plank. Fasten this batten to the plank with screws. Then attach the fore bottom planking in the same way until the plywood begins to offer too much resistance at the bow ends. Cover this section of the plank with wet cloths and run an electric iron over them to steam the planking until it bends smoothly in place.

With the main and fore bottom planks in place, cut two chine pieces for each sponson and fit them as in Fig. 1A. Use pieces of 3/4-in. plywood as gussets at the butt joint of the sponson chines. Also glue a triangular fillet along the lower edge of the hull chine. When all parts fit, glue and screw them to the planking and then make a 1/4-in. plywood pattern of the forward sponson planks. Slit this pattern as in Fig. 3 and bend and mark it to fit the sponson. Shape the fillet with a wood rasp as necessary to make a smooth joint where the planking overlaps. When the plank fits, transfer its shape to both of the 3/8-in. plywood sponson planks and cut them out. Then make the saw slits in each and attach them, using steam where necessary. Next cut the 1/4-in. side planks and attach them with sealer and #8 x 1 1/4-in. screws.

**Decking.** Now turn the hull right side up again and install the steering wheel, cables and pulleys (Fig. 7) while there is access to the inside of the hull. Also dust the interior of the hull with a vacuum cleaner and give the hull interior 4 or 5 coats of plywood sealer at this time. Then clamp the fore deck panels in place with their joint on the centerline of the hull and mark the shape of the bow on them. Allow a 3/4-in. edge to extend beyond the beams and sheer plates around the cockpit. Glue and nail the decking in place with 1-in. nails, spaced about 3 in. apart, setting



the heads of these nails 1/16-in. below the surface of the deck so they may be filled when finishing the decking. Notice that in order to cut the fore decks from one sheet of plywood, one of them is longer at the cockpit edge than the other and will require a section of decking as a filler on the short side. Attach this and the after deck the same as the fore deck.

Now make paper patterns of the aft side planks and the inside tail planks (Fig. 3). Transfer the patterns to 1/4-in. plywood and then attach the side planks, joining them to the fore planks with a plywood batten. Use sealer and #8 x 1 1/4-in. screws at the sheer and chines. Fasten a 57-in. ledge (Fig. 1) where the tail plank meets the deck and fasten the plank to it with glue and 1-in. nails.

The seat backs may be made from 1/8-in. fir or mahogany plywood if it is available. If not, use 1/4-in. stock and steam it as you did the planking to form the bucket-type seats (Fig. 5B). The seat bottoms are laid out and cut from 3/8-in. plywood and joined to the seat backs with a molding bandsawed from 3/4-in. lumber. Attach the crosspiece to the seat supports (Fig. 3) and fasten the seat bottoms to the crosspiece.

**Finishing.** Apply a coat of mahogany filler to the deck, let dry 10 to 15 minutes, and then rub it in across the grain with burlap sacking to prepare the deck for finishing. Fill the nail heads and other indentations with mahogany stained *Plastic Wood* and then sand the deck lightly. Apply three coats of spar varnish, allow each to dry and sand all but the last.

Turn the hull over and apply the fiber glass covering and resins according to the manufacturer's instructions, and then paint the bottom and sides with an epoxy resin finish. Add the necessary hardware, such as lights, lifting handles, step plates and controls. Be sure the remote control unit is made to fit the motor being used. The final touch is to attach the aluminum moldings at the joint between the decking and the hull sides (Fig. 4).

● Craft Print No. 313, in enlarged size for building Sea Fury is available at \$1. Order by print number. We suggest you remit by check or money order (no C.O.D.'s or stamps) to Craft Print Dept. 2039, SCIENCE AND MECHANICS, 450 E. Ohio St., Chicago 11, Ill. See coupon on p. 168. Now available, our new illustrated catalog of "196 Do It Yourself Plans," 10¢. Please allow three to four weeks for delivery.



