

Want a Utility or Racing Boat?

USES: Speedy outboard runabout for Class B racing, beveled chines for safe high-speed operation. Two hull styles from same basic design given—one for general utility, one for racing. Performs well with outboard motors of from 10 to 25 hp.

LENGTH: 11 ft. 2 in. (to planking extension).

BEAM: 4 ft. 7 in. measured (to outside of plywood at widest point).

DEPTH: 15 in. (amidships).

WEIGHT: 185 lb. (dry).

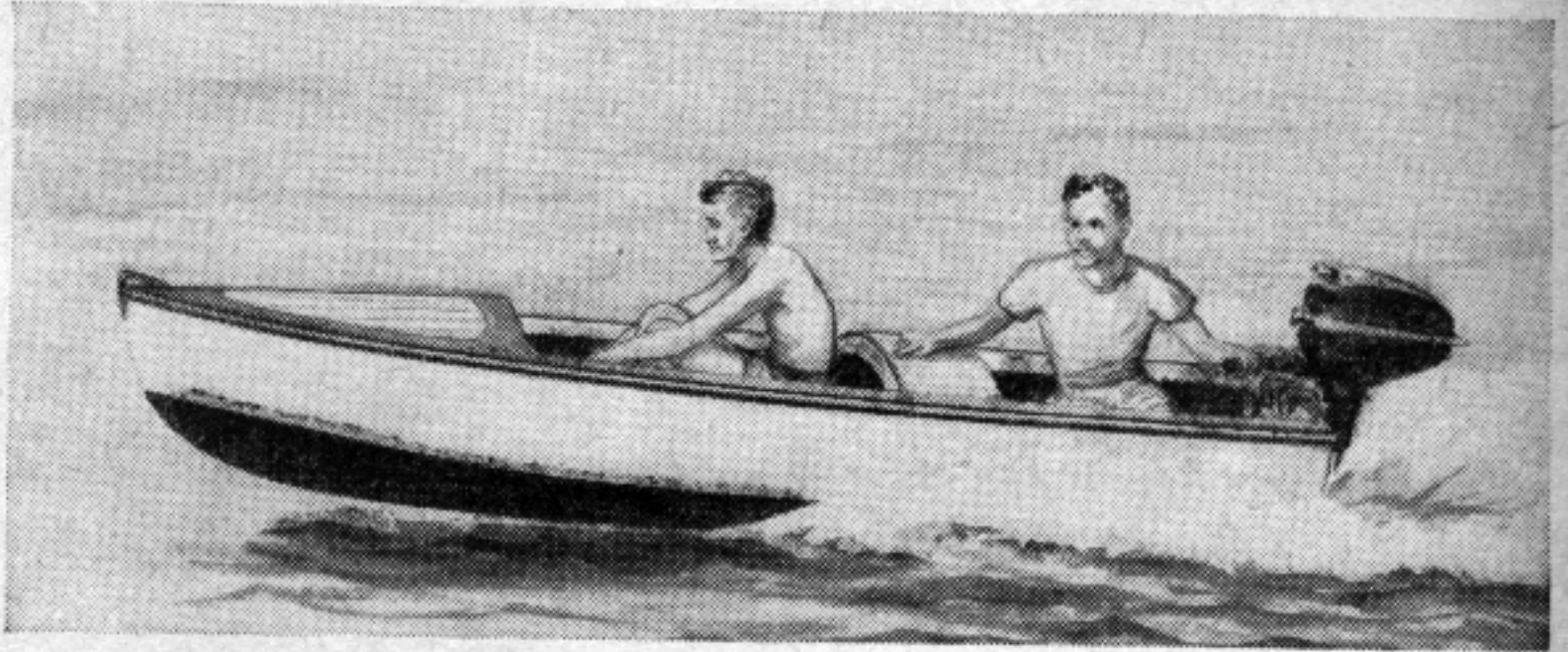
SEATING CAPACITY: 4 persons.

SPEED: Over 40 mph with 25 hp outboard engines.

CONSTRUCTION: 1/4 in. plywood over specially stressed framework using two frames, and minimum number of joints.

Craft Print Project

No. 174



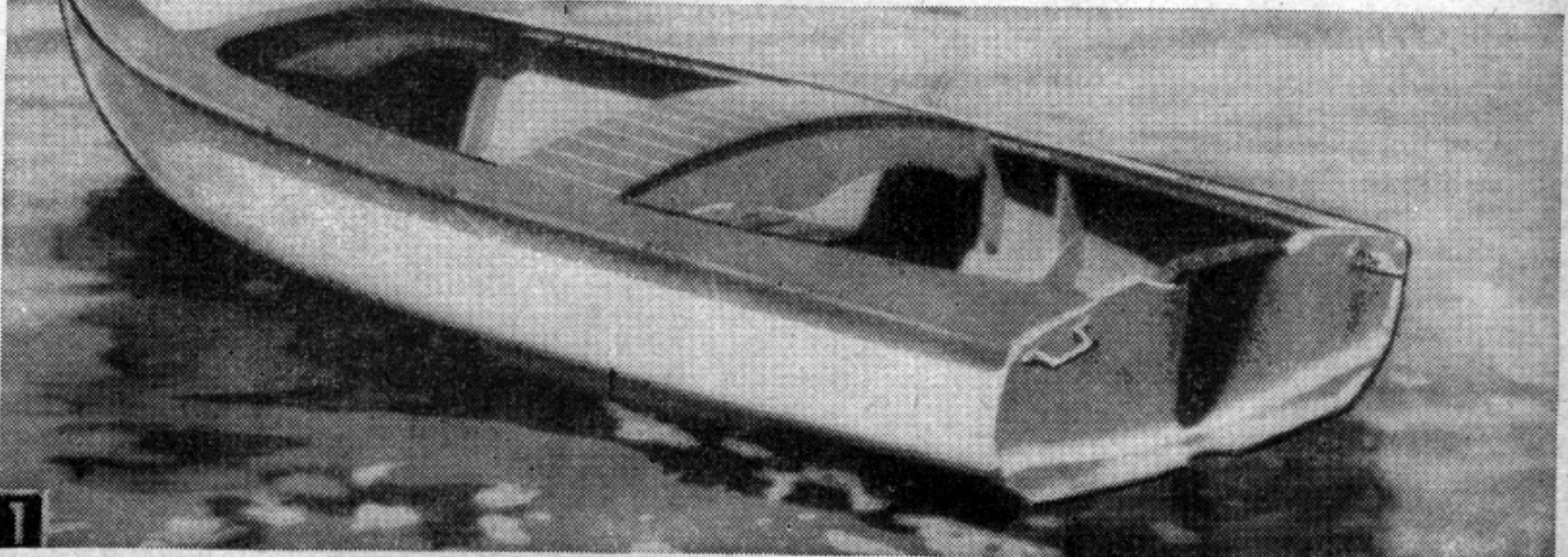
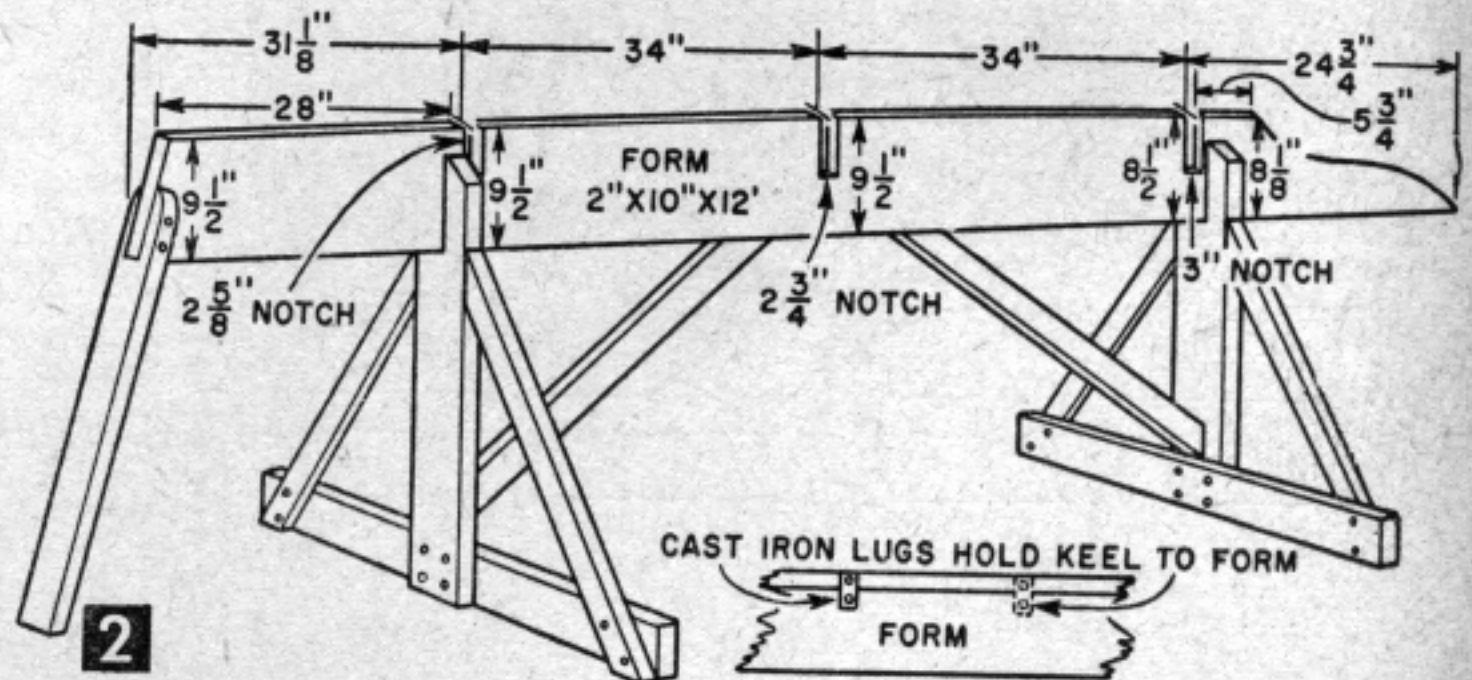
Try These Plans for BLITZEN

By WILLIAM D. JACKSON

Naval Architect

THE first *Blitzen* design we built was bought by a boat manufacturer who wanted to win some Class B runabout races. And, by golly, he did just that, with a speedometer clocked top speed of 47 mph, using a Mercury with a special lower unit. Actually, this *Blitzen* design makes either an ideal fast utility boat (Fig. 3) or a racer

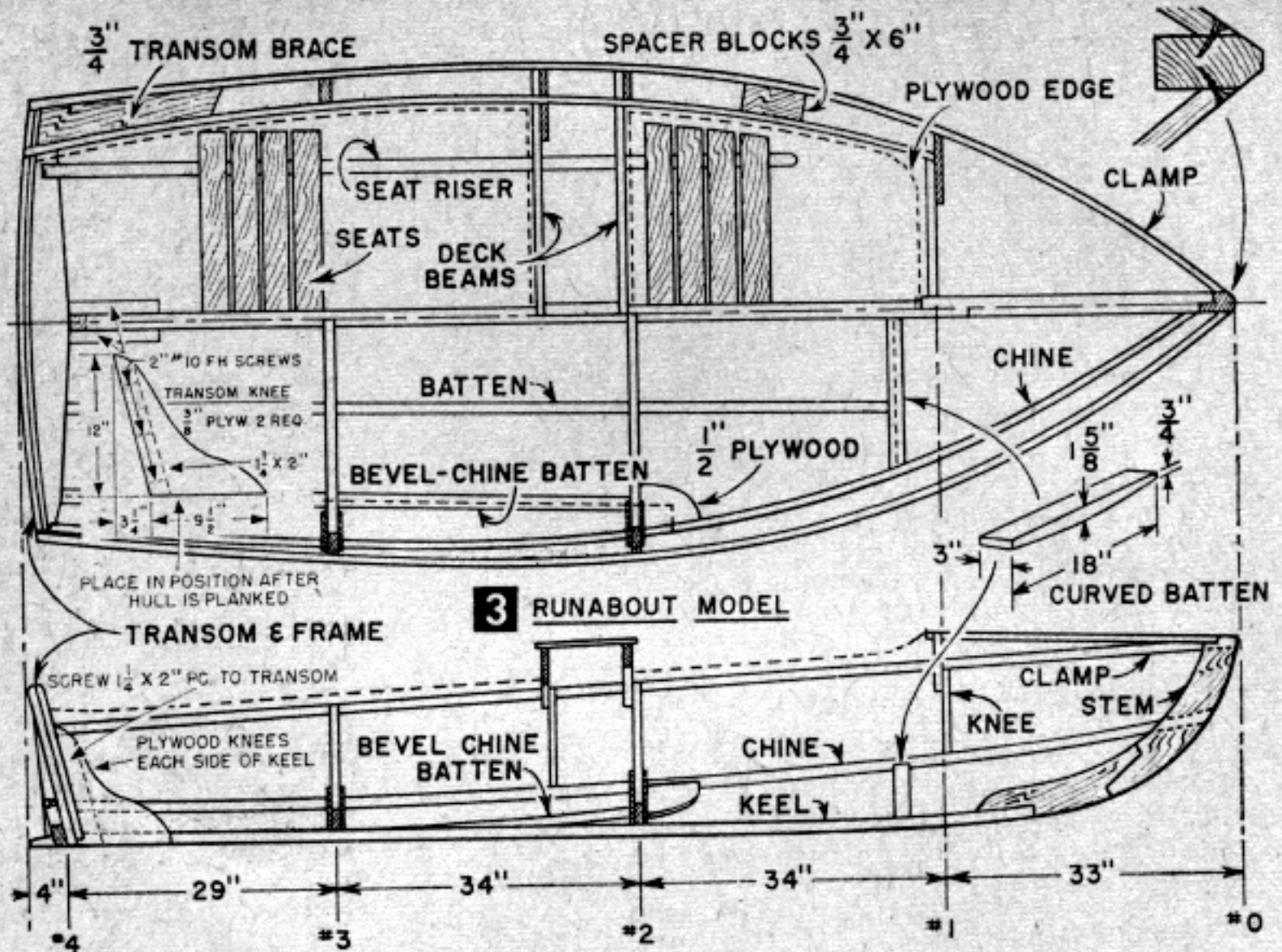
hydroplane (Fig. 14) for Class B competition. Its hull does all right for itself with the more powerful 25 hp Johnson and Evinrude motors in smooth and rough water, and on either the utility or racer hull, its beveled chines give you an easy maneuverability. It also lends itself to quantity production in case you want to make



and sell some extra ones for profit (you won't want to part with the first one you build). Incidentally, it should cost you about \$45 to build one and you'll find you can sell it for over \$200.

Get ready to build this craft by sawing the form to shape and mounting it on a framework as in Fig. 2. This form is the same for either the utility boat or racing runabout. Don't notch this form until the frames are completed, and you can then measure the frames and notch the form accordingly. Now, on large sheets of building paper, draw full-size outlines of the stem, frames #1, 2, 3 and 4, and the deck beams #1, 2 and 3. These beams are also the same for either model. Actually, the difference between the racer and utility models is that the racer has the freeboard cut down for streamlining, which means that heights of the frames and stems are shorter (see racing sheer marks and change in transom design in Fig. 4, and compare Fig. 3 with Fig. 14).

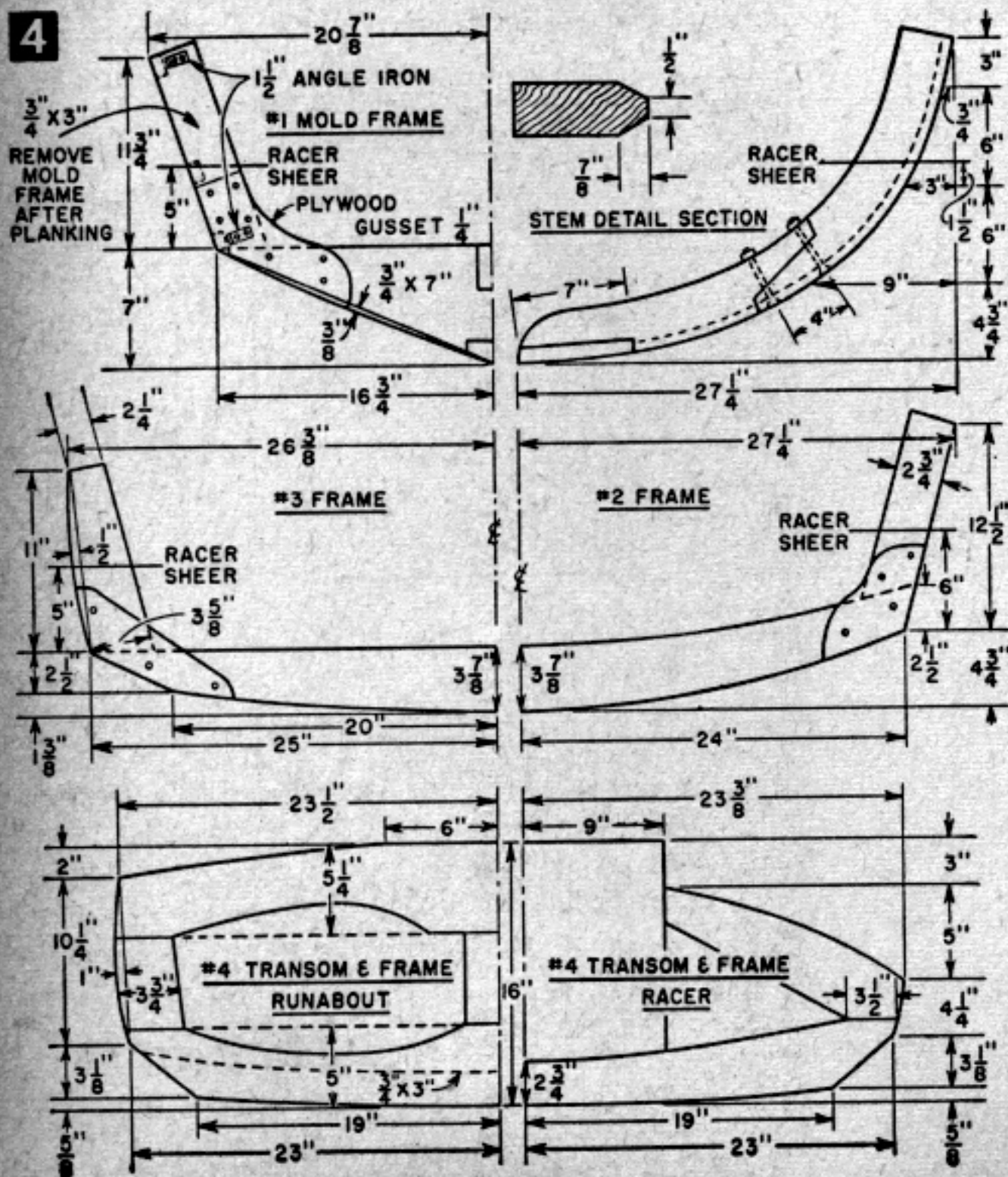
After you have cut out your full-size patterns,

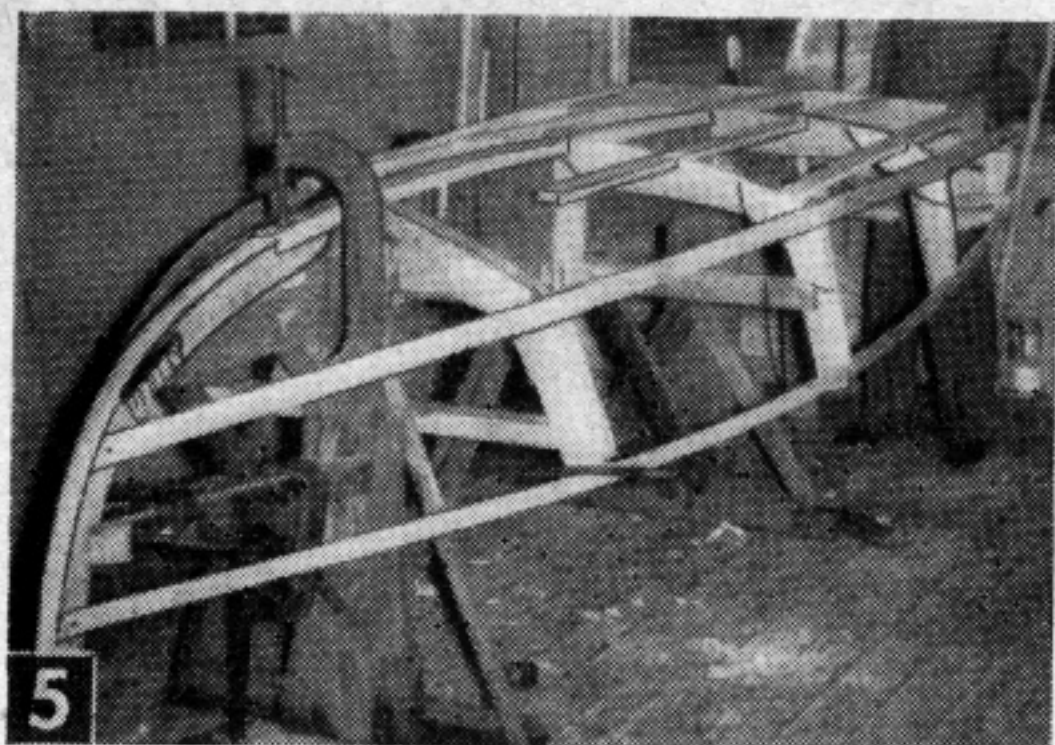


lay them on top of the lumber for the stem, frames and transom and prick an outline through the patterns onto the lumber. Then connect pattern lines with legible pencil marks and saw the various parts to shape. Fasten the stem together with two 1/4 x 3 3/4 inch bolts and flatten the bolt heads so they fit flush with the stem. Next notch the stem to fit the keel as shown in Fig. 4. The #1 frame is a mold frame which you remove when boat is fully planked, so

make this frame from any scrap material and fasten it in place with 1 1/2 inch angle irons at the chine and sheer joints. After you have cut frames #2 and #3 to shape as indicated, fasten the chine joints together with 1/4 inch plywood gussets and 7/8 in. alum. nails or 7/8 in. #6 fh screws, 6 to each gusset. Coat surfaces of gussets and frames with *Weldwood* glue to insure a permanent, durable bonding. Now depending on the type boat you have chosen (utility or racer) saw the plywood outer shell of the #4 transom to shape and secure to its inner face a 3/4 in. framework. Glue adjoining surfaces of shell and transom framework with *Weldwood* glue and then screw fasten plywood to framing with 1 1/4 in. #8 fh screws spaced about 3 in. apart.

You are now ready to assemble the frames, transom and stem on the form. Notch form to receive the frames and support the transom and stem with 2x4's as in Fig. 2 to keep them properly aligned. You'll need to attach two strap iron lugs on each side of the form to hold the keel firmly to the form during construc-

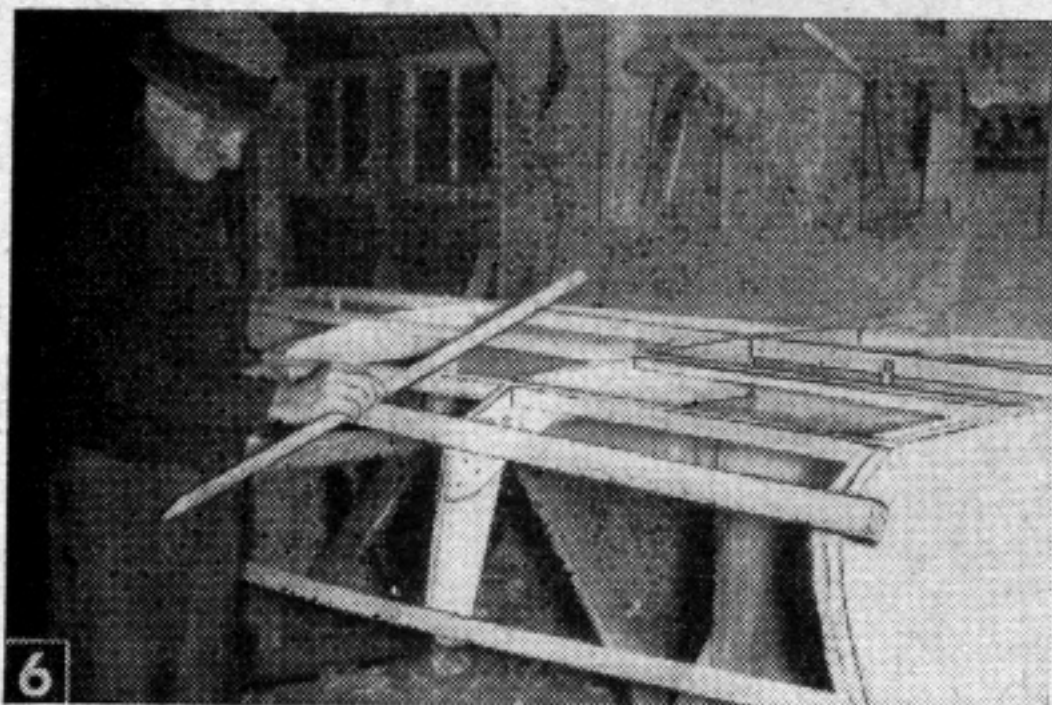




fastened the chine to the frame.

The clamps or sheer battens are now placed in position on each side and cut to fit evenly into the frames. Then fasten the clamps to the frames with one 2 in. #10 fh screw to each joint (Fig. 8). Don't fasten chines and clamps permanently to the #1 mold; instead use angle iron to hold these parts together temporarily.

Now is a good time to notch the #2, 3, and



MATERIALS LIST—BLITZEN

Exterior or Marine Plywood Required

- 2 pcs. 1/4" x 4x8' Fir or Mahogany
- 1 pc. 1/4" x 4x6' Gum or Mahogany
- 1 pc. 3/4x18x48"

- Planking
- Decking
- Transom

Other Lumber Required (Use Oak or Yellow Pine except as indicated)

- 2 pcs. 3/4x15/8" x 12'
- 2 pcs. 3/4x1 1/4" x 12'
- 1 pc. 1 1/4 x 2" x 10'
- 2 pcs. 3/4x1 1/4" x 10'
- 2 pcs. 3/4x1 1/8" x 10'
- 2 pcs. 3/4x1 1/4" x 12'
- 2 pcs. 3/4x1 3/4" x 6'
- 2 pcs. 3/4x2 1/4" x 8'
- 3 pcs. 3/4x8" x 8'
- 1 pc. 3/4x3 1/2 x 24"—1 pc. 3/4x9 1/2 x 36"
- 3 pcs. 3/4x7 1/2" x 6' (Make spacer blocks from waste)
- 1 pc. 1 3/8x6x36"
- 8 pcs. 3/4x2 3/4x38"
- 2 pcs. 1 1/2x3x18"
- 1 pc. 1 1/2x9 1/2 x 12' (Use waste for joint battens)
- 1 pc. 3/8x16 x 16" plywood
- 1 pc. 1 1/4x2 x 12" fir or hemlock

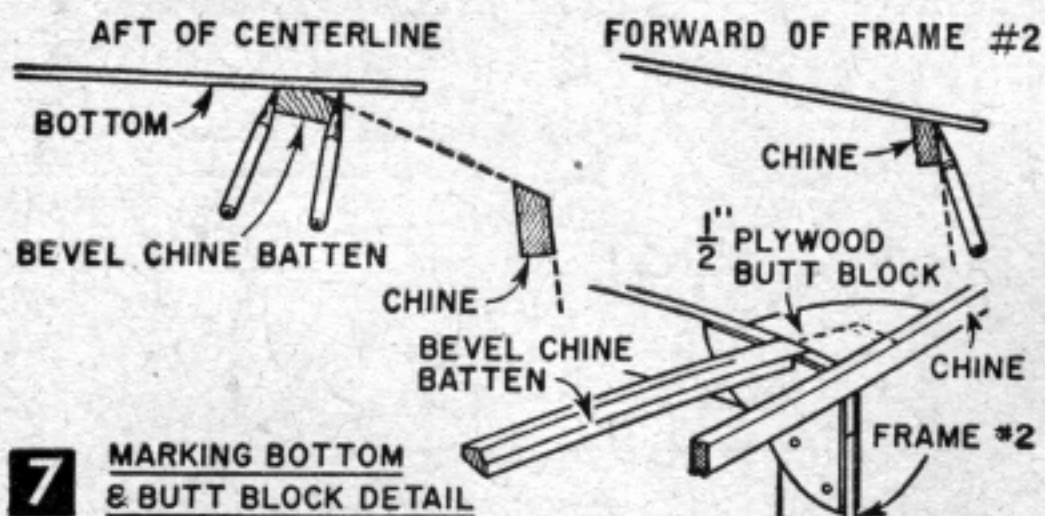
- Chines
- Clamps
- Keel
- Bottom battens
- Carlins
- Moldings
- Bevel chine battens
- Seat risers
- Frames
- Mold frame
- Deck beams
- Stem
- Seats (boards)
- Joint battens
- Form
- Transom knees
- Transom piece

Fastenings Required

- 4 gross 7/8" #8 flathead screws
- 1 gross 7/8" #6 flathead screws
- 3 doz. 1 3/4" #8 flathead screws
- 3 doz. 2" #10 flathead screws
- 6 2 1/2" #12 flathead screws

Miscellaneous

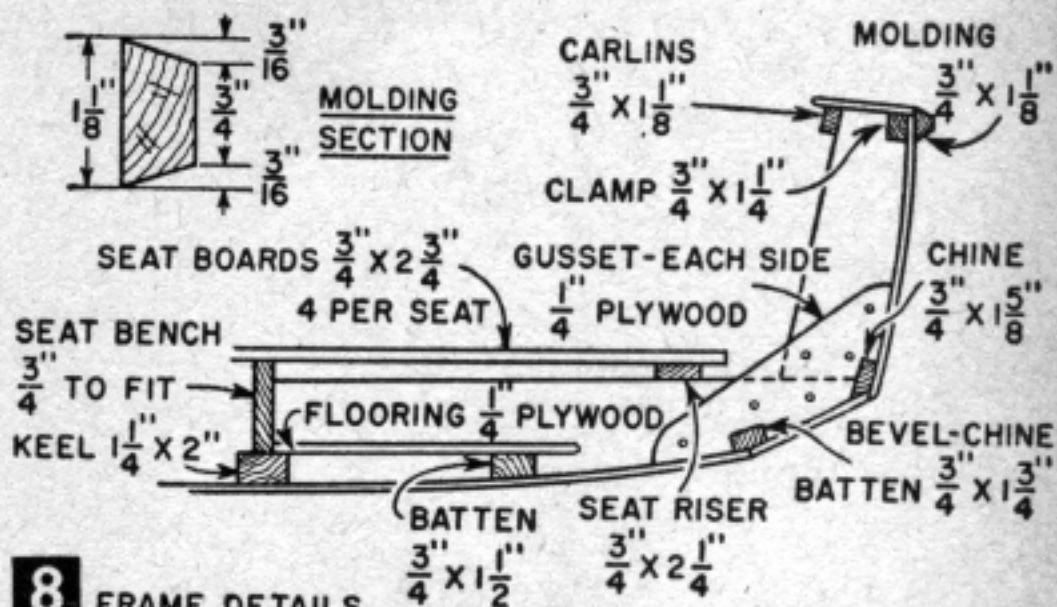
- 1 pt. Weldwood glue
- 1 qt. Kuhl's elastic bedding composition; 1/2 gal. Firzite for first coat; 3 pts. inside paint; 1 qt. enamel for sides and bottom; 1 pt. varnish; fittings and hardware such as bow handles, lofting plate, etc. as required. Steering wheel as desired.



7 MARKING BOTTOM & BUTT BLOCK DETAIL

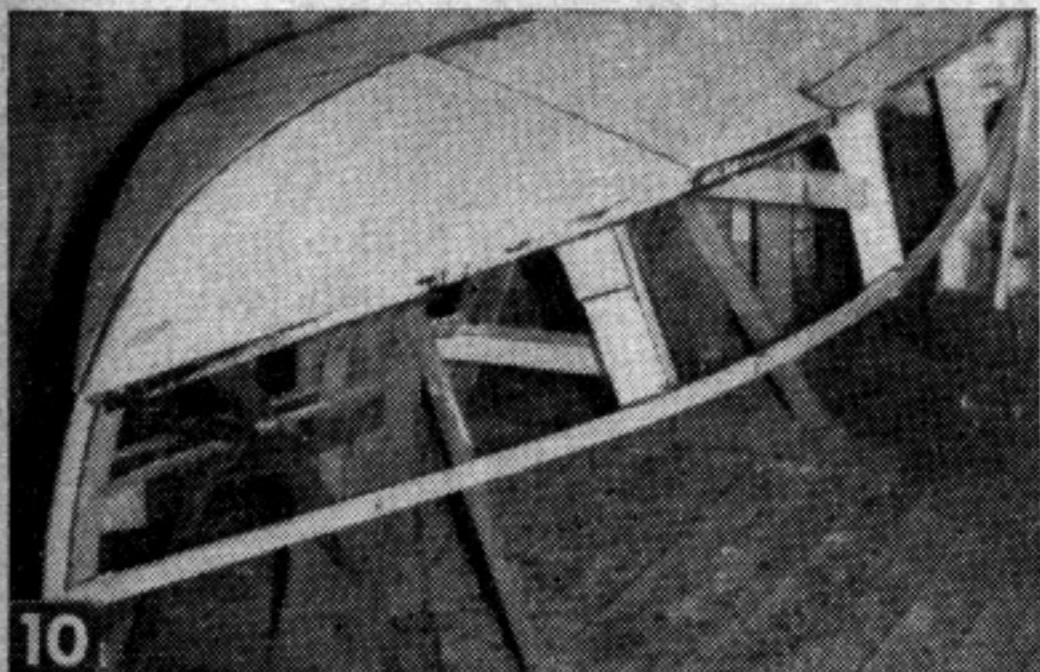
tion; after the hull is planked but prior to removing from the form you can simply remove four screws and the hull will then retain its shape and may be lifted free from the form.

When you have tested the frames to see that they fit easily in the form notches, remove all the frames and cut notches in them for the keel, chines and clamps. Don't cut these notches to their full depth since the final trimming and fitting is best done after the frames are assembled on the form. Now, reassemble the frames on the form and brace them. Then notch the aft end of the keel as in Fig. 3 and screw fasten it to the frames with one 2 1/2 in. #12 fh screw to each joint, and to the stem with two screws to each joint. Next you will fasten the chines in place simultaneously. Starting at the transom, work forward tying the chine ends together at the stem temporarily, notching the frames for the chines as in Fig. 5, and then fastening the chines to the frames with one 2 in. #10 fh screw to each joint. Next bevel the chine ends to fit the stem and fasten these two parts together as you



8 FRAME DETAILS

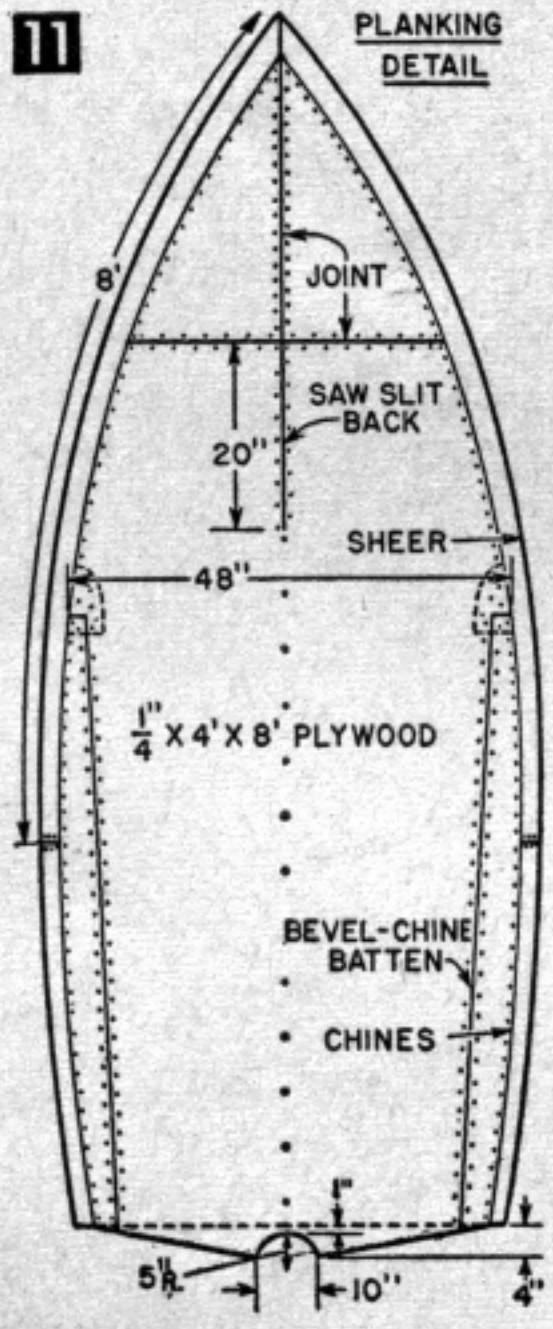




4 frames to receive the bevel-chine battens and secure these battens to the frames with one 2 in. #10 fh screw to each joint. Then place the bottom battens in position midway between the keel and the bevel-chine battens, mark and notch the frames so the battens will fit flush into them, and then fasten each batten to the frame (Fig. 7) with one 2 in. #10 fh screw to each joint. If you are building the racer and expect it to be used in fairly rough water, place four battens in the bottom, standing each batten on edge for greater strength and to prevent "flexing" or "panting" of the bottom.

You should now be ready to trim and fair all the framework so that your bottom and side plywood will fit evenly at all points. Be especially careful when fairing towards the transom since 1/8 inch variation along the keel will cause "galloping" in the completed boat. Test the flatness of all points by laying a batten across them (Fig. 6).

Start planking the bottom by laying a 1/4 in. x 4 ft. x 8 ft. plywood sheet in position on the bottom frames and clamping along the bevel-chine battens on each side. Slit the fore end of this bottom plywood as in Fig. 11 so it will bend readily. Then, after clamping it in place along the chines, mark underneath on the plywood, along the outside and inside edges of the bevel-chine batten and along outside of chines forward of station No. 2 (Figs. 3, 7 and 11). Then remove plywood and, using a straight batten, mark a center line exactly between inner and outer bevel chine markings and saw to this line, and the fore chine marking.

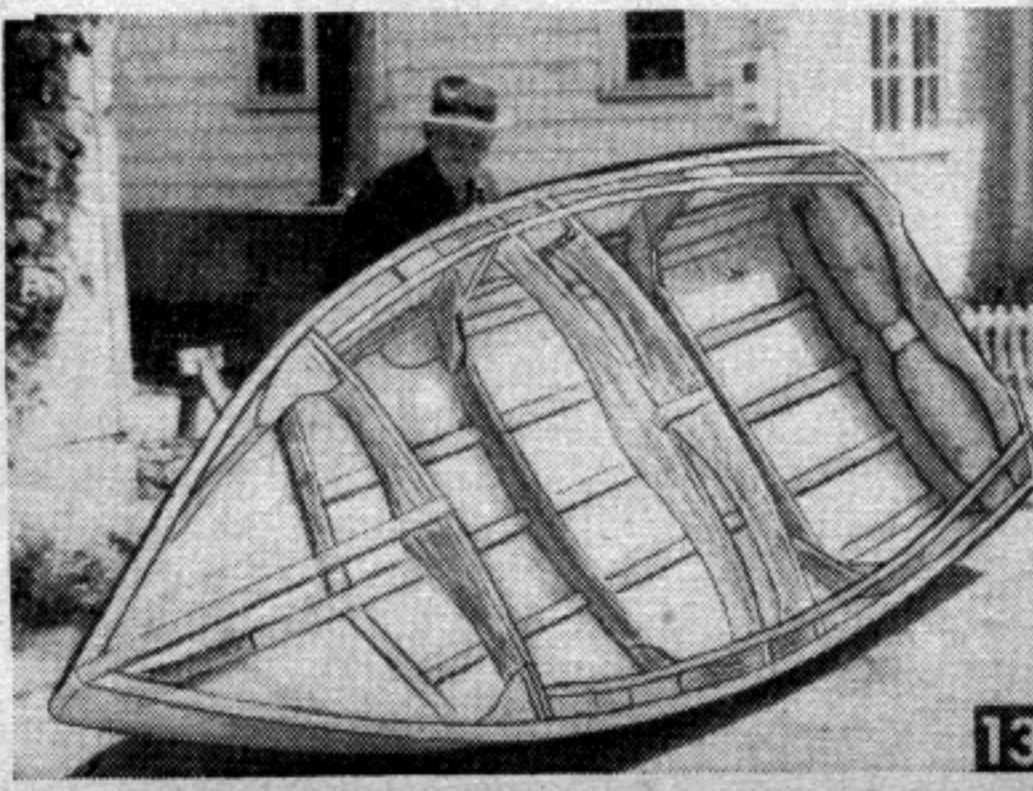
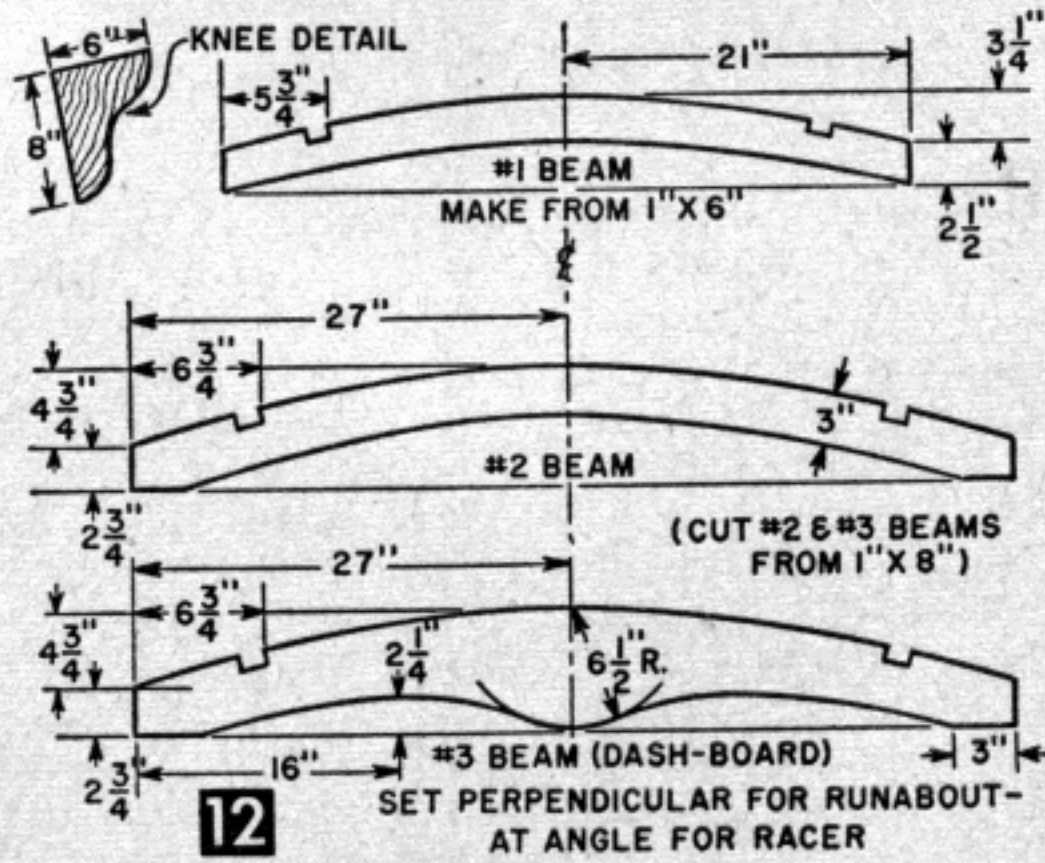


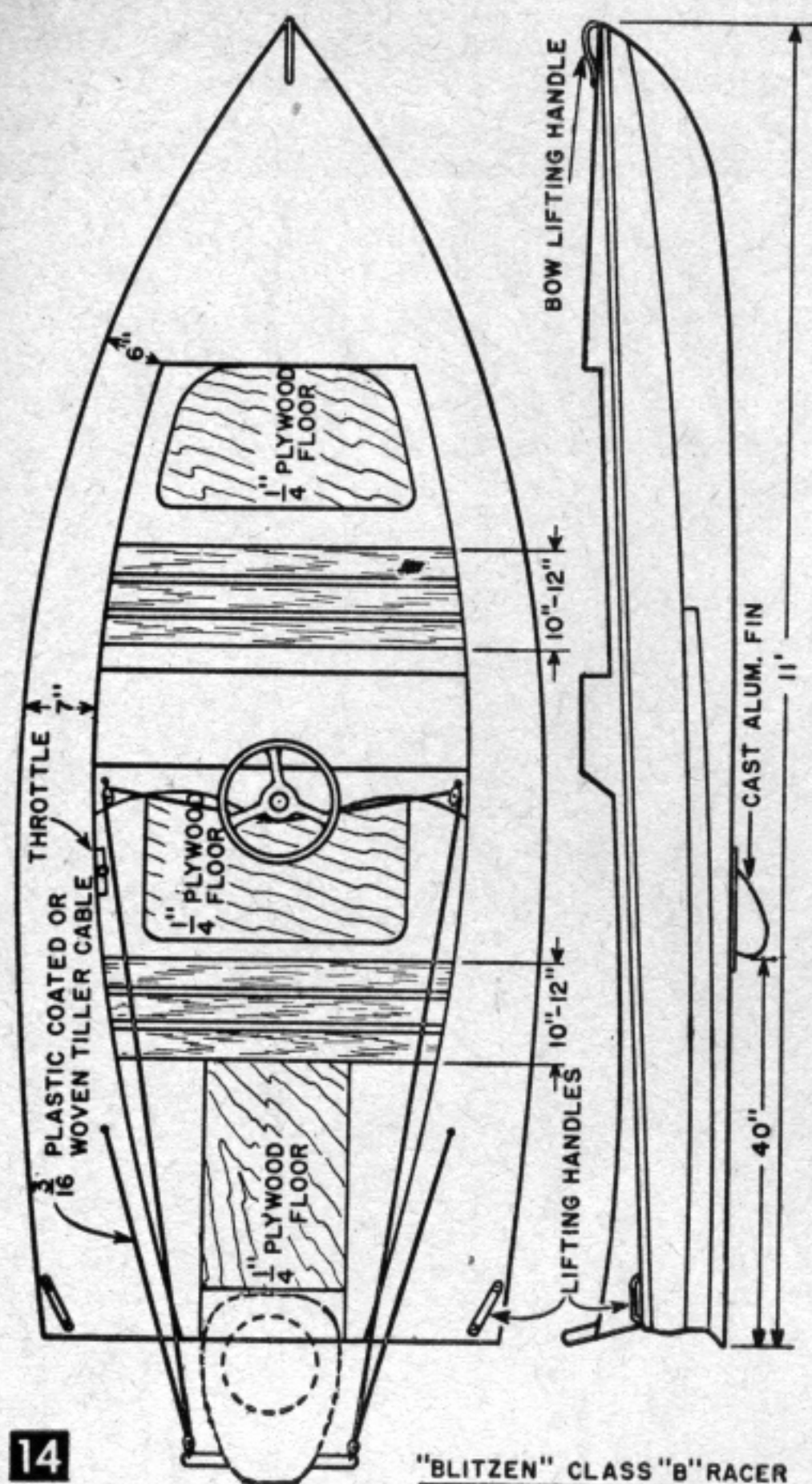
Also lay out pattern for after edge of bottom planking (Fig. 11) and saw to shape.

Next, coat contact points of keel and battens with *Weldwood* glue and coat bevel chines and transom with Kuhl's elastic bedding composition. Then clamp the shaped bottom plywood in position and fasten it at all contact points with 7/8 in. # 8 fh screws spaced about 2 in. apart, using a double row of screws along the transom. Cut narrow plywood strips to cover the beveled chines as in Fig. 9. Then coat the beveled chines with Kuhl's bedding compo and the chines with *Weldwood* glue and fasten these beveled chine planks in position with 7/8 in. #8 fh screws spaced about 2 in. apart.

Now cut the fore part of the planking to fit, using a paper pattern to obtain the shape of plywood adjacent to the stem. With the two fore planks cut to shape, lay them aside and cut the two curved battens shown in Fig. 3 which will secure the planking joint at this point. Then glue coat the battens and adjacent plywood joint and fasten the battens to the plywood in place with 7/8 in. #8 fh screws. Next, soak the extreme fore planking ends in hot water for about 15 minutes so they will bend readily, then coat their contact surfaces with *Weldwood* glue and fasten them to the framework with 7/8 in. #8 fh screws (Fig. 10).

Apply the side planking as you did the bottom planking, first providing a batten for the





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"BLITZEN" CLASS "B" RACER

side joints, then coating contact areas with Kuhls' elastic bedding compo, and finally fastening the planking to the framework with $\frac{7}{8}$ in. #8 *fh* screws. Then glue and screw the battens covering joints in side planking in place.

When the hull has been planked and trimmed evenly along the chines, remove it from the form. Leave the #1 mold frame in place for the time being to retain the hull shape forward (Fig. 13). Then cut deck beams to shape (Fig. 12) and, beginning with the #1 beam and working back or aft to #3 beam, fasten the various deck beams as indicated in Fig. 3, using knees that are screw-fastened from outside the hull with three $1\frac{3}{4}$ in. #8 *fh* screws to each knee. Secure the beams to the knees using two $\frac{3}{16}$ in. x 2 in. *rh* (round head) stove bolts to each beam end, or four bolts to each beam. When the #1 beam is installed you can remove the #1 mold frame and the hull will retain its shape. After fastening all the deck beams in place, notching the beams to take the carlins as shown in Fig. 12, using one $1\frac{3}{4}$ in. #8 *fh* screw to each joint. then trim off the beams, carlins, and edges of plywood along the sheer, evenly and you are ready to apply the decking.

Use $\frac{1}{4}$ in. natural finish gum or mahogany

for the decking (you might use $\frac{1}{8}$ in. for the racer hydroplane, but stick to the $\frac{1}{4}$ in. if you plan to use heavy outboards). Place the plywood decking in position, mark and cut it to shape, and then fasten it to the framework (Fig. 14) with $\frac{7}{8}$ in. #5 *fh* screws spaced about 3 in. apart. On the original *Blitzen*, the $\frac{1}{4}$ in. decking was scored with an electric hand saw, cutting through the first ply only; these score lines were later filled with white seam filler to make an attractive finish.

Next, lay the seat risers atop the frames as in Fig. 6 and screw fasten them to the frames with two $1\frac{3}{4}$ in. *fh* screws to each joint. Then cut the seat boards to fit and fasten them to the risers with two $1\frac{3}{4}$ in. *fh* screws to each joint. Finally, fasten the moldings along the sheer edges with $1\frac{3}{4}$ in. #8 *fh* screws spaced about 8 in. apart.

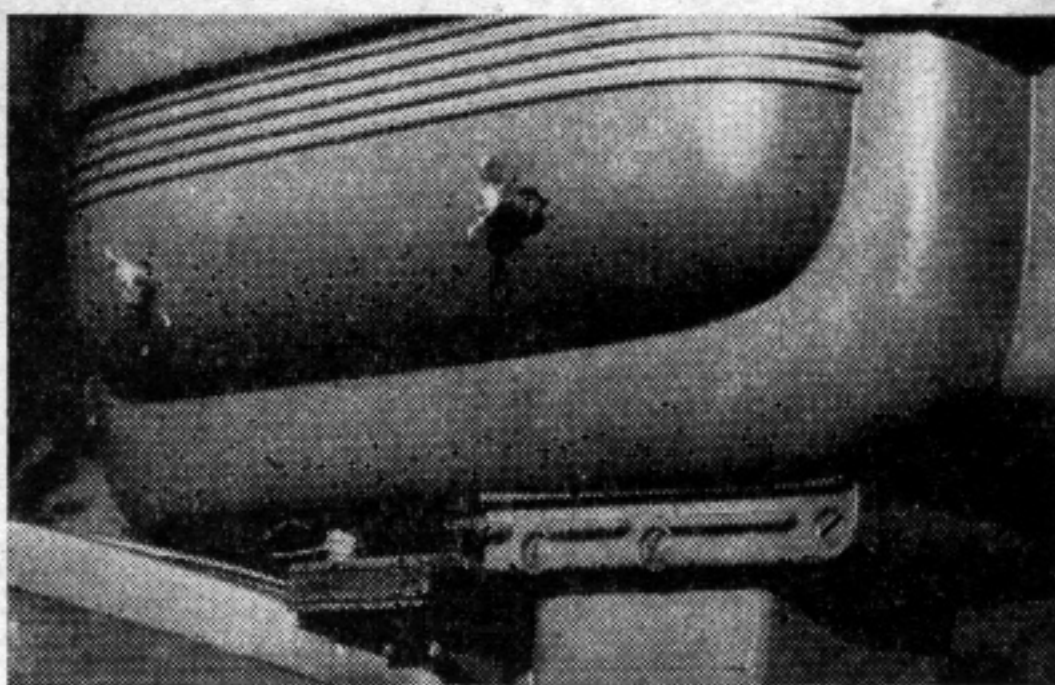
Paint the hull with two or three priming coats of Firzite, followed by two coats of enamel and decking varnish. You can add lifting handles aft and a bow plate forward if you wish. The steering wheel is installed in either the racer or utility model as in Fig. 8 of the racer model.

And that does it. Let us know how your model comes out and just how much speed you can get out of her, using different type motors, motor mounting angles and fuel mixes.

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cover plates make the job of motor inspection or changing plugs easier and faster. If screw heads are set too deep for the base of the wing nuts to reach them, screw a $\frac{1}{4}$ -in. brass cap screw into the wing nuts and braze for spacers to set them out from the cover.—CLINTON R. HULL.

