

MECHANICS · AUTOS · HOME IMPROVEMENTS

POPULAR SCIENCE

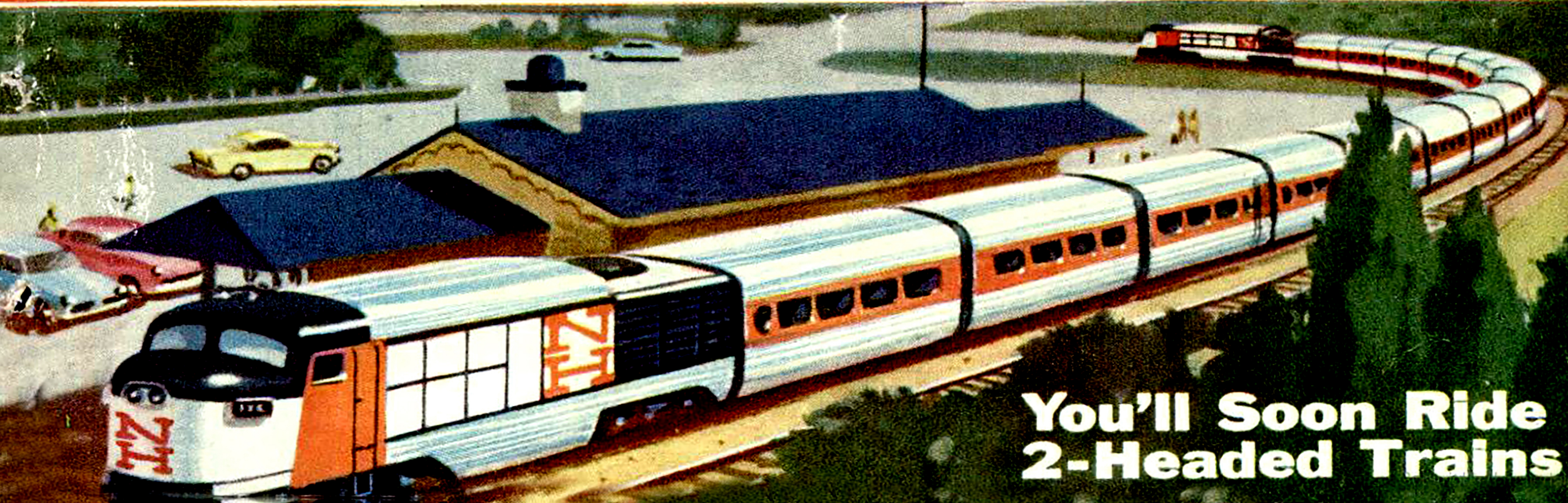
March 1956 35 c

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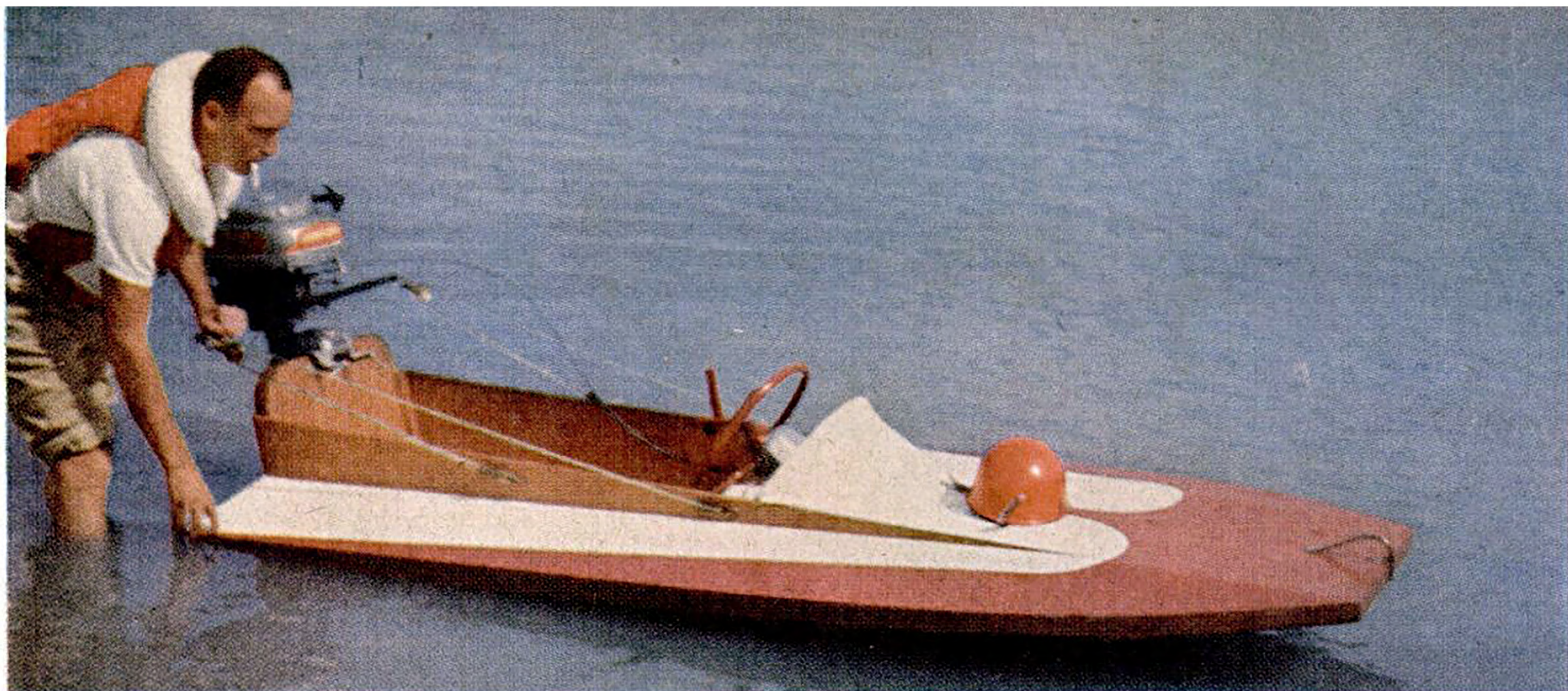
**How to Build This
Outboard Hot Rod**
PAGE 112



8 SPECIAL FEATURES **Spring Boat Fair** **PAGES 99 TO 122**



**You'll Soon Ride
2-Headed Trains**



AN OLD HAND WITH HYDROS, Rogers says that this one likes motors in the 6-to-10-hp. range. His advice to novices: Get in some time at part throttle until you get the feel of the thing; avoid rough water or large wakes from other boats.



By John Rogers

FOR pure unadulterated thrill, it's hard to beat blasting along in a racing hydroplane. The sensation of speed is terrific, and there are constant opportunities for testing your skill and your nerve.

The speedy cockleshell shown here and on the cover has four big virtues:

- It can be built in a couple of weeks of spare-time work by anyone who can pilot a screwdriver and saw. There is *no* tricky table of offsets, *no* need for full-

size plans, and *no* steam-box wrassle with the curves.

- It's cheap. I spent about \$60 for paint, screws and lumber (specifying first-grade mahogany), and I didn't use any workshop scrap. If your shop has the normal accumulation of odds and ends, you might cut the cost of the hull by a third. The wheel, throttle, fin and fittings may tack about \$25 to the bill.
- Designed for 10-hp. motors, it doesn't need big, expensive power plants. Even with a little 6-hp. rowboat kicker (about

[Text continued on page 118]

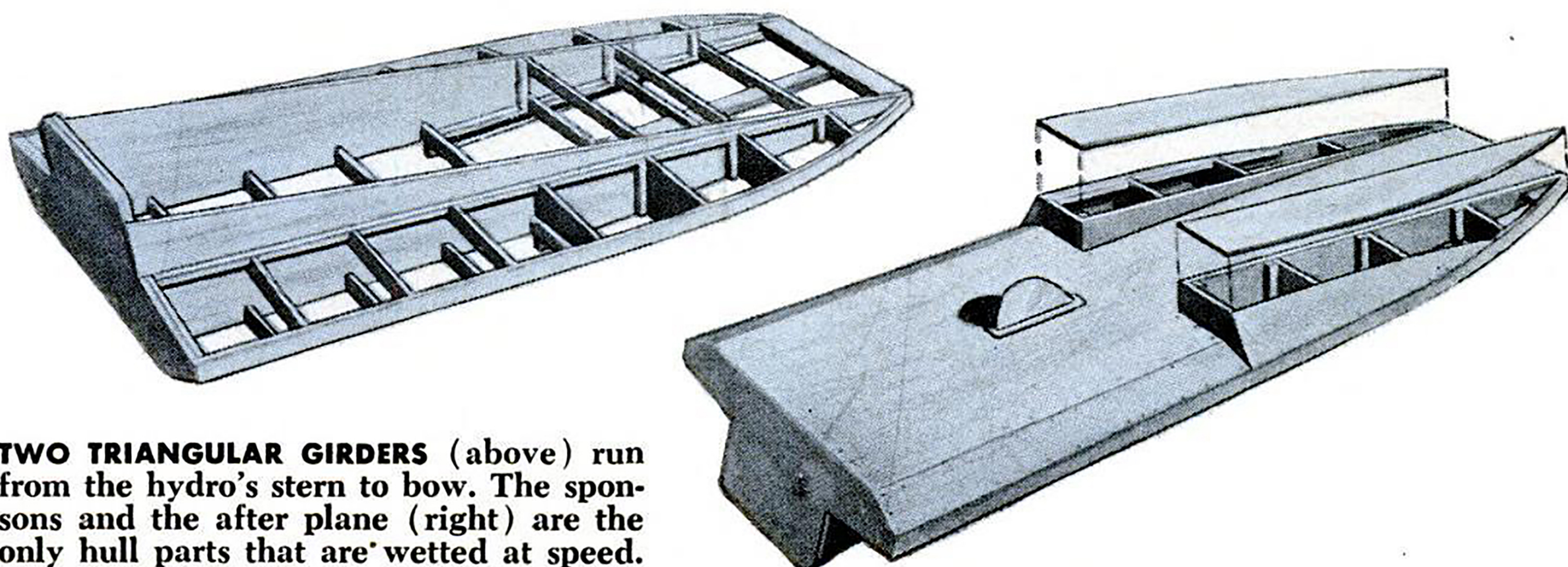


How to build this outboard hot rod

For less than \$100 and a couple of weeks of easy work, you can build this high-speed hydroplane. It goes like the wind with just a modest motor.

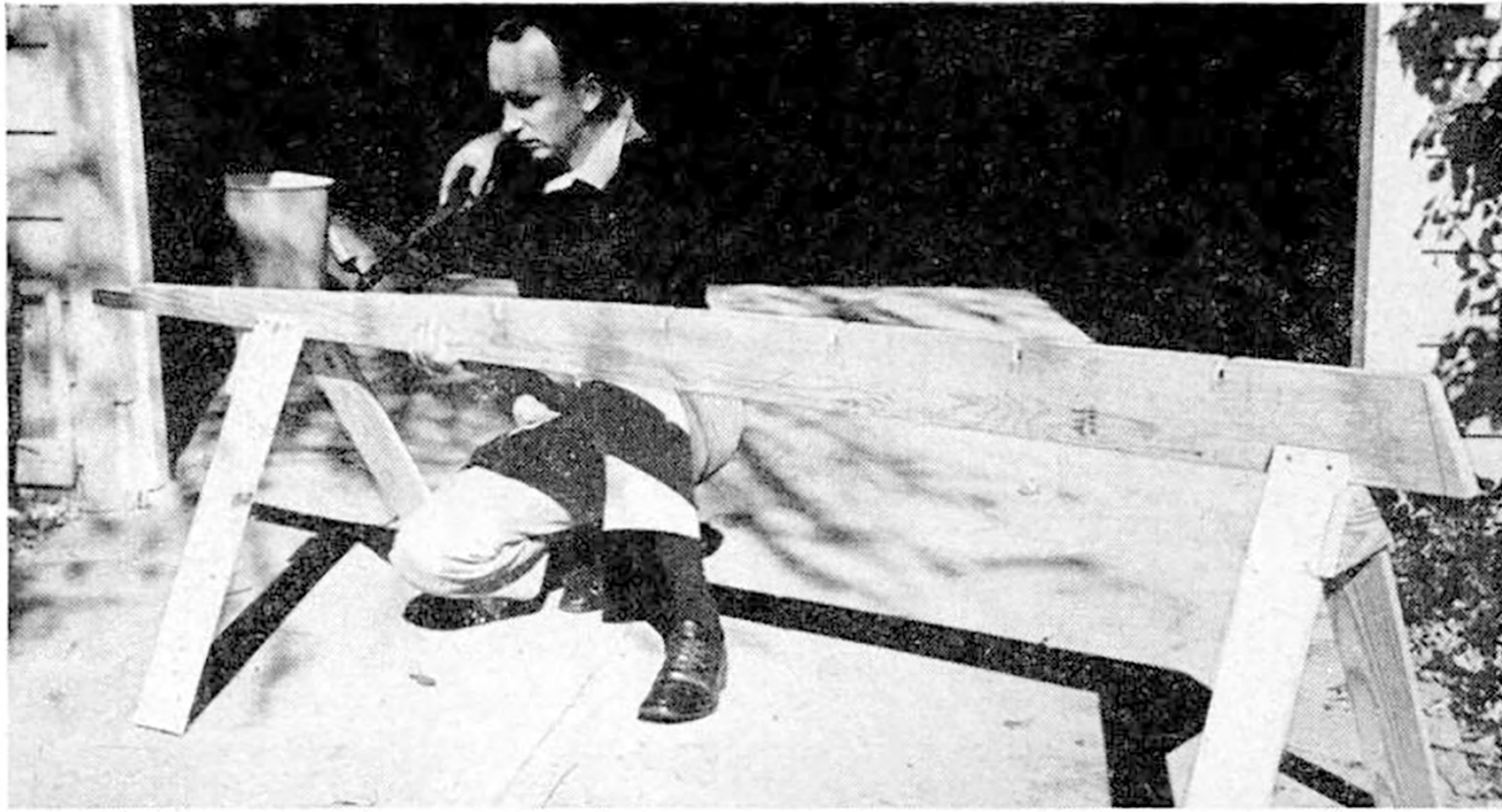


Fancy craftsmanship isn't needed for this hull

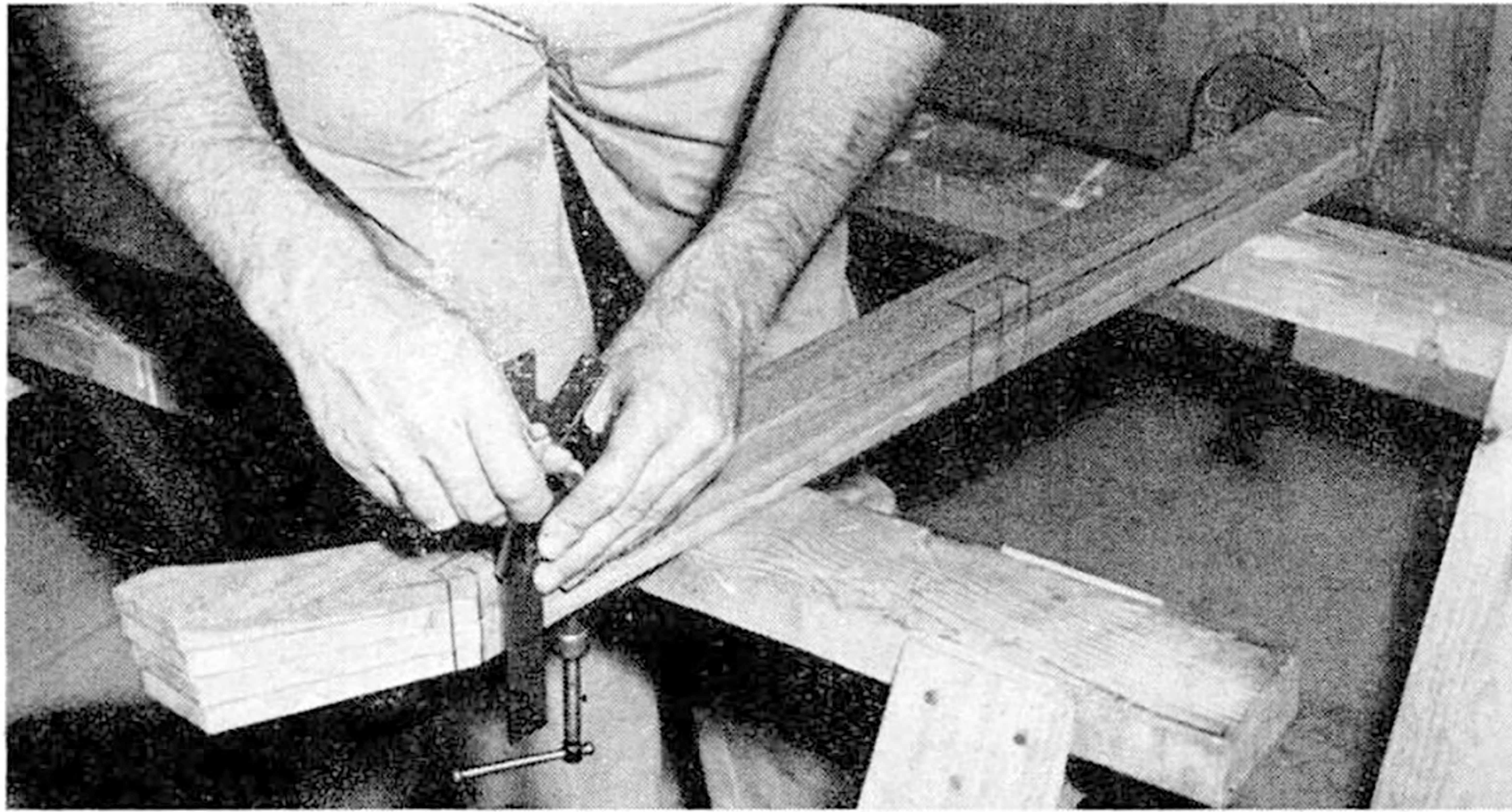


TWO TRIANGULAR GIRDERS (above) run from the hydro's stern to bow. The sponsons and the after plane (right) are the only hull parts that are wetted at speed.

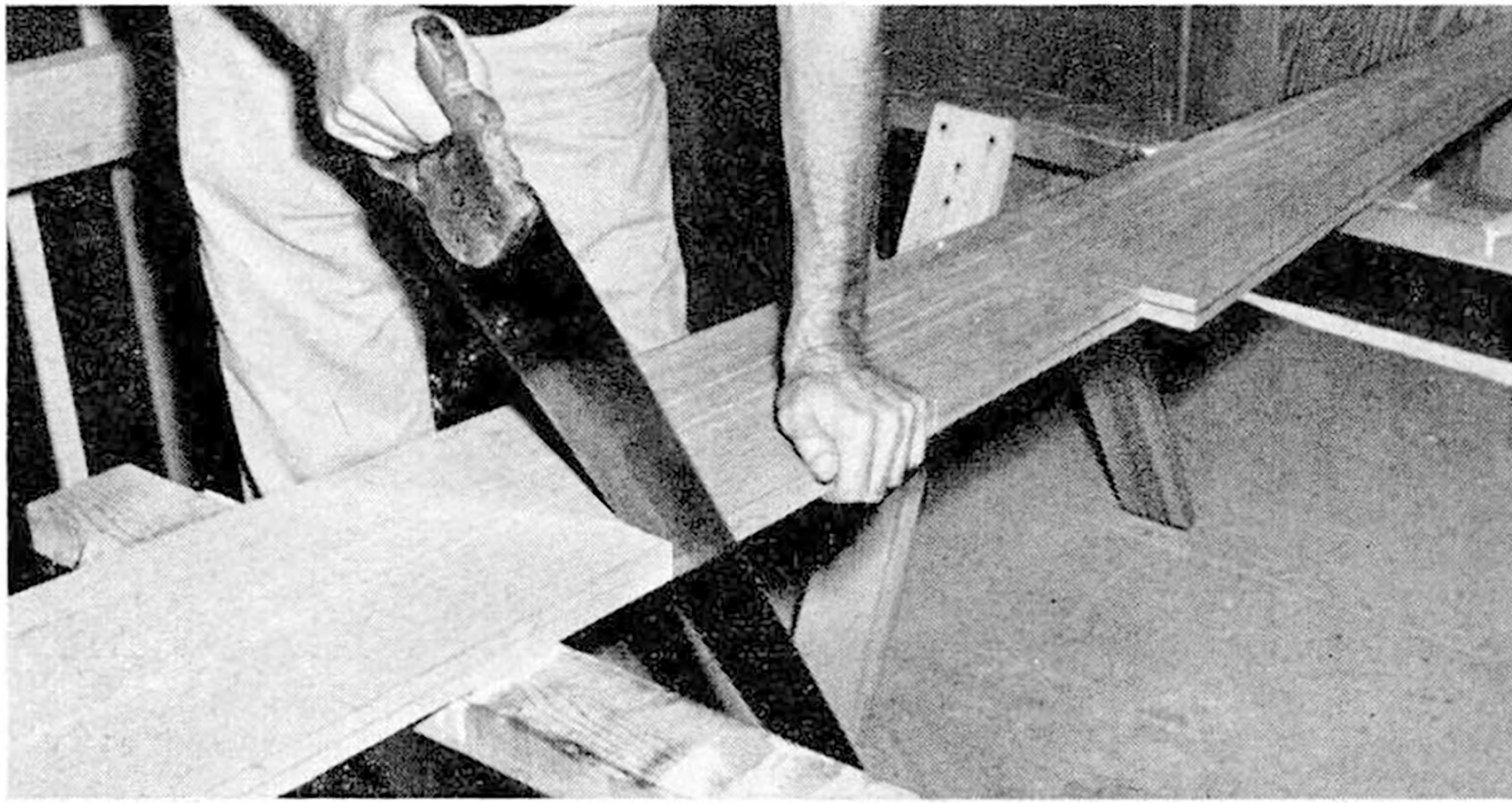
See following pages for construction details



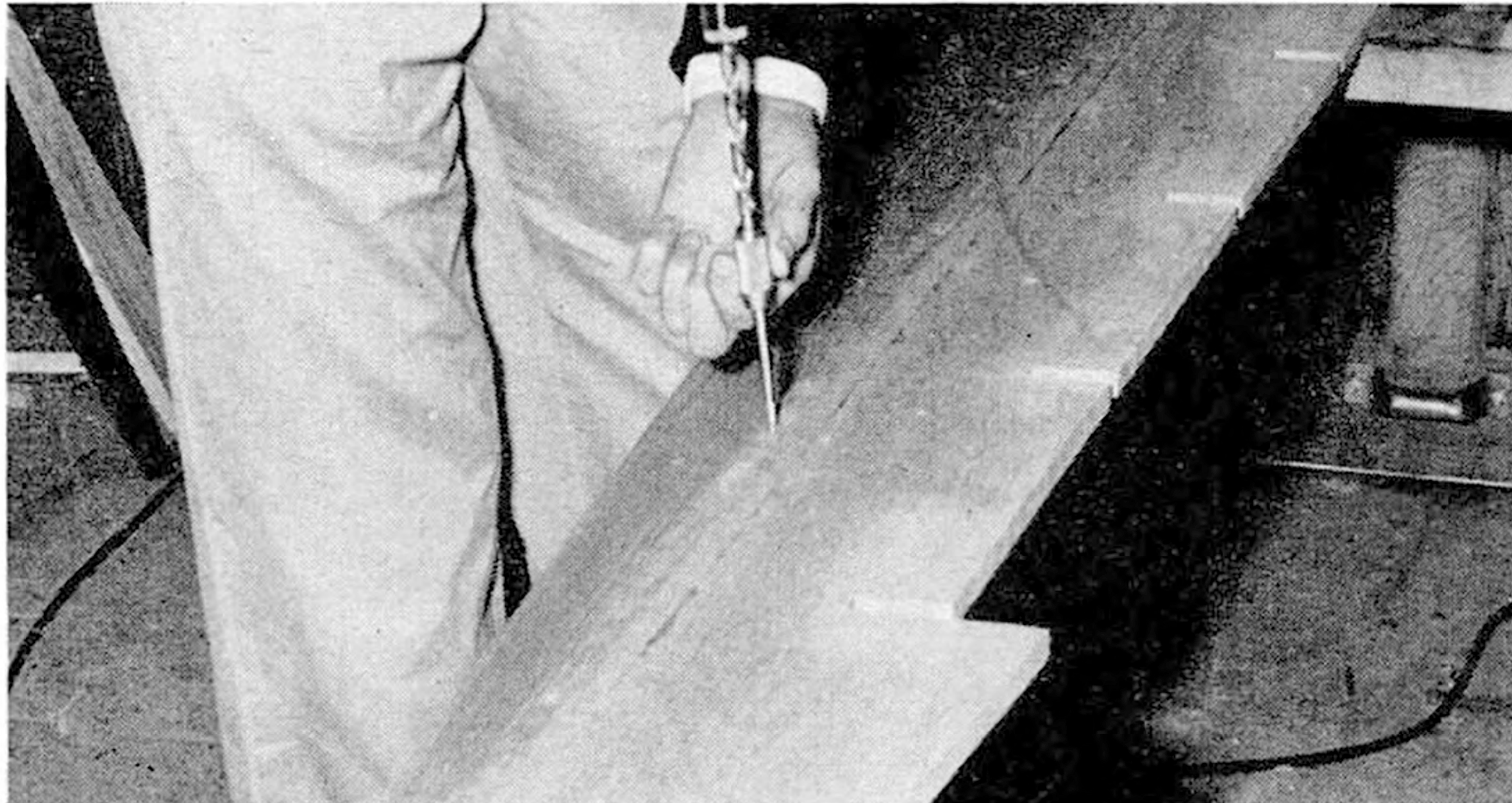
1 FRAMING JIG is laid out on a straight, true, two-by-six. Shape of top edge is a straight line from stern to a point 1" down at station 4; and a second straight line from here to a point 4" down at bow. With a plane, lightly dub off angle change just forward of station 4. The notches are 1¼" deep.



2 FRAMES 4, 5, 6, 7, which differ only in upturn at the ends, are sawed out of ½" stock. Then they are lined up, clamped together, and planed dead flat on the bottom. Before loosening the clamps, mark and cut notches for the keel and chine battens.

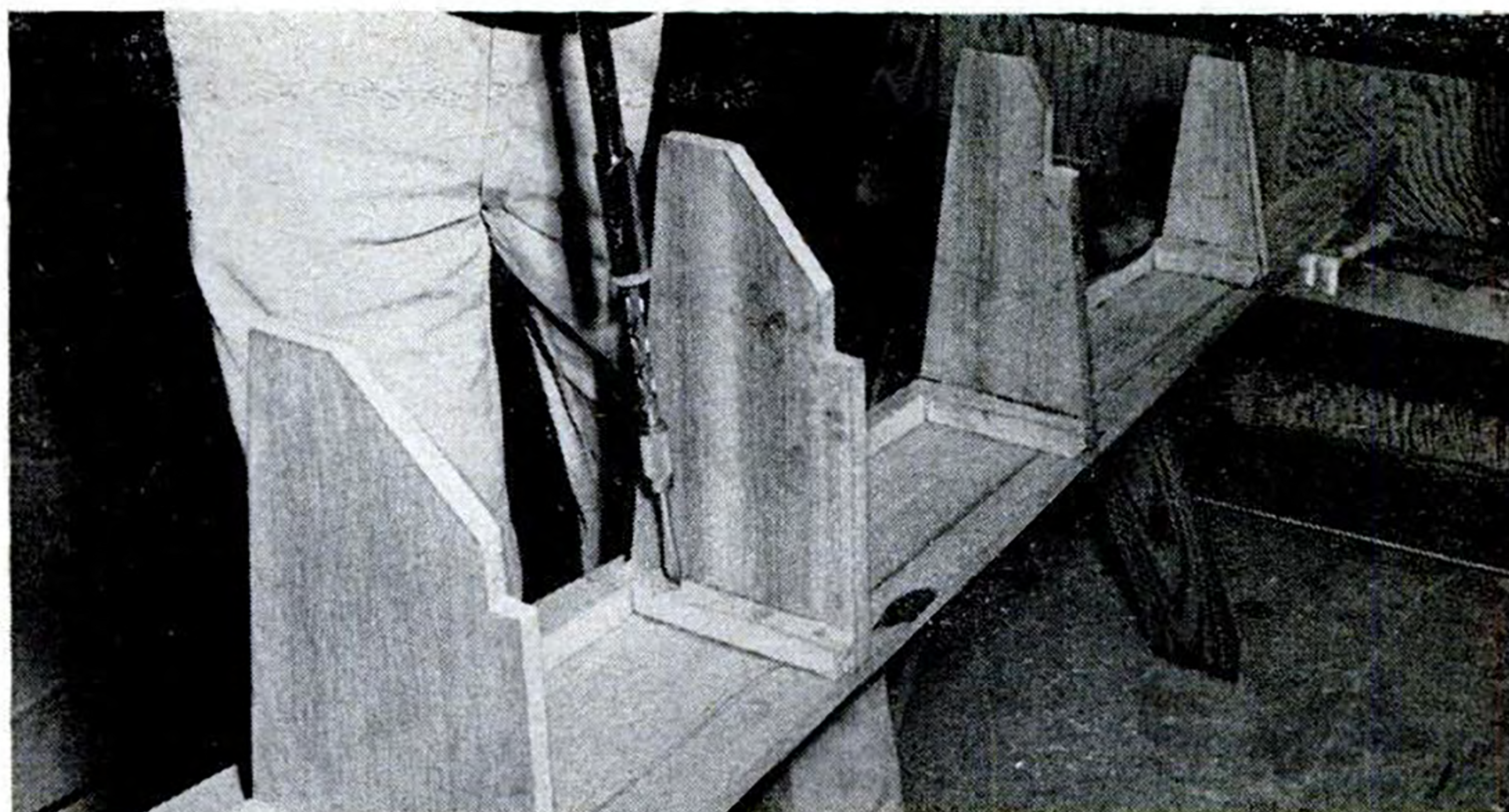


3 TWO IDENTICAL GIRDERS are cut from ½" stock. Lay out one on a plank 14" wide, or on a piece of ½" marine plywood, and use it after cutting as a pattern for the second. Mark deck line on what will be the outer side of each. Clamp them together and notch for frames 4, 5, 6 and 7.

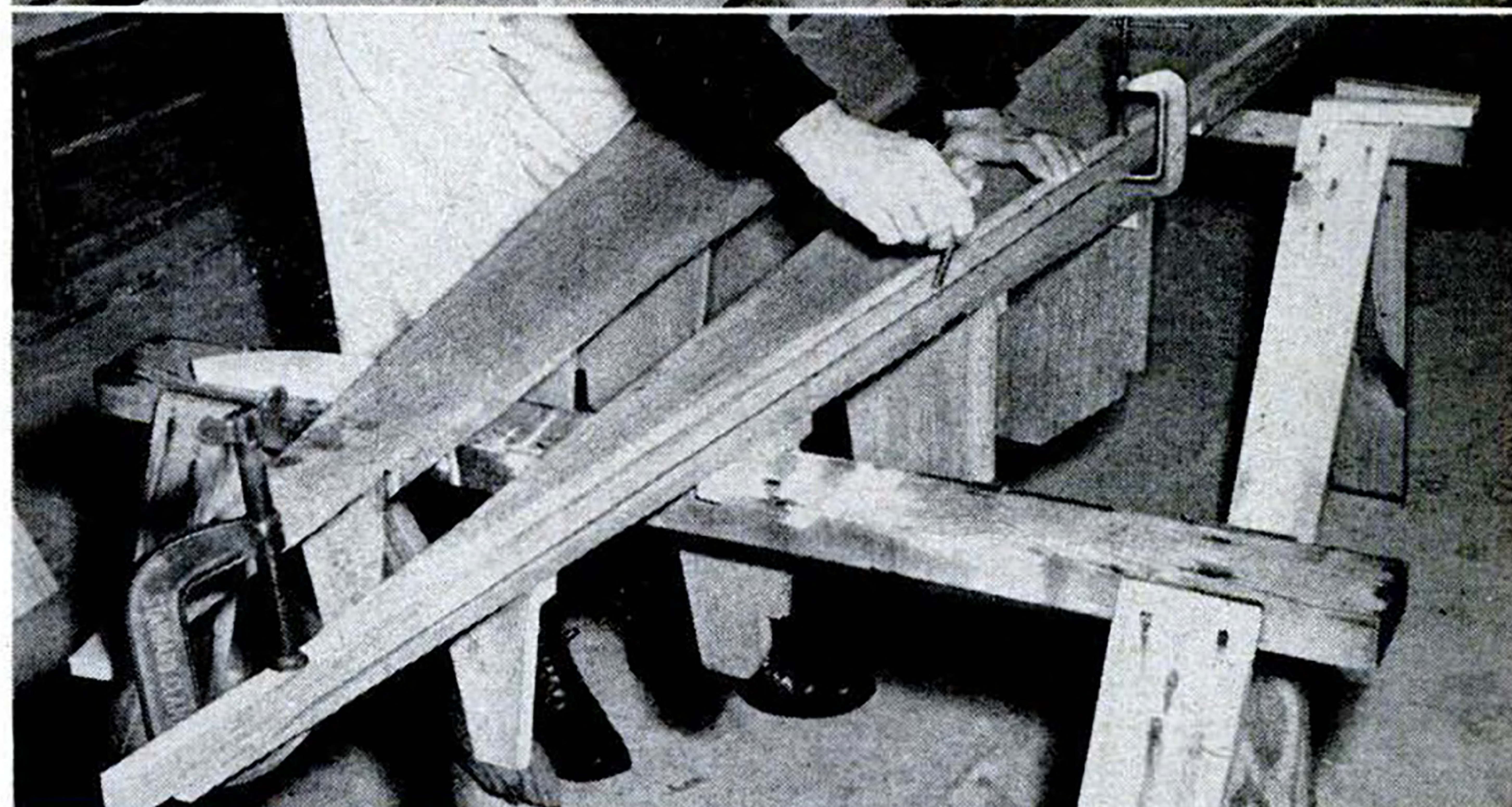


4 A DECK BATTEN, its top beveled 8 deg., is glued and screwed to the outer side of each girder. (Don't forget that you have a left one and a right one.) Use waterproof glue and 1¼" No. 8 flathead screws spaced 12" apart.

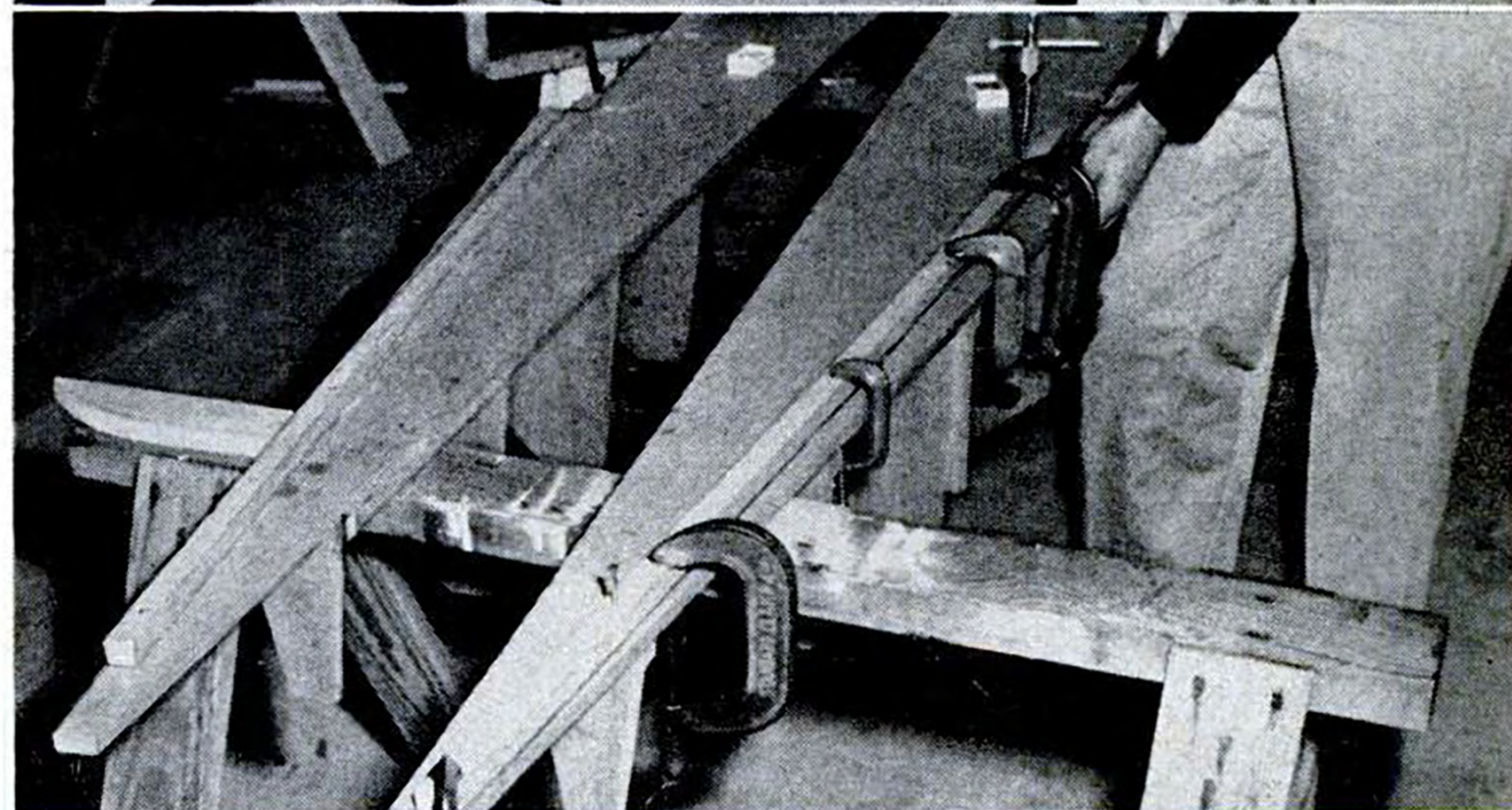
5 STUB FRAMES in pairs are sawed out for stations 1, 2, 3 and 4. Support blocks $\frac{3}{4}$ " square are glued and screwed to each. Then each stub frame is glued and screwed to the outer face of its girder. They are aligned at 90 deg. to the deck batten, not to the bottom.



6 BOTTOM LINE, forward of the sponson ends, is established this way. Each girder is flipped over and a flexible batten clamped in place as shown. Bottom line of the after plane is dead straight; that of the forward plane is nearly so, but it does have a slight curve forward of station 4.

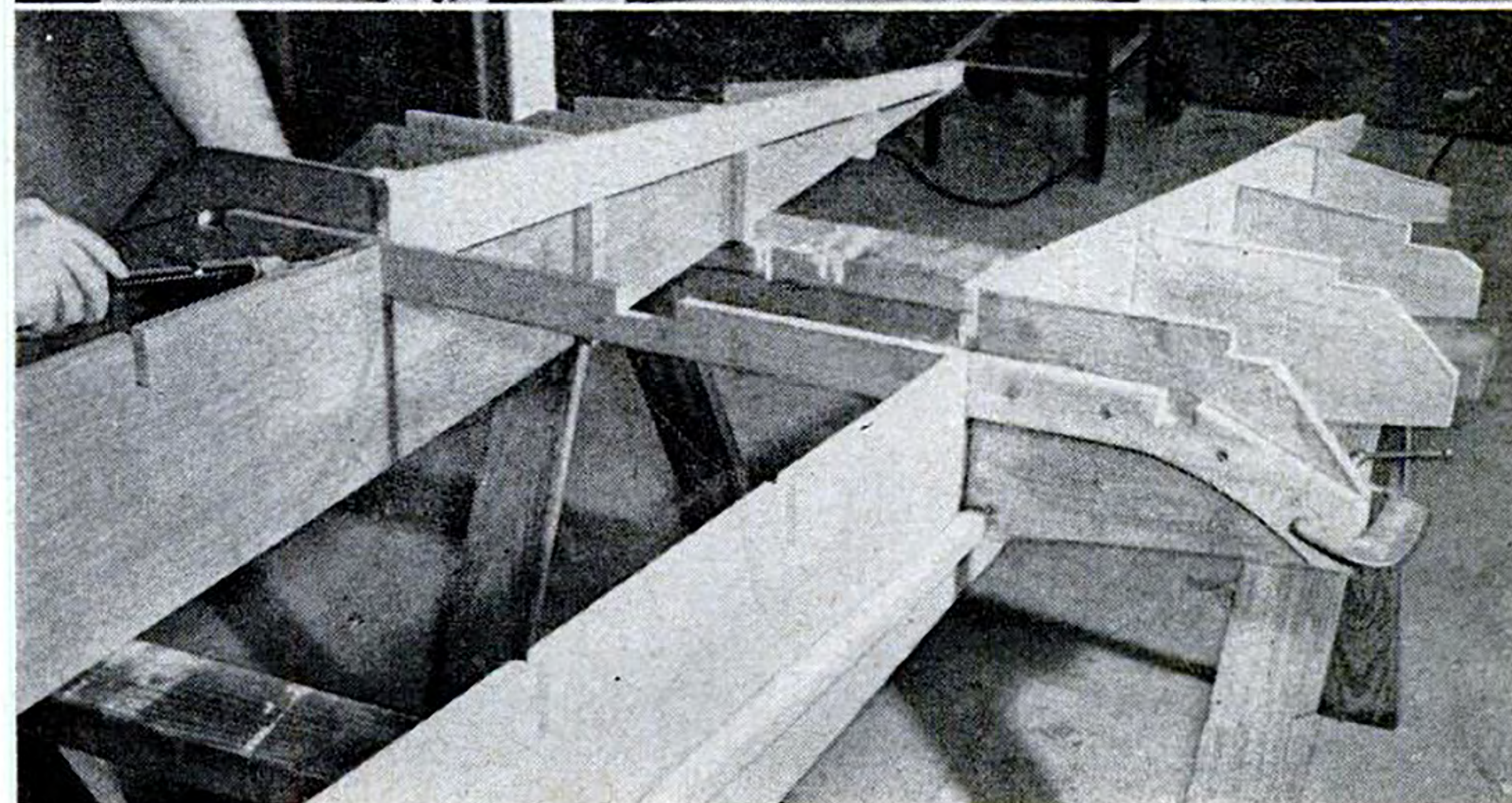


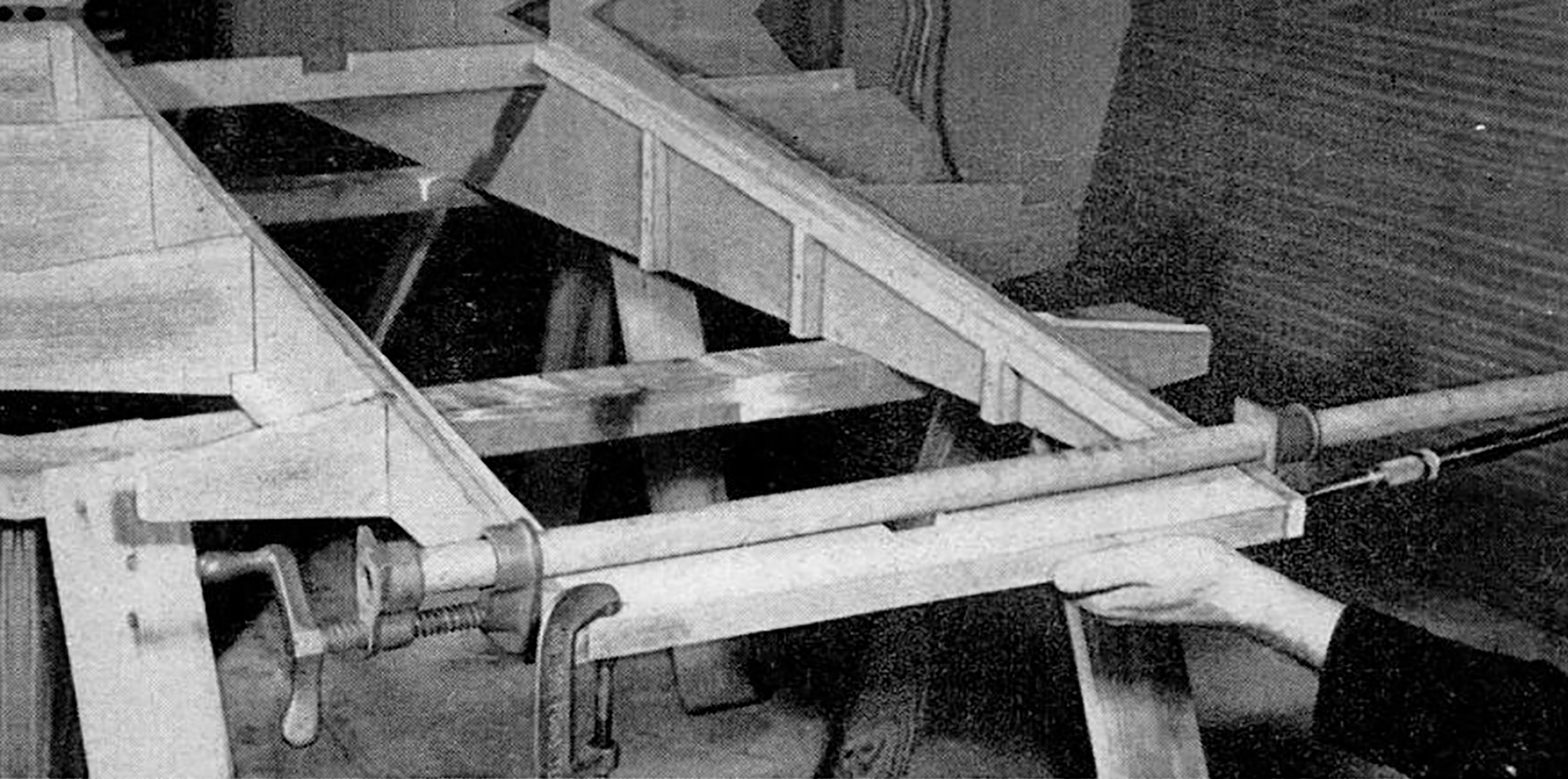
7 A BATTEN $44\frac{1}{2}$ " long is glued and screwed to the inside of each girder along this forward bottom line. It starts 3" short of the girder tip, to leave room for the bow block.



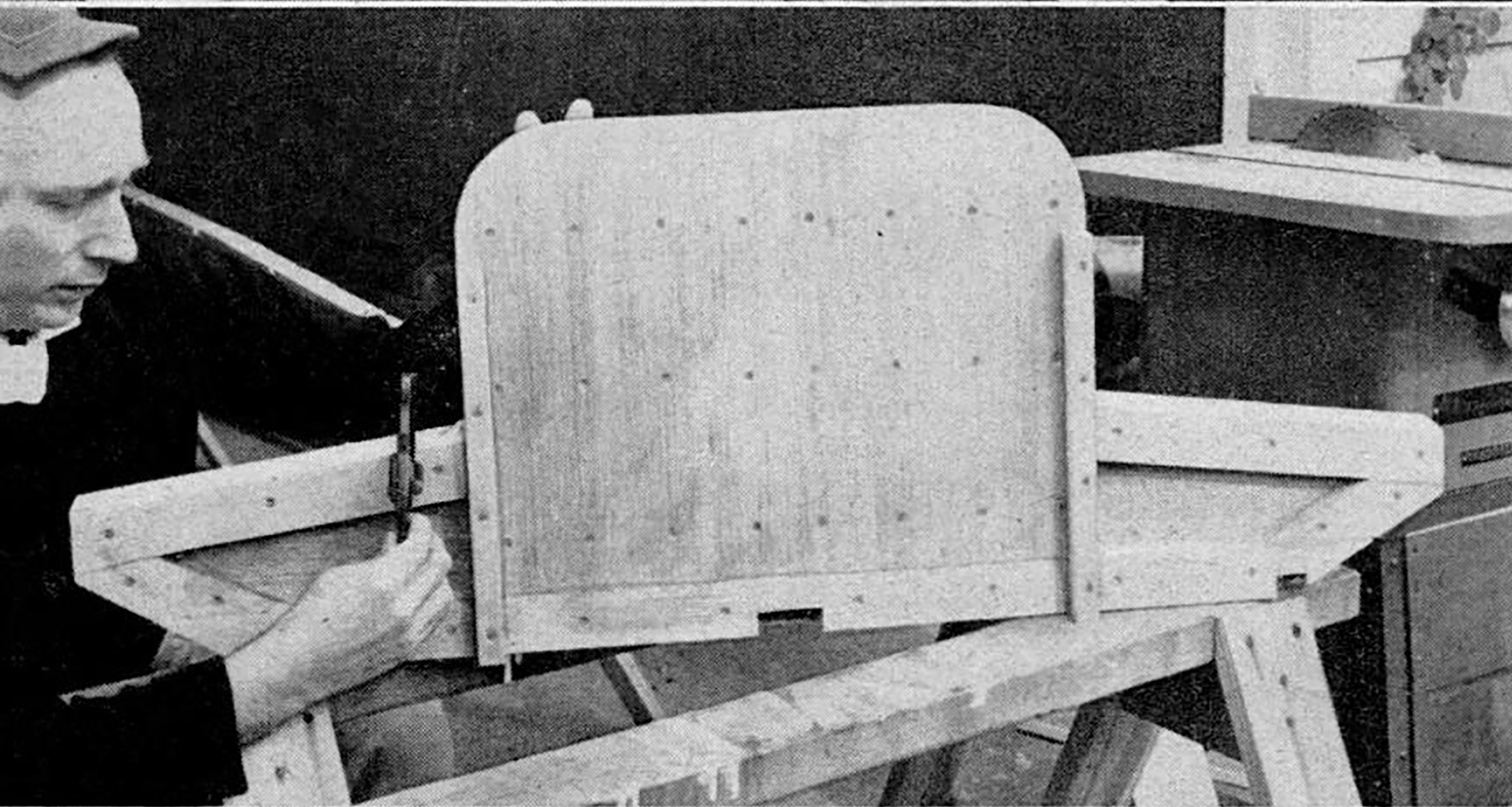
8 SET ON SAWHORSES, the girders are carefully squared up 19" apart. Then frame No. 4 is glued and screwed to its stub frames. Throughout construction, keep checking to make sure that the bottom will be true and unwarped.

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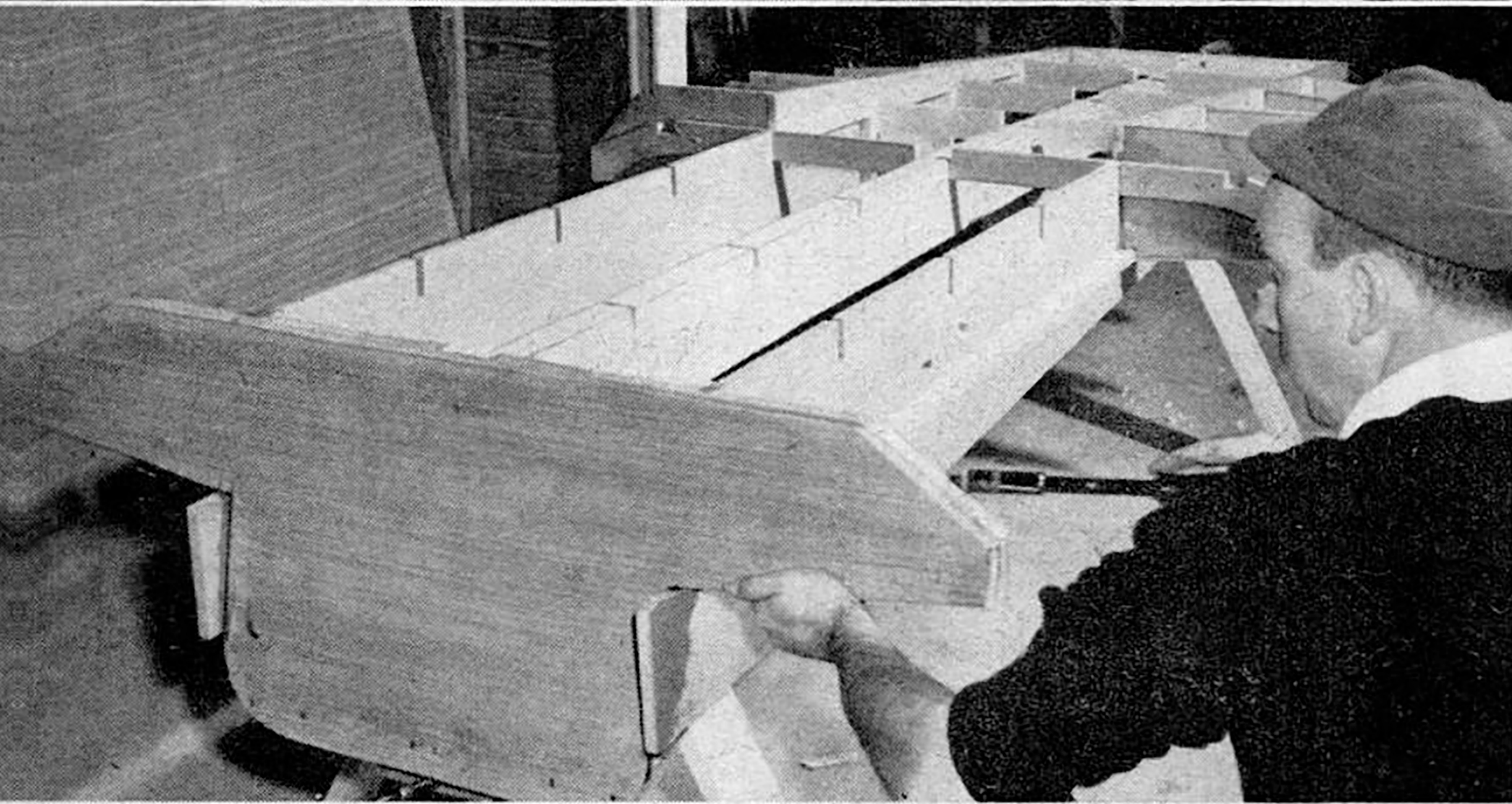




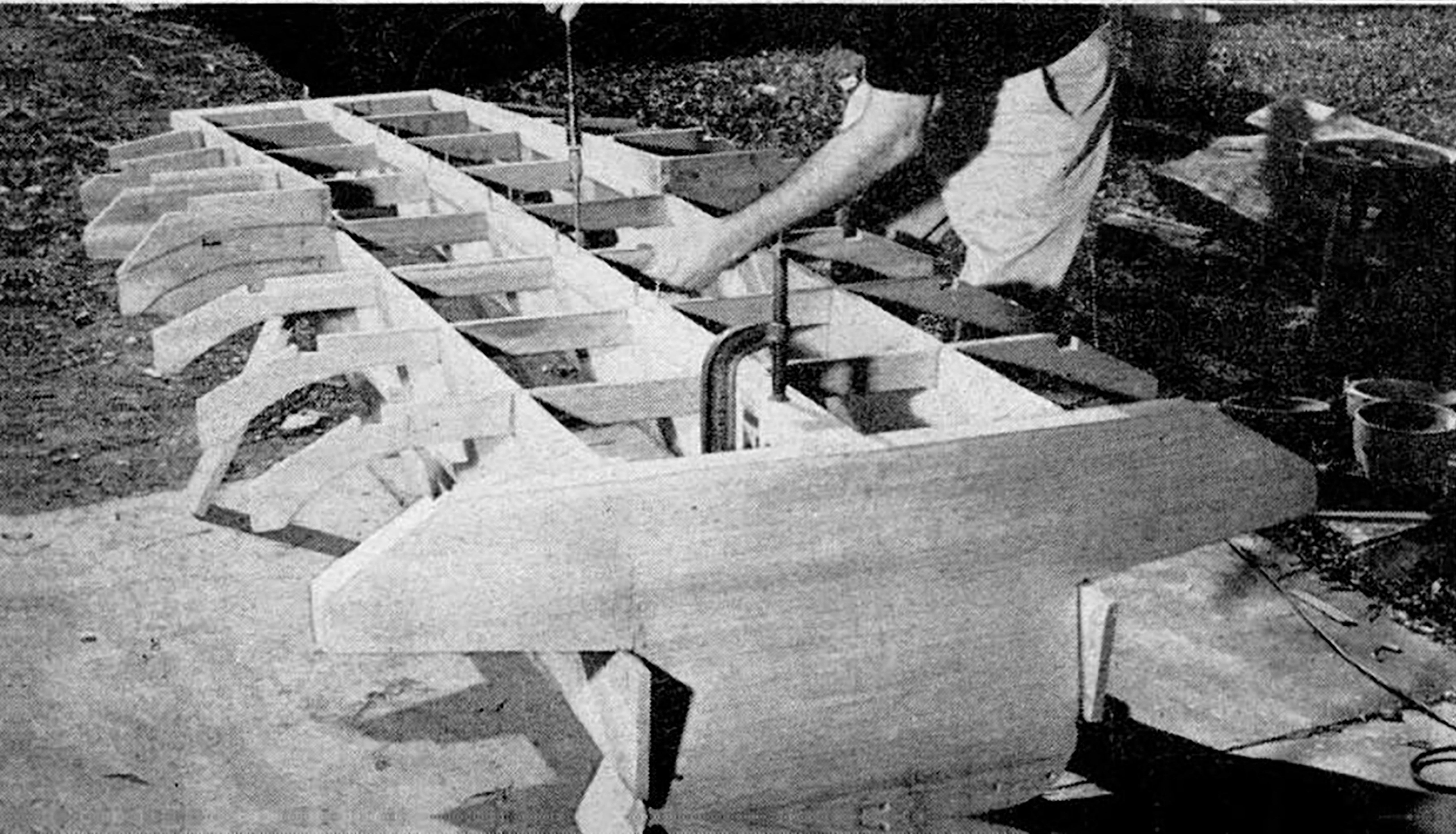
9 BOW BLOCK, glued up from two pieces of $\frac{3}{4}$ "-by-3"-by-19" stock and then tapered and notched for the keel batten, is attached between girders. Note the short upright blocks that are glued and screwed to the inside of each girder, to help in securing the deck beams and bottom frames at stations 1, 2 and 3.



10 RUGGED TRANSOM is a must; it will take lots of punishment. This one is built up: two pieces of horizontal-grain $\frac{3}{4}$ " mahogany for the rear part, doubled in the center section only with two vertical-grain pieces. Marine plywood would do as well. Bottom, deck, and bevel-chine members are added, notched for keel and chine battens. (The notches are not cut through the transom.) Also attached are two vertical strips to help hold the girders.

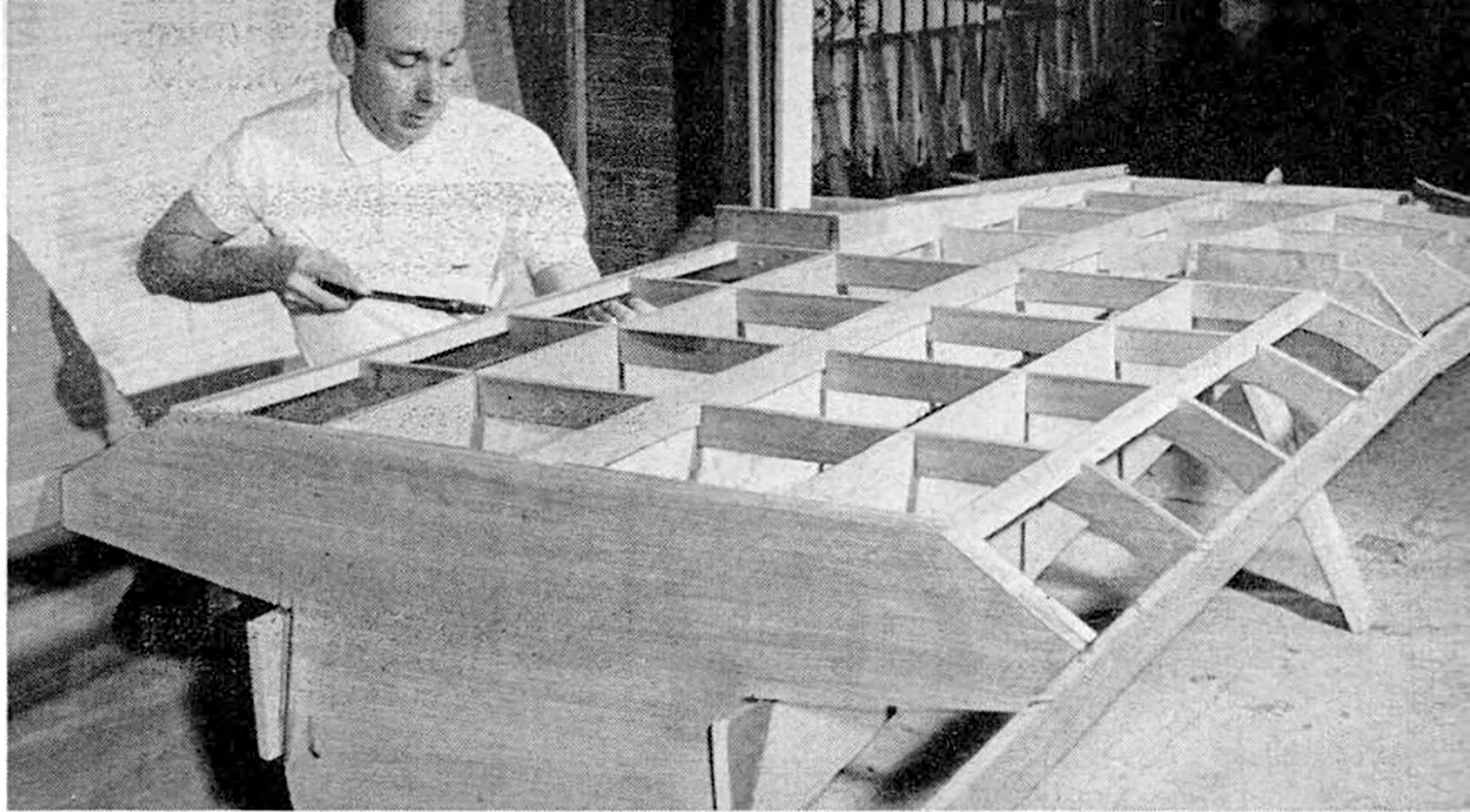


11 FRAMING JIG is first loaded with bottom inside frames 1, 2, 3. Then the girder subassembly is set in place. Transom is clamped on and glued and screwed securely, as are the inside frames in the forward section.

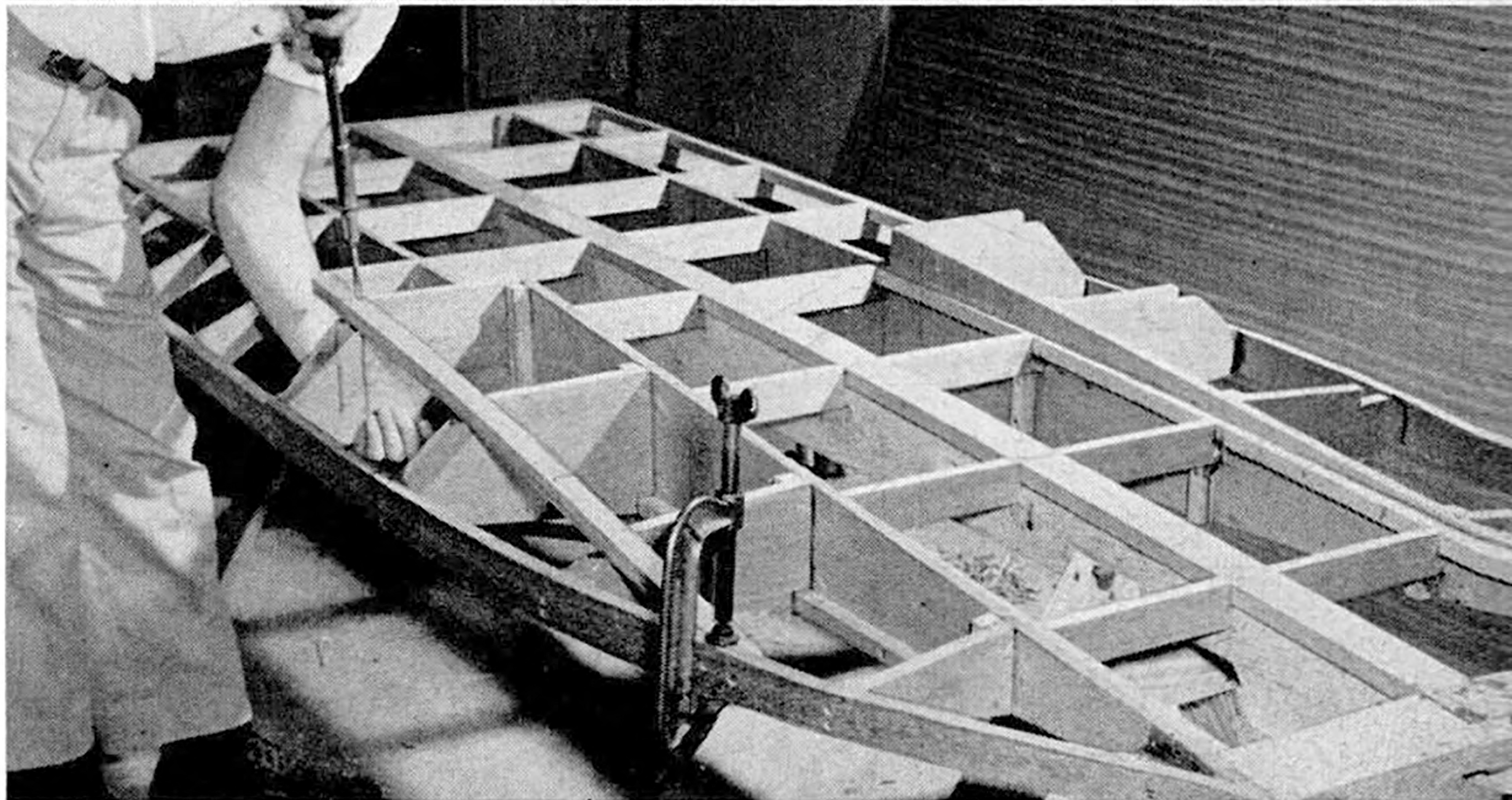


12 SEQUENCE isn't tricky, though it could fool you. Add frames 5, 6 and 7, and then attach the keel batten, taper-cut to fit in the bow-block notch. Keep checking flatness of surfaces that will form the bottom plane.

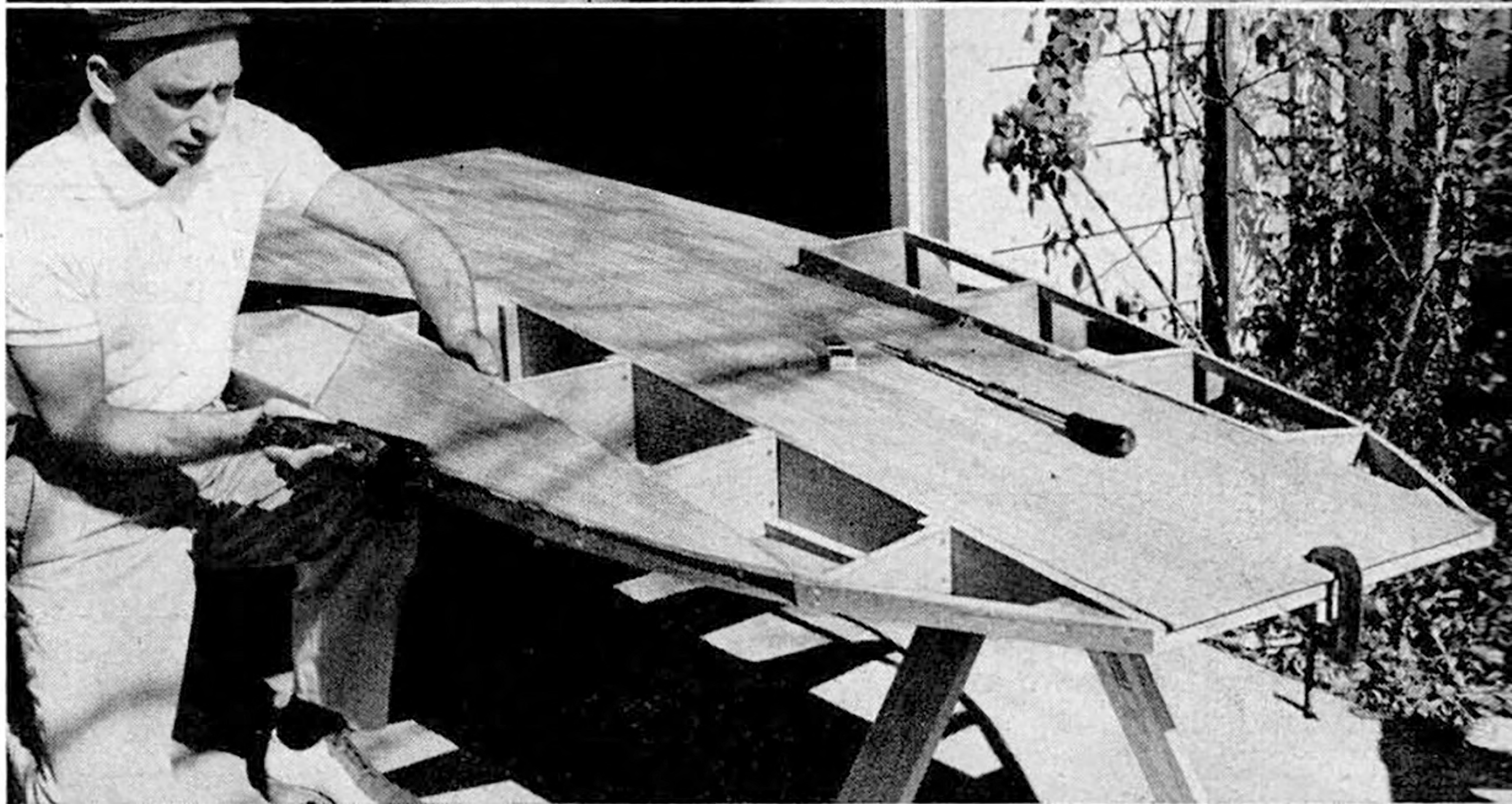
13 CHINE BATTENS come next. The lower chine batten being attached here is beveled after assembly. The main chine battens are attached at the bow first and then bent back. No wood steaming or soaking is necessary.



14 ON THE SPONSONS, lower chine battens run from the main chine battens back as far as the step. Attach first at the forward end and work back. All of the battens are carefully planed to produce chamfers against which the plywood planking can be fastened.

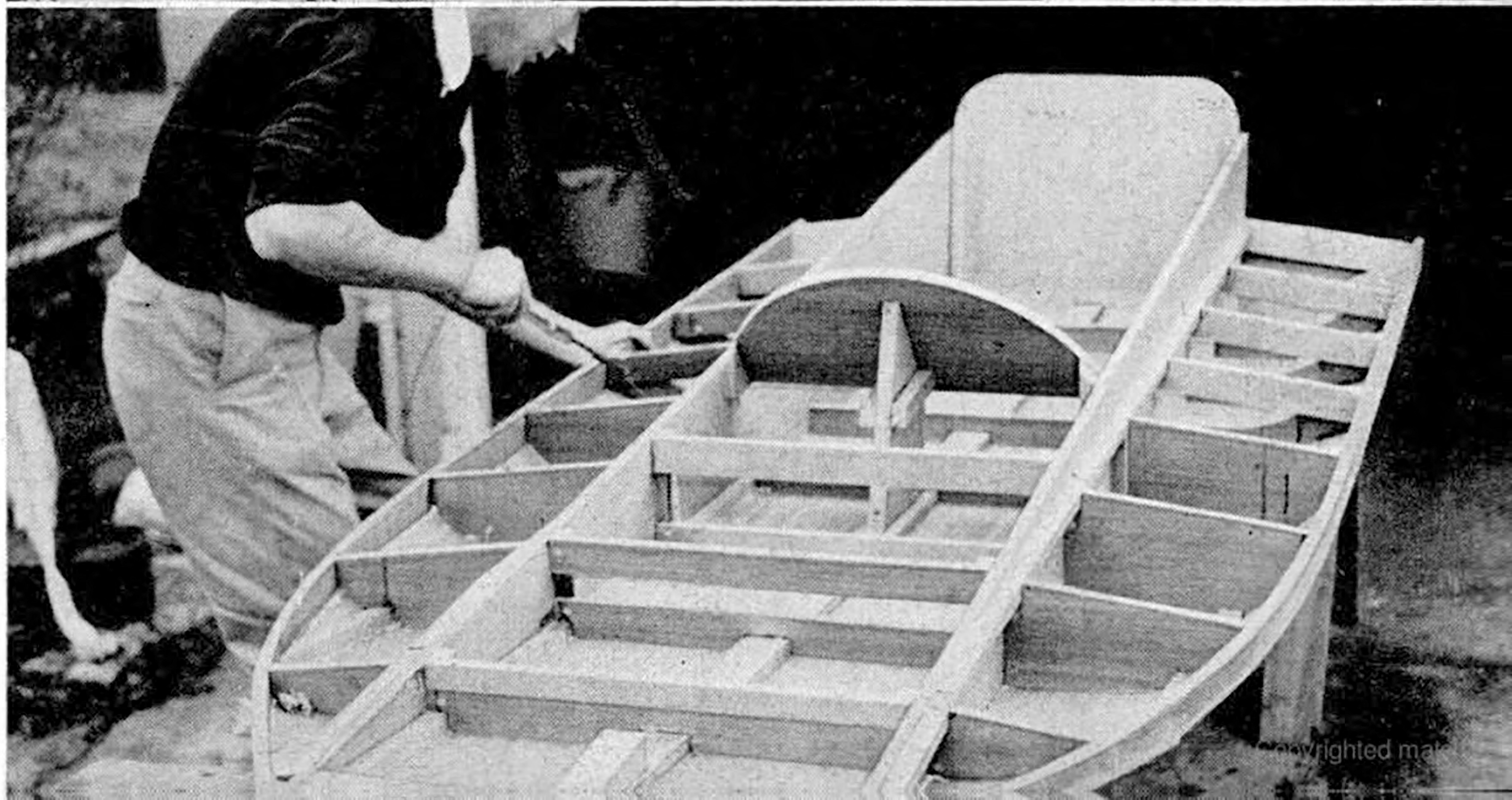


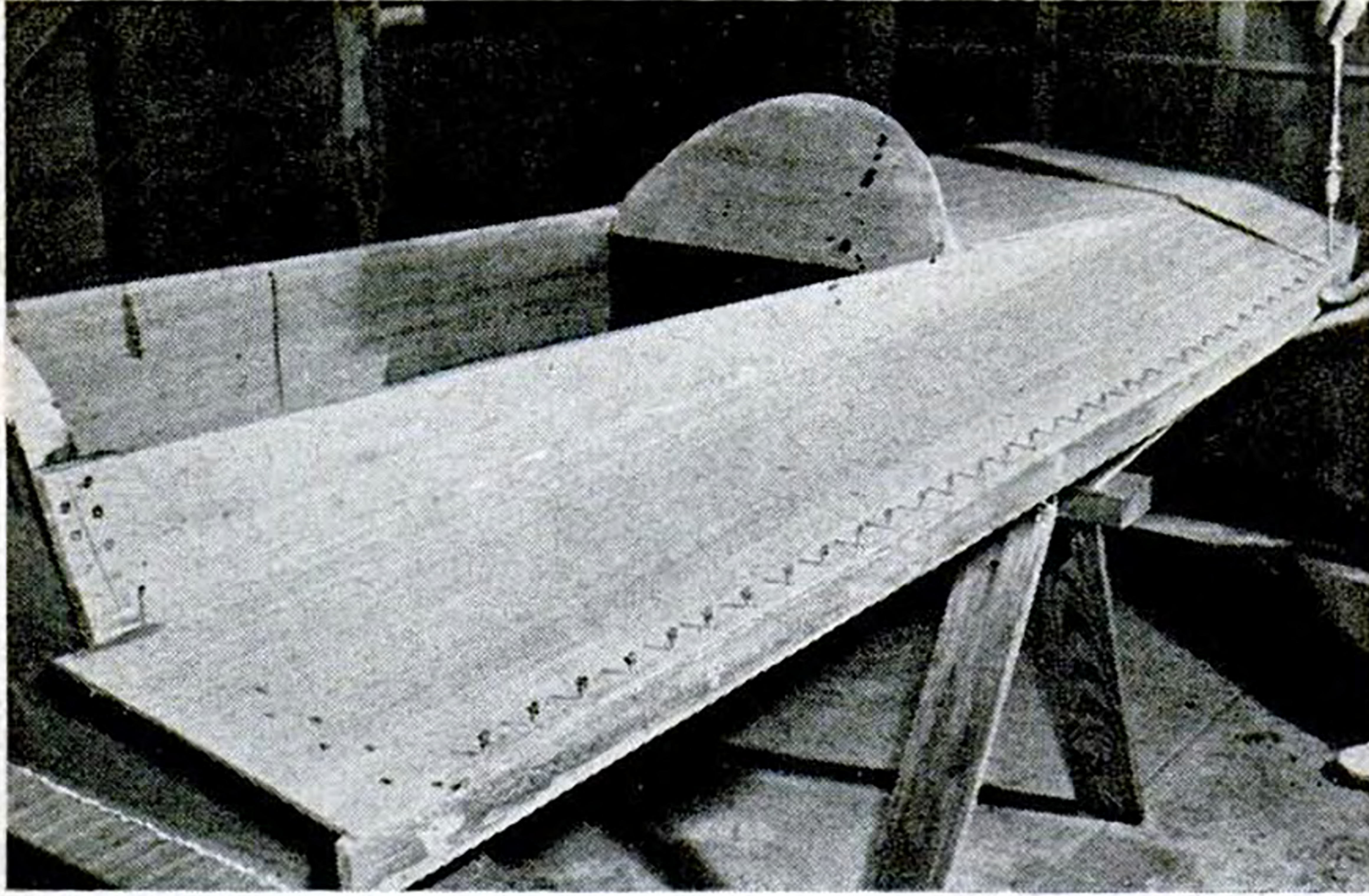
15 ONE 4'-by-8' SHEET of $\frac{1}{4}$ " marine mahogany plywood will plank the bottom if you cut it for minimum waste. In place of glue author used a rubber mastic sealer that makes a slightly flexible watertight joint. Screws are 1" No. 6 flathead, spaced 2" apart. Begin with the bevel-chine planks. Then plane edges flush with the bottom and add the one-piece bottom plank. Use the same sequence with sponsons.



16 WHEEL MOUNT, set at 45 deg., is installed just forward of frame No. 4. Brace it strongly; you'll be hanging on to it for dear life. Deck beams are added at frames 5, 6 and 7. Wedge block on the keel batten near the bow is for screws of the carrying handle.

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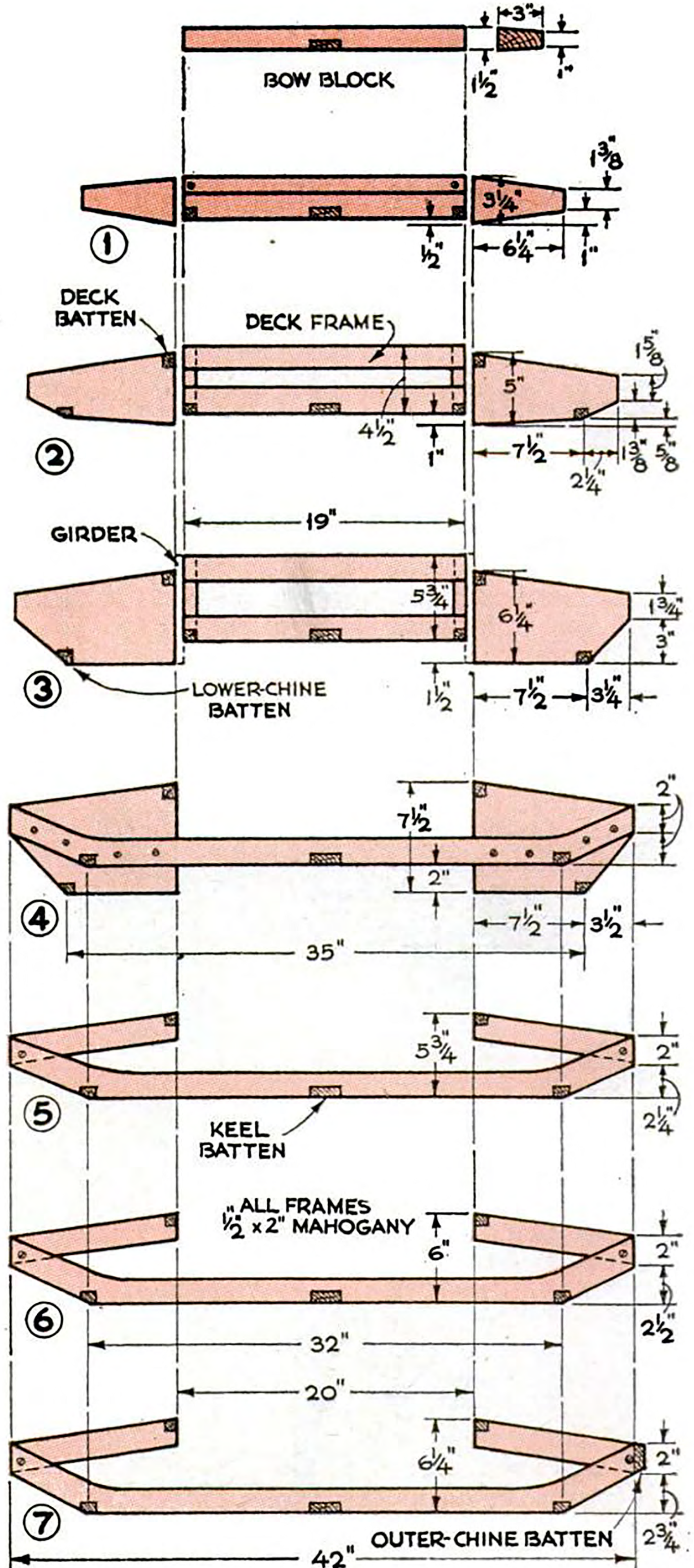


17 DECK OVER the raised center section first and then the two sides. Shape a cowling of .040" dural and attach to the wheel mount and deck. Sand the entire hull carefully before applying finish. Add the aluminum fin and a 1/4"-plywood floorboard; rig the wheel and the crash throttle. Then you're ready to head for the water.

the minimum size), it'll scoot along at about 25 m.p.h. With an ordinary 10, it'll probably outrun the most pompous inboard on the lake. And with one of the hot under-20-cubic-inch jobs made for stock racing, it'll top 50 m.p.h.

• Less than eight feet long and four wide, it can be carried, handled and launched with ease. If you make the fin easily detachable, the hull is a cinch for car-topping.

Tech specs. The boat is a three-point hydroplane, modified so that the sponsons—the small forward steps—are tucked under the hull instead of being on each side in the conventional manner. It conforms, if you want to go racing, to the Class A-B specifications for stock hydros (details obtainable from the National Outboard Association, 707 Market Street, Nashville, Tenn.). Even if you aren't a cup hound, this quick little shin-



WHAT YOU'LL NEED

- | | |
|---|--|
| Bottom, deck, floorboard: | 2 panels, 1/4" x 4' x 8' marine plywood |
| Transom, keel and chine battens, bow block, misc. cleats: | 1 piece, 3/4" x 12" x 14' Philippine mahogany |
| Frames, deck beams, outer chine battens, etc.: | 1 piece, 1/2" x 12" x 14' Philippine mahogany |
| Girders: | 2 pieces, 1/2" x 14" x 8' Philippine mahogany |
| Framing jig: | 1 piece, 2" x 6" x 8' fir |
| Cowling: | .040" x 16" x 26" dural |
| Cadmium-plated screws: | 7 gross 1" No. 6; 2 gross 1 1/4" No. 8; 1 gross, 1 1/2" No. 8. |
| Waterproof resin glue, mastic batten and seam sealer, clear spar varnish, enamel. | |

gle will give you plenty of excitement zipping about home waters.

Facts of life. People not familiar with small hydros should be counseled that this is no craft for rough weather or for picnic cruising with lady friends. Its one-man cockpit is 19 inches wide. You drive kneeling on a sponge-rubber pad. A life jacket is uniform-of-the-day; and an automatic crash throttle, to cut the engine if you bounce gaily overboard, is a must. The boat has no amenities and virtually no utility—just pure fun.

The boat can be built in the basement or garage—anywhere that you have about 10 feet of clear space. The job will go much easier if you have a spiral screwdriver and a screw-hole drill. A table saw or bandsaw is useful but not essential.

For a “fast bottom,” three coats of clear spar varnish serve nicely. Topsides can be finished in any way that suits your fancy. Costly marine enamels are not necessary, because a hydro is not usually left in the water or exposed to weather except when it’s in use. **END**

