

Build Your Own Cedar-Strip Canoe



Cedar-Strip Canoe

One of the most beautiful and desired canoes is the cedar-strip canoe. Until now you either had to pay someone upwards of \$3000 to build you one, or wrestle your way through 300 pages of plans to build your own. These plans are just as in-depth as the more difficult plans, the difference is we have eliminated all of the duplicate information you really do not need to know to build one of these canoes.

If you are like me, I know what you're probably thinking: 'I want a canoe just like that, and I'd love to build one, but this is just too big and too difficult a project for me.'

I think you're in for a pleasant surprise. This *is* a large project, and it is time-consuming. But it's like painting your house - lots of time and lots of work, but not all that difficult if you approach it properly. Unlike most forms of boat-building, a cedar-strip canoe is very forgiving in its construction. A first-time canoe builder with modest tool skills can build an excellent craft. This would be an excellent project to involve your teenage in.

This canoe is 18 ft. long, and is designed as a general-purpose family touring craft for camping and general flatwater paddling. It is not designed to run class 5 rapids. It's stable, moderately fast, carries plenty of weight, has no keel, and is easy to portage. This canoe will weigh in at about 55 lbs. when completed.

The plans are presented in 3 logical steps;

Part 1: Building the form on which to build your canoe

Part 2: Stripping the canoe with cedar strips

Part 3: Fiberglassing and finishing the canoe.

Each step includes a shopping list and a cutting list, directions and illustrations. It is suggested that you read the entire sequence of steps and familiarize yourself with the process before beginning your canoe. Make sure you have a source of materials, the knowledge to put them together, the tools for the job, and the room to accommodate your efforts.

When finished, you will be the proud owner of one of the most beautiful canoes ever designed. Follow the directions and illustrations for an easily built canoe you can enjoy for years to come.

Part 1: Building the form on which to build your canoe

Assembling the wooden form on which your canoe will be built.

WHAT IS A CEDAR-STRIP CANOE, ANYWAY? The basic idea behind a cedar-strip canoe is to make a hull of narrow wood strips, each one glued to the next with ordinary carpenter's glue, and then cover the hull with fiberglass, inside and out. The wooden hull by itself is weak, but the two layers of fiberglass make the canoe extremely strong, lightweight and waterproof. No ribs are needed, no canvas covering, and no caulking.

This "sandwich" construction, with the fiberglass as bread and wood as the filling, is also why this type of canoe is very forgiving to a novice builder - the wooden strips don't have to be fitted very exactly, because the fiberglass covers all the gaps.

As we start to build the canoe, we begin by assembling the "strongback," which is basically a long sawhorse on which to work. We then attach the molds, which are curved plywood pieces that the hull will be built on. The plans show clearly what the strongback and molds look like.

WHAT IT TAKES TO BUILD

You don't need the skills of an expert woodworker to make a cedar-strip canoe. If you can operate a table saw or radial arm saw, you can do it. You do need patience and persistence, however. There are a lot of wooden strips to put on, and there's plenty of surface area to sand. You should count on it taking about 150 - 175 hours to finish the canoe. In addition, the materials will cost around \$450 - \$500. A garage or covered patio is the best place for building, because you need 12 - 16 ft. of clearance in front of and behind your saw for cutting the long strips. Furthermore, sanding the glued-up hull produces clouds of sawdust, and applying the fiberglass produces noxious fumes. You could work in a basement shop, but be sure you can get the finished canoe out, and install a powerful fan to exhaust dust and fumes.

The tools you will need are:

Power tools: table saw or radial arm saw, jigsaw, electric drill, belt sander, orbital sander and router.

Hand tools: wrenches, chalk line, ten 2-in. spring clamps, four 6-in. clamps, two staple guns, Surform file, hand plane, two 7 in. or 9 in. paint rollers and three trays, two paint scrapers, coping saw, and a combination square.

Miscellaneous: church-key can opener or small tack puller, 20 clothespins, cartridge-type respirator, safety goggles, dust masks and rubber gloves.

If you're ready, take a deep breath, and let's get started.

What you need for the first step.

SHOPPING LIST

ITEM	QUANTITY
22" x 28" poster board	3 sheets
19" x 24" tracing paper	5 sheets
½" x 4' x 8' exterior fir plywood	2 sheets
2" x 4" x 12' pine	7
1" x 6" x 8' pine	2
¼" x 5" hex head bolts with nuts and washers	2
1-4" x 3" hex head bolts with nuts and washers	8
1/4" x 2-1/2" hex head bolts with nuts and washers	26
1/4" x 2" hex head bolts with nuts and washers	2
1/4" x 3" lag bolts	20
#6 x 2-1/2" drywall screws	50
#6 x 1-1/2" drywall screws	46
1" brads	50
1" x 10" x 16' cedar	3

CUT STRONGBACK PIECES TO SIZE

This is possibly the most important step in building your canoe. Be precise and build your strongback level and straight. This is the beginning, and a mistake or sloppiness here will result in a canoe that is hard to handle, or worse.

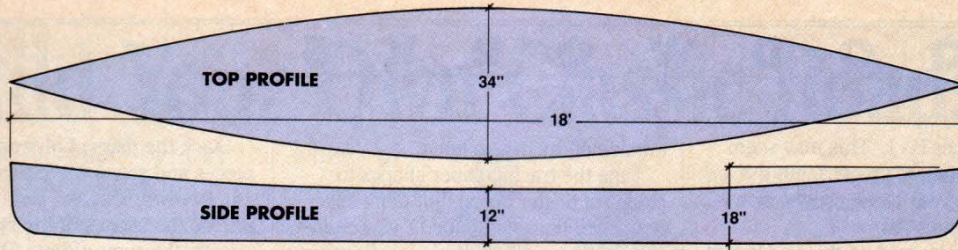
Begin by cutting all the plywood pieces A - M to the dimensions given in the following "Cutting List".

Cut the leg supports (M) to their finished shapes.

Cut the pine pieces N - U to their finished dimensions, then cut the tapered ends of the top pieces (U).

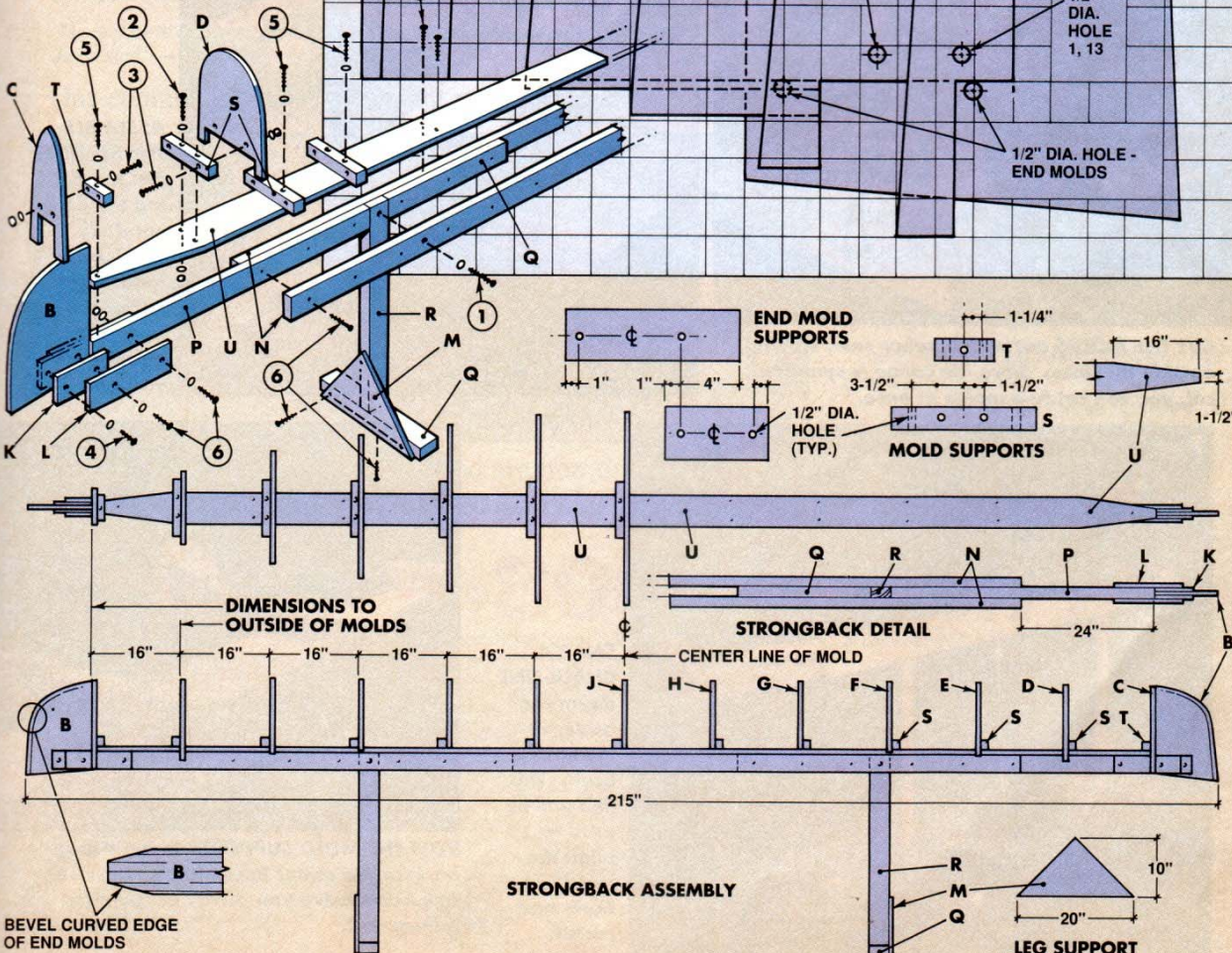
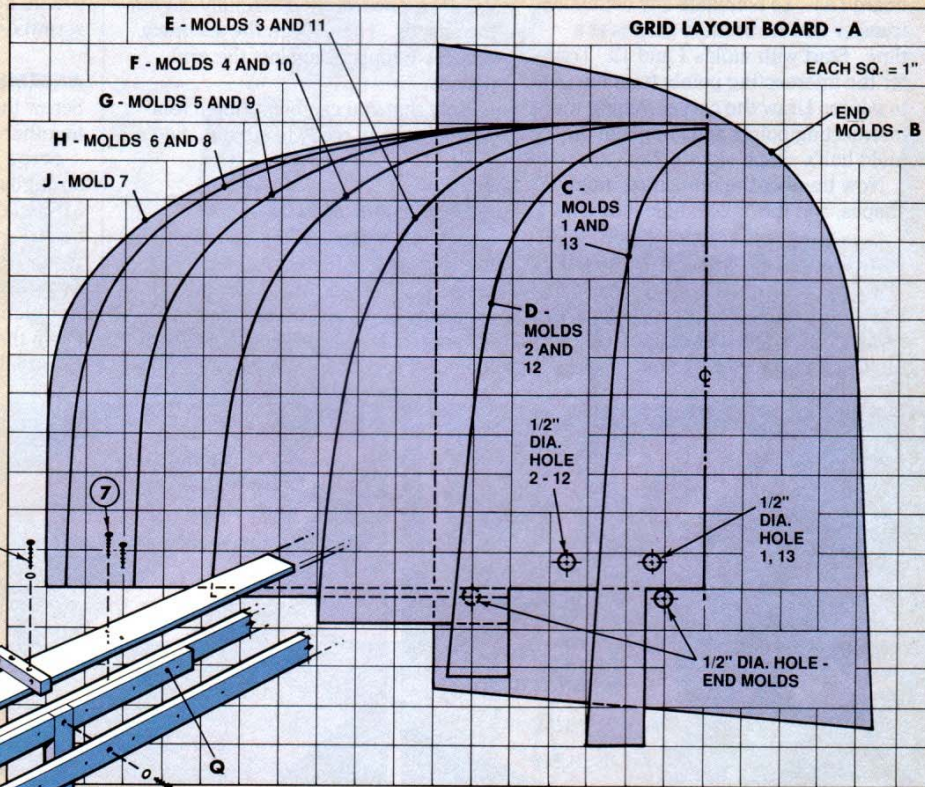
CUTTING LIST		
KEY	PIECES	SIZE & DESCRIPTION
A	1	1/2" x 20" x 24" fir plywood (grid layout board)
B	2	1/2" x 12" x 18-1/2" fir plywood (end molds)
C	2	1/2" x 6-1/4" x 16" fir plywood (molds 1 and 13)
D	2	1/2" x 13-1/2" x 14-1/4" fir plywood (molds 2 and 12)
E	2	1/2" x 13-1/4" x 20" fir plywood (molds 3 and 11)
F	2	1/2" x 12-1/2" x 25" fir plywood (molds 4 and 10)
G	2	1/2" x 12" x 30" fir plywood (molds 5 and 9)
H	2	1/2" x 12" x 33-1/4" fir plywood (molds 6 and 8)
J	1	1/2" x 12" x 34-1/4" fir plywood (mold 7)
K	4	1/2" x 3-1/2" x 7" fir plywood (end mold supports)
L	4	1/2" x 3-1/2" x 12" fir plywood (end mold supports)
M	2	1/2" x 10" x 20" fir plywood (leg supports)
N	2	1-1/2" x 3-1/2" x 12' pine (strongback sides)
P	2	1-1/2" x 3-1/2" x 48" pine (strongback ends)
Q	4	1-1/2" x 3-1/2" x 24" pine (strongback centers and feet)
R	2	1-1/2" x 3-1/2" x 36" pine (strongback legs)
S	11	1-1/2" x 1-1/2" x 10" pine (mold supports)
T	2	1-1/2" x 1-1/2" x 4" pine (mold supports)
U	2	3/4" x 5-1/2" x 8' pine (strongback top)
V	70	1/4" x 3/4" x 16' cedar (hull)

The following page contains a diagram to help you with this process. Each square on the diagram equals 1" to help you transfer and increase the size of the molds.



HARDWARE LEGEND

1. 1/4 X 5" HEX HEAD BOLT WITH WASHER AND NUT (2 REQD.)
2. 1/4 X 3" HEX HEAD BOLT WITH WASHER AND NUT (8 REQD.)
3. 1/4 X 2-1/2" HEX HEAD BOLT WITH WASHER AND NUT (26 REQD.)
4. 1/4 X 2" HEX HEAD BOLT WITH WASHER AND NUT (2 REQD.)
5. 1/4 X 3" LAG BOLT WITH WASHER (20 REQD.)
6. #6 X 2-1/2" DRYWALL SCREW (34 REQD.)
7. #6 X 1-1/2" DRYWALL SCREW (18 REQD.)

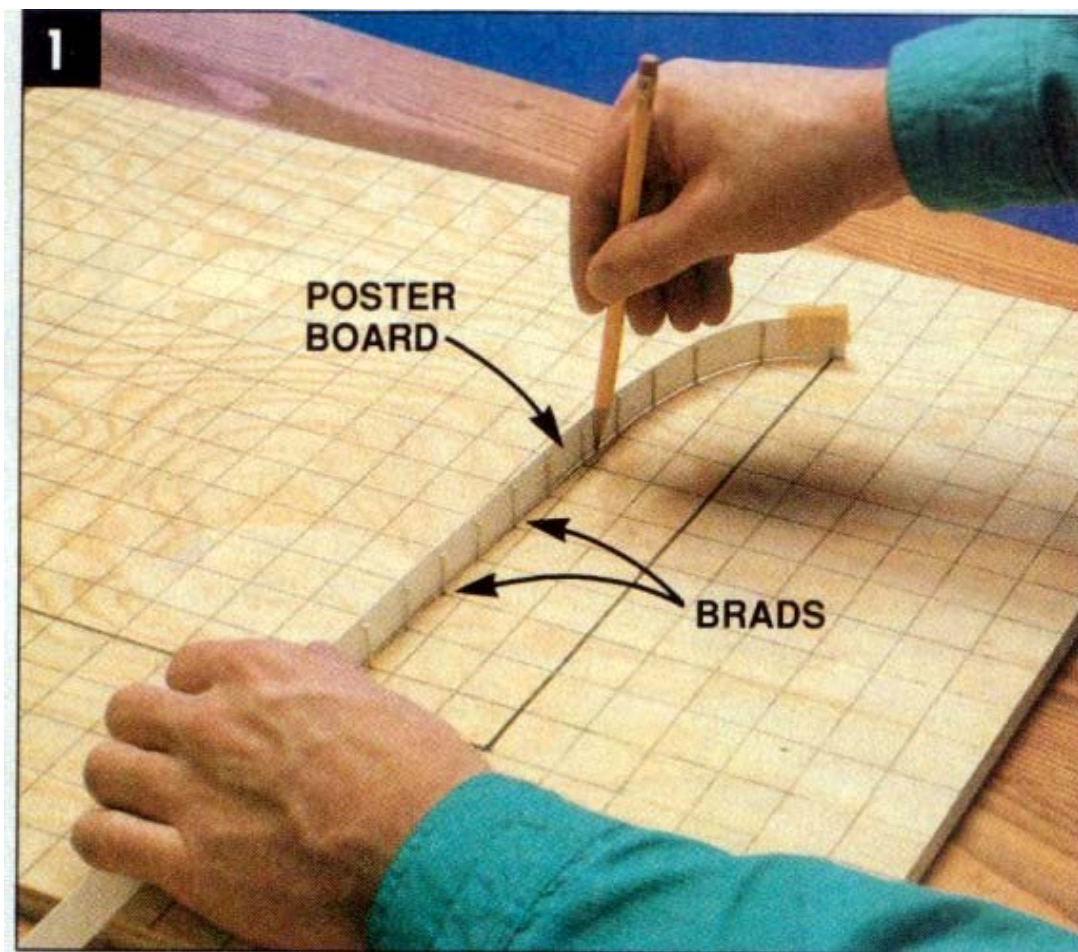


THE GRID LAYOUT BOARD

The grid layout board is used for drawing all the mold shapes to their full size. The shapes are then transferred to poster board templates, and then to the plywood pieces B - J. This may seem like a cumbersome process, but the payoff is that your canoe will be symmetrical and smooth.

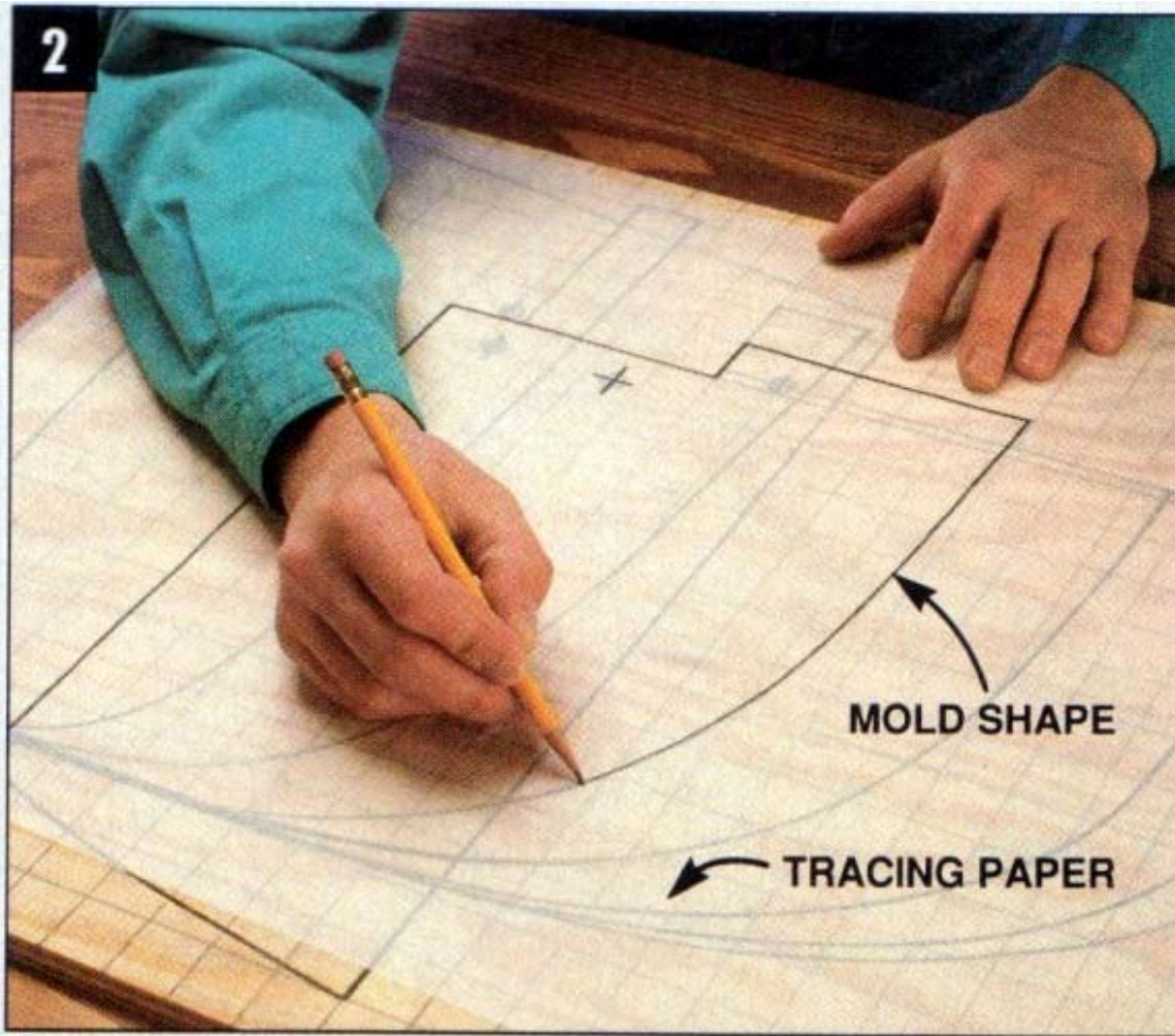
Draw the 1-in. grid on the grid layout board (A). To eliminate any confusion, transfer one set of mold shapes at a time. Start with molds 1 and 13. Transfer the intersecting points from our grid to yours. Draw the curves joining the intersecting points and complete the mold half's shape (Photos 1 & 2).

Now transfer the remaining mold shapes, and the 1/2-in. hole locations.



TRANSFER MOLD SHAPES from our drawing to a piece of plywood using brads and a thin piece of poster board.

2



MOLD SHAPE

TRACING PAPER

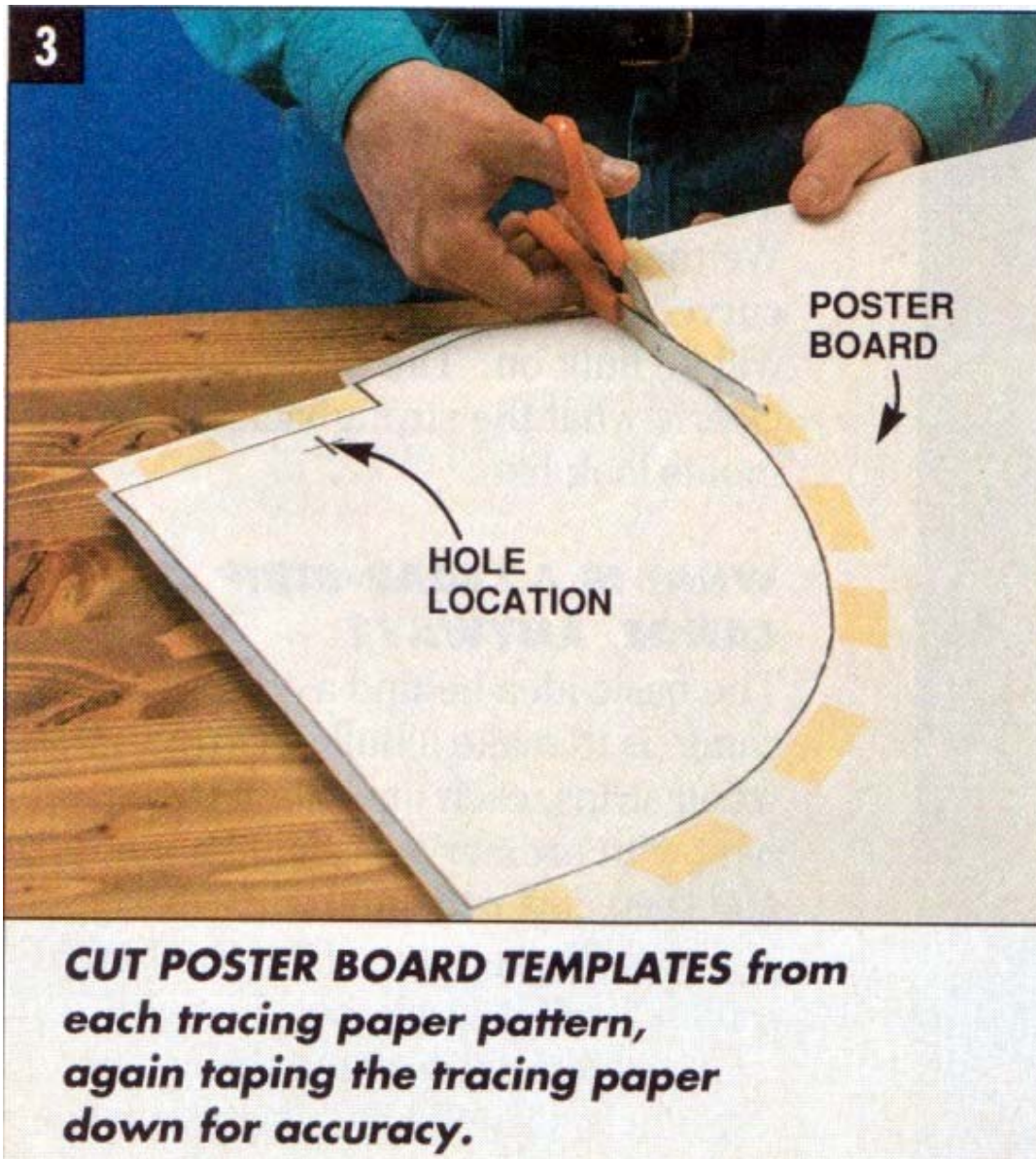
TRACE the shape of each mold to a separate sheet of tracing paper, taping it securely to the plywood layout board for accuracy.

MAKE POSTER BOARD TEMPLATES

Trace the individual mold shapes to separate sheets of heavy tracing paper. Don't forget the hole locations (Photo 2).

Cut the shapes out about 1/2 in. outside of the drawn lines.

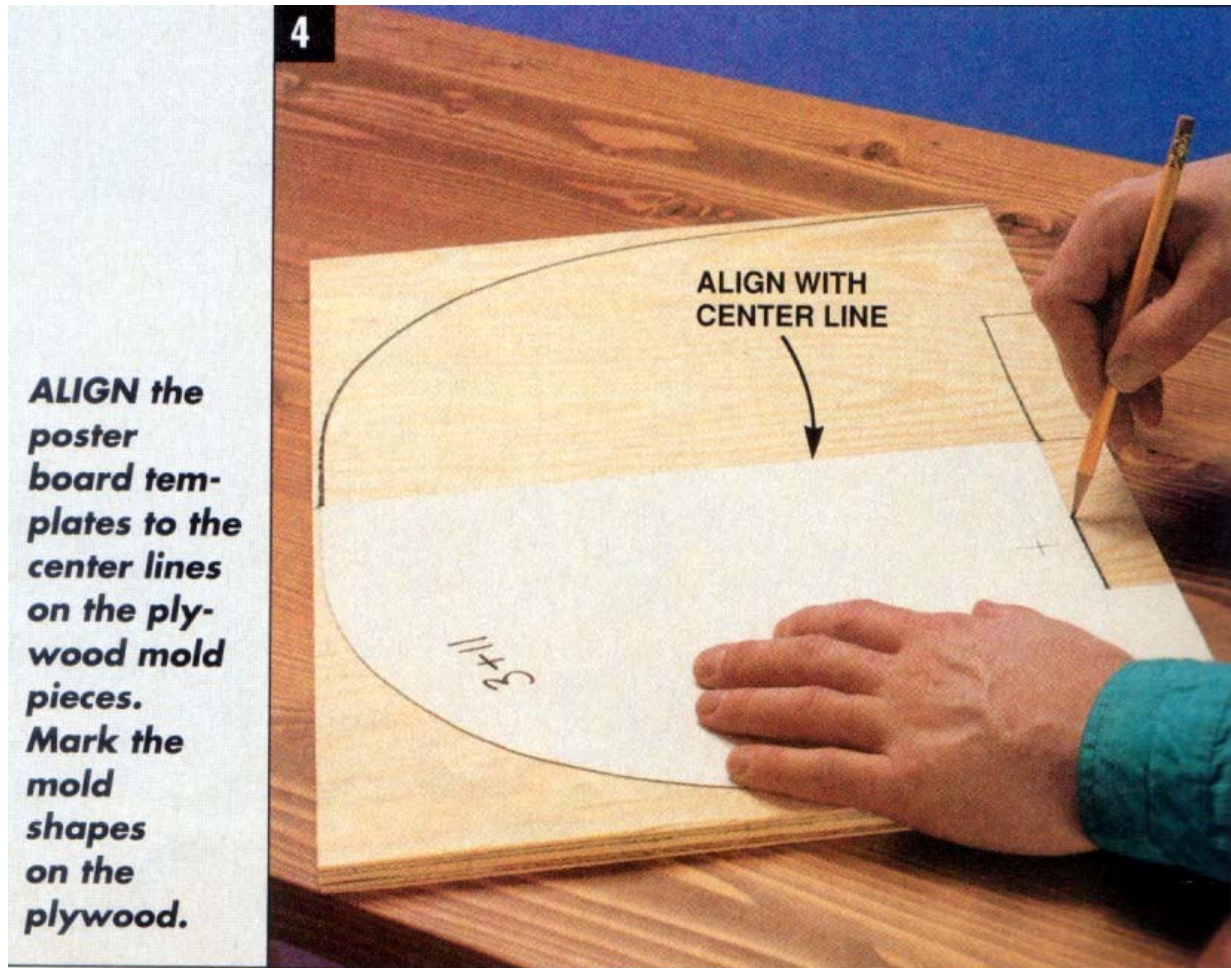
Tape the tracing paper shapes to pieces of poster board, but don't cover the pencil lines with tape. Use a center punch to transfer the hole locations to the poster board, then carefully cut out the shapes. Then check the accuracy of these templates against the grid pattern.



CUT OUT THE MOLDS

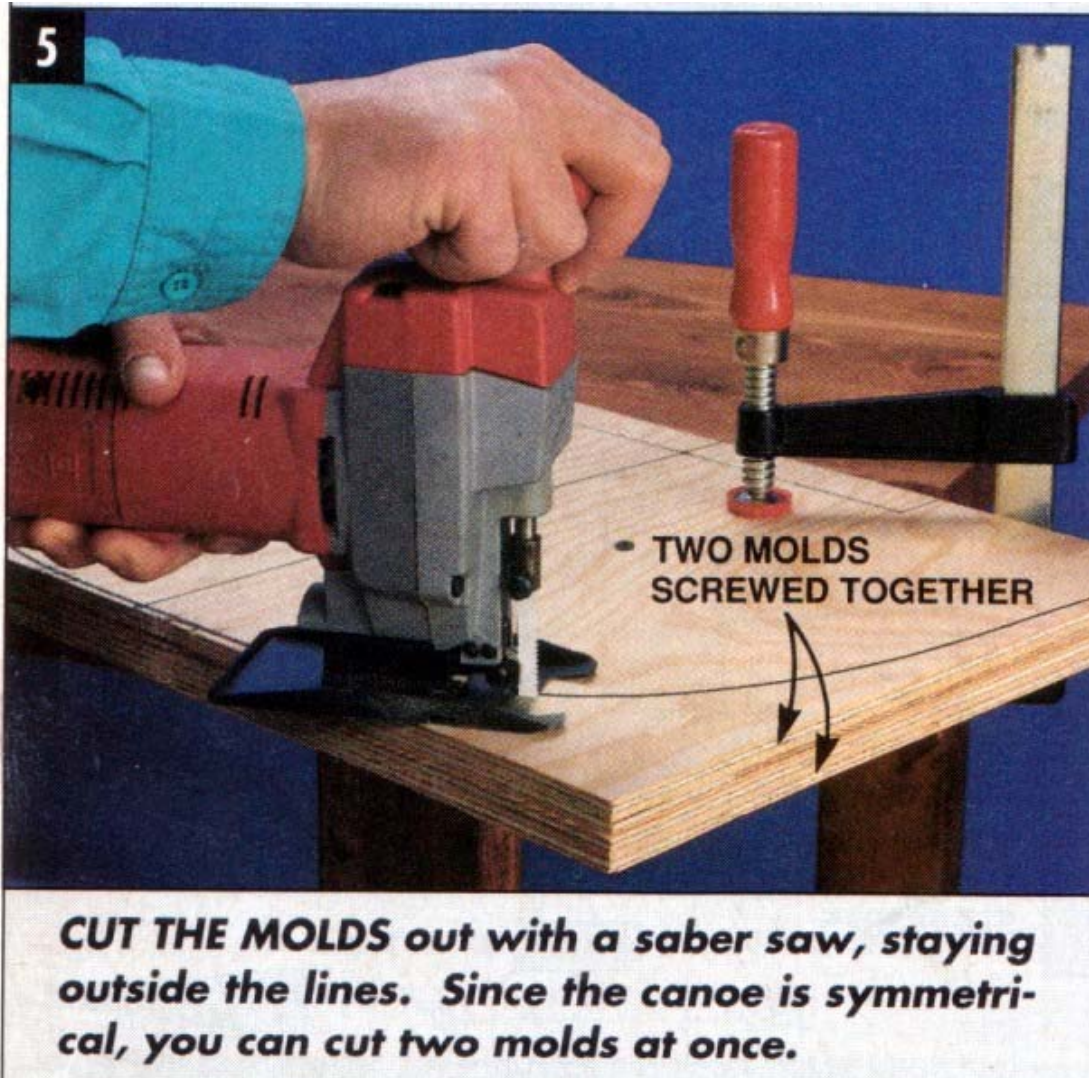
Draw center lines dividing the width on both sides of all the plywood mold pieces C - J.

Trace the poster board shapes to one piece of each pair of plywood mold pieces and to the center mold 7 (Photo 4).



Stack the pairs of plywood mold pieces and screw them together with 1-in. screws.

Cut and sand them as a unit so the shapes of the two molds are exactly the same (Photo 5). Drill the 1/2-in. holes, and then separate the screwed-together pieces.

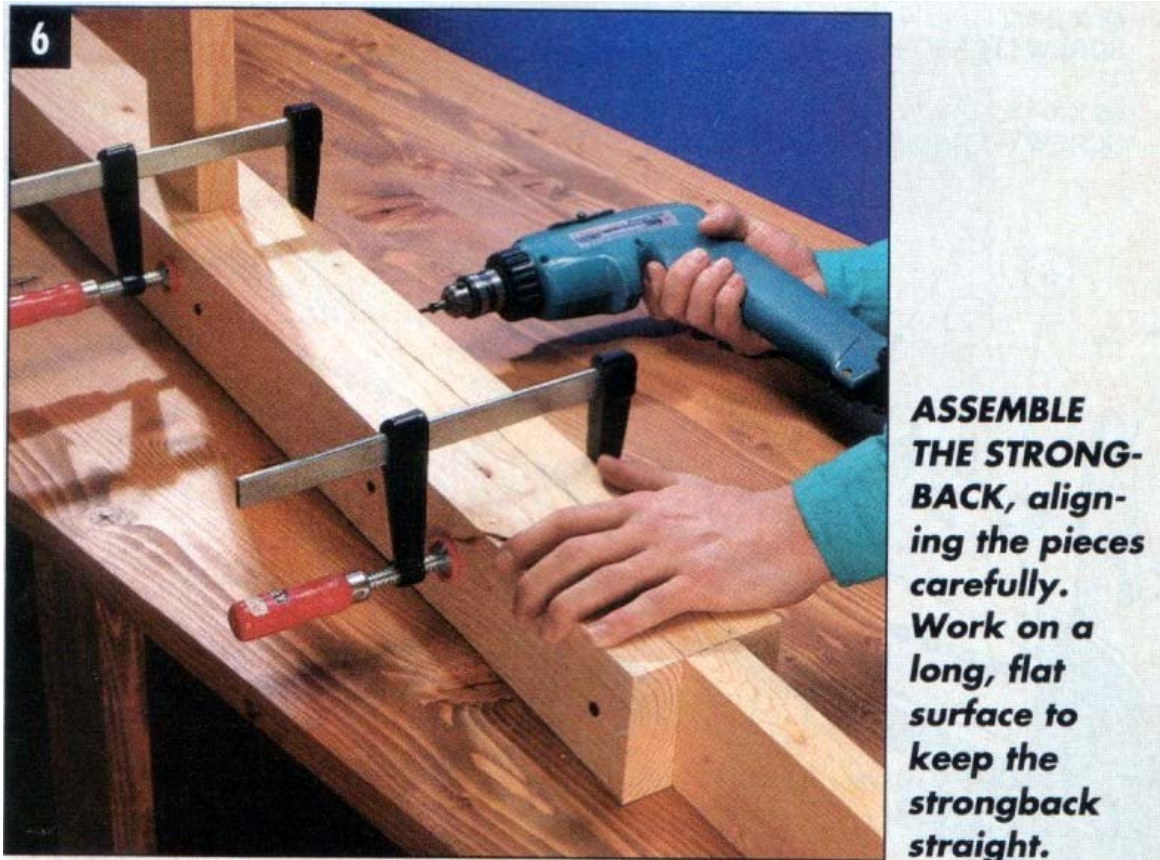


ASSEMBLE THE STRONGBACK

Screw the pine strongback pieces N - Q together (Photo 6).

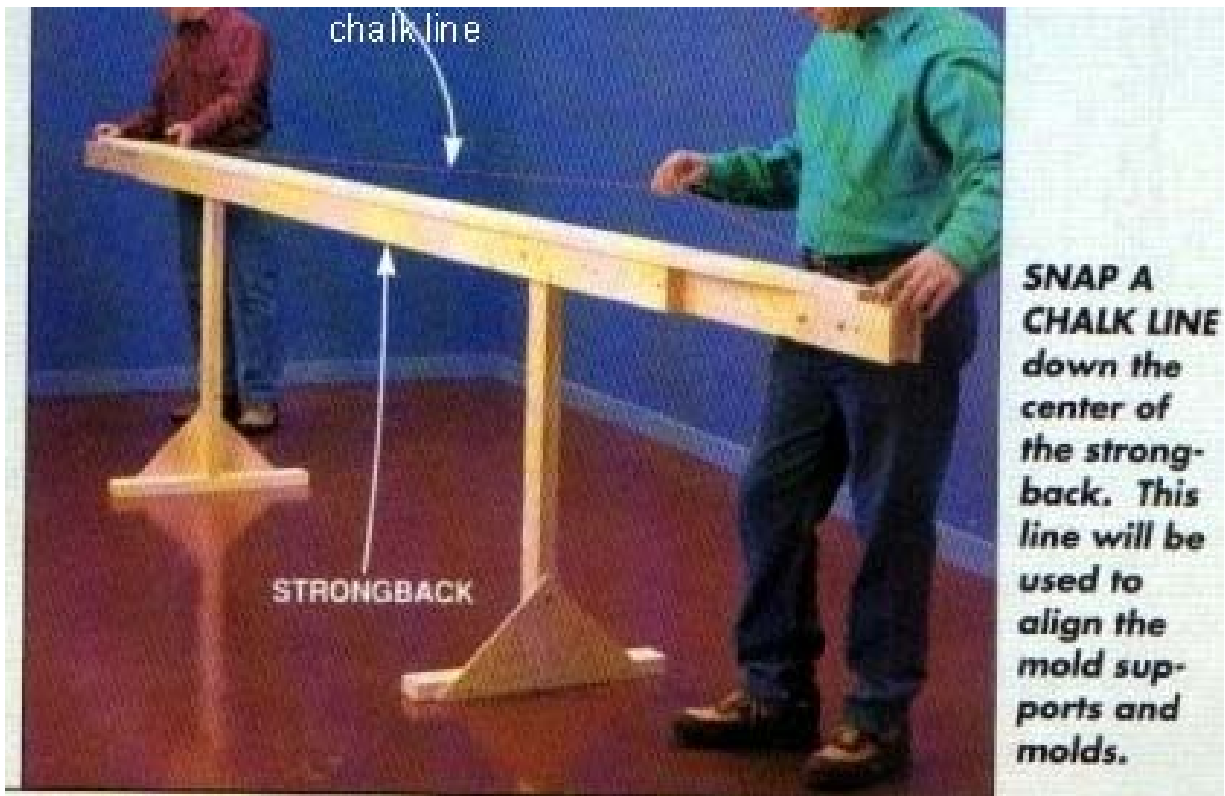
Screw the strongback top (U) to the strongback. Assemble the legs (Q, R, M) and then bolt the legs to the strongback.

VERY IMPORTANT: Make sure you keep everything plumb and aligned.



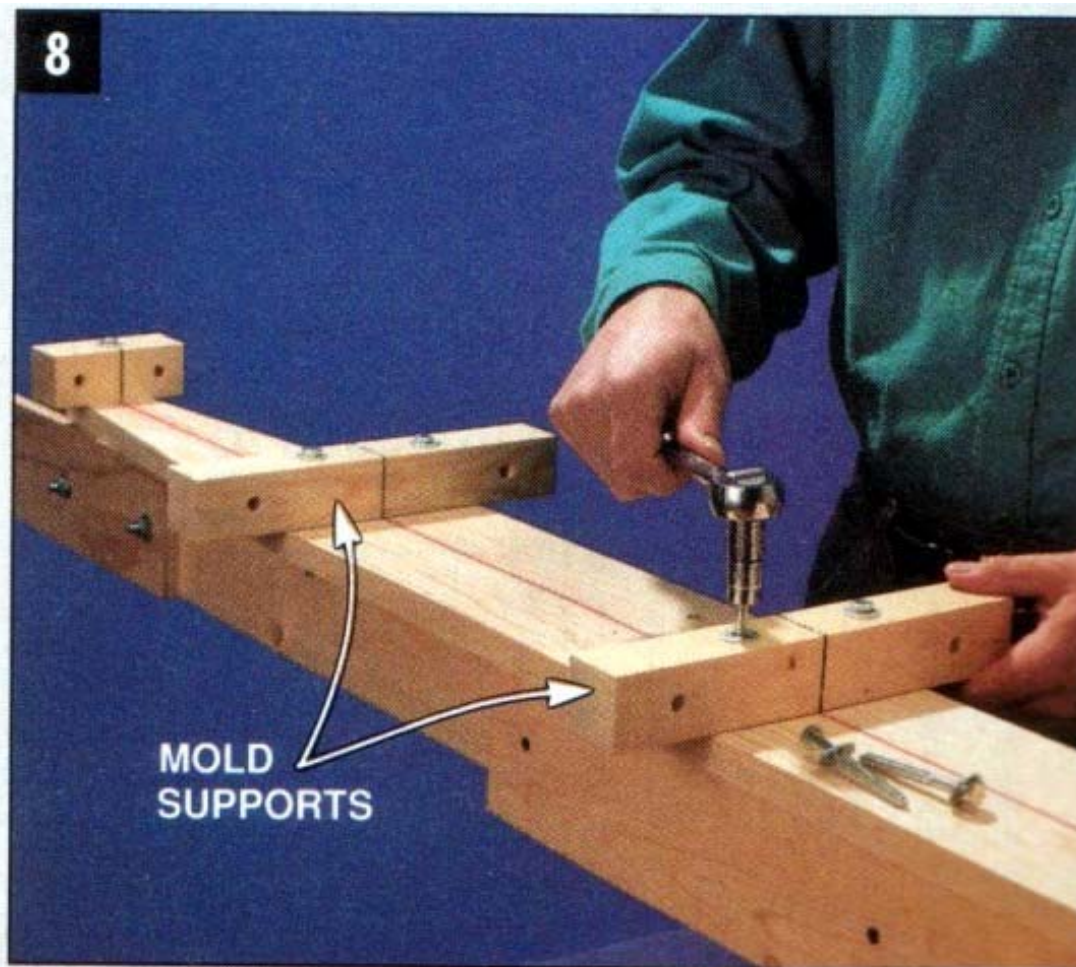
MOUNT THE MOLD SUPPORTS

Use a chalk line to snap a center line down the length of the strongback top (Photo 7).



Mark the locations of the molds on the strongback top. The spaces between the molds are equal except for those between molds 6 and 7 and molds 8 and 7, which are 1/4 in. less than the rest.

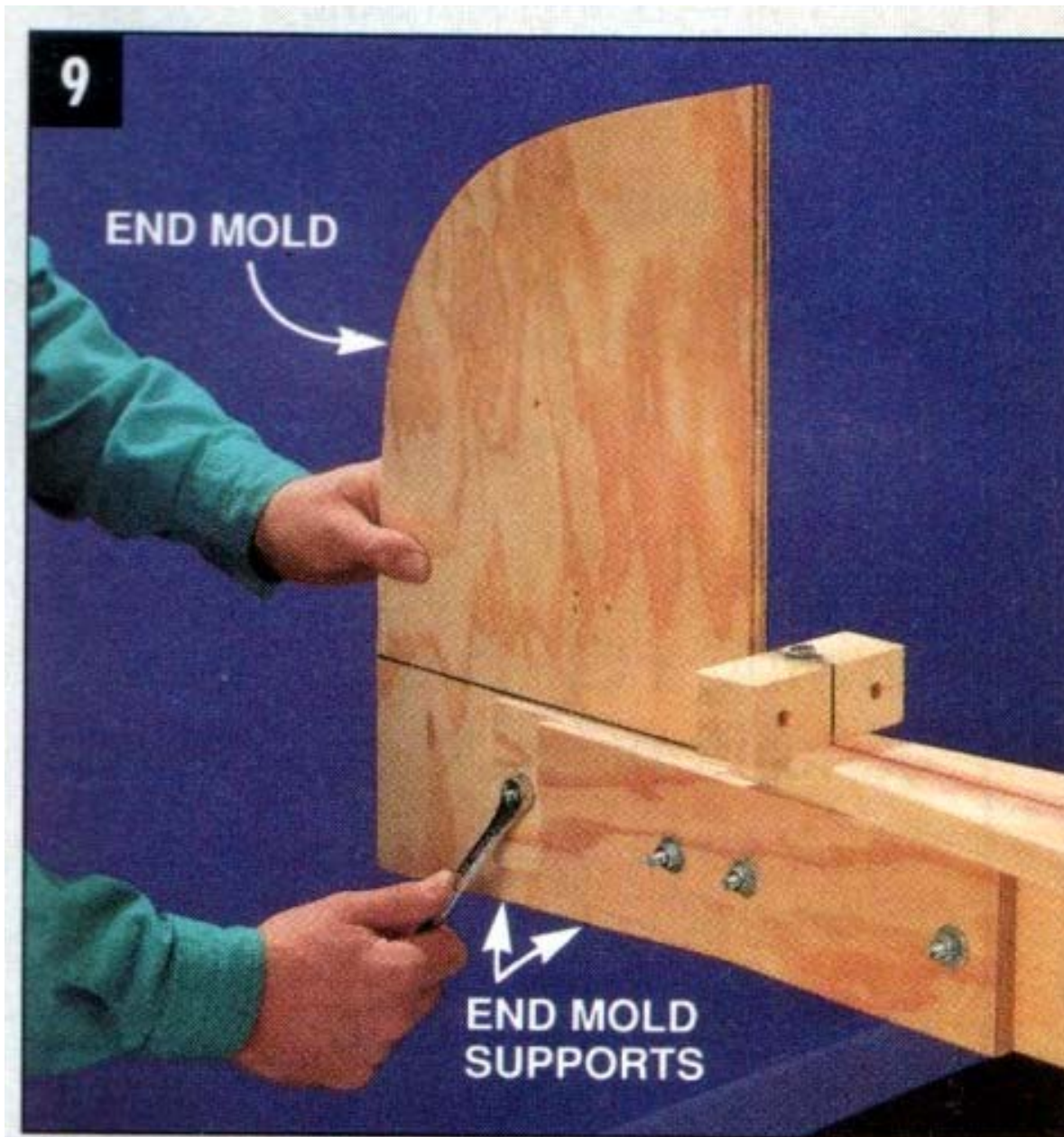
Draw center lines dividing the length on all sides of the mold supports (S, T). Drill the bolt holes in the mold supports and end mold supports (K, L). Drill the holes in the ends of the strongback for the end mold supports (L), then bolt them in place. Bolt the mold supports to the strongback (Photo 8).



BOLT THE MOLD SUPPORTS to the strongback so the center lines match. The over-size holes leave you plenty of room for adjustment.

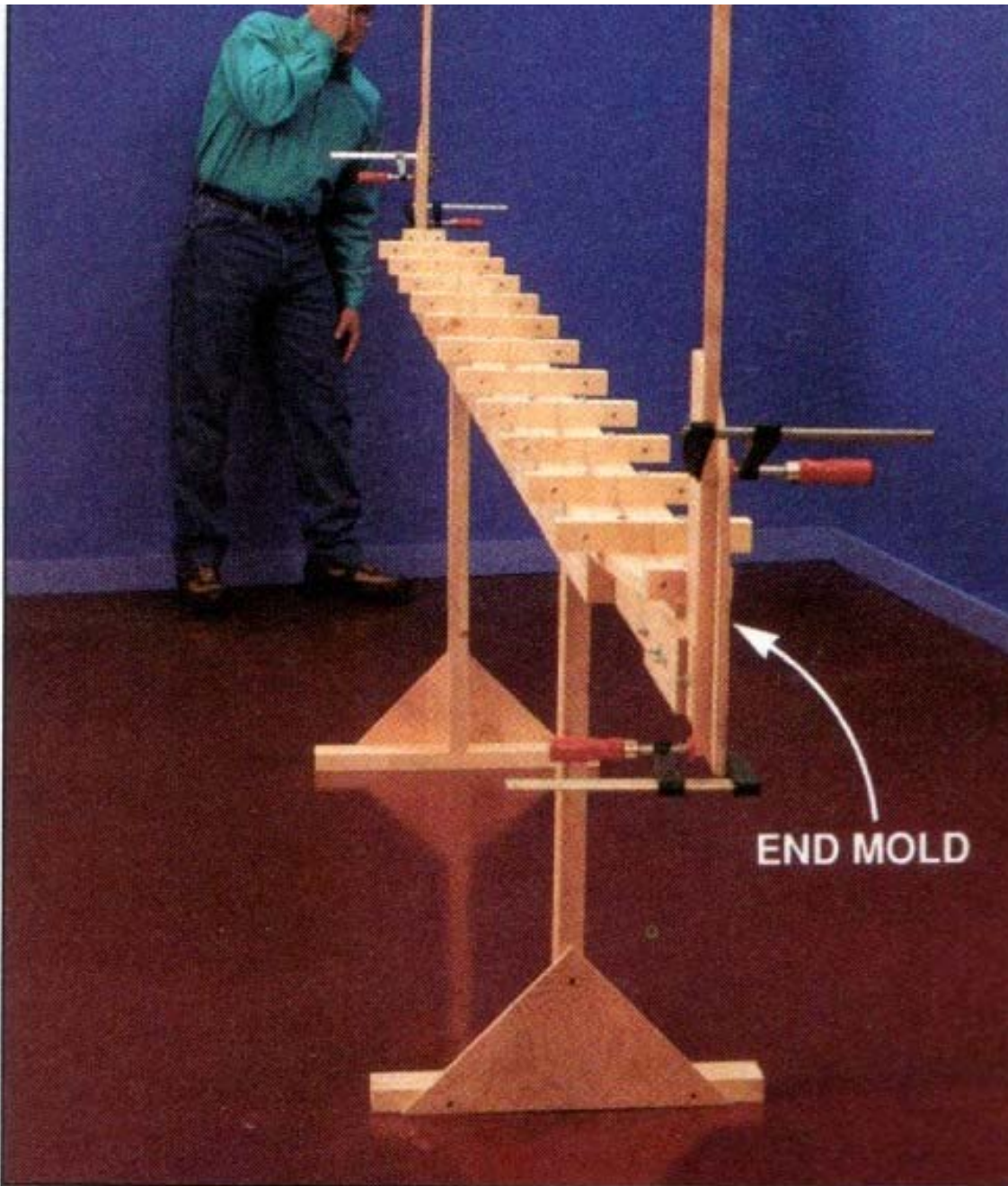
MOUNT AND ALIGN THE MOLDS

Bolt the end mold supports (K) to the end molds, and then to the strongback (Photo 9).



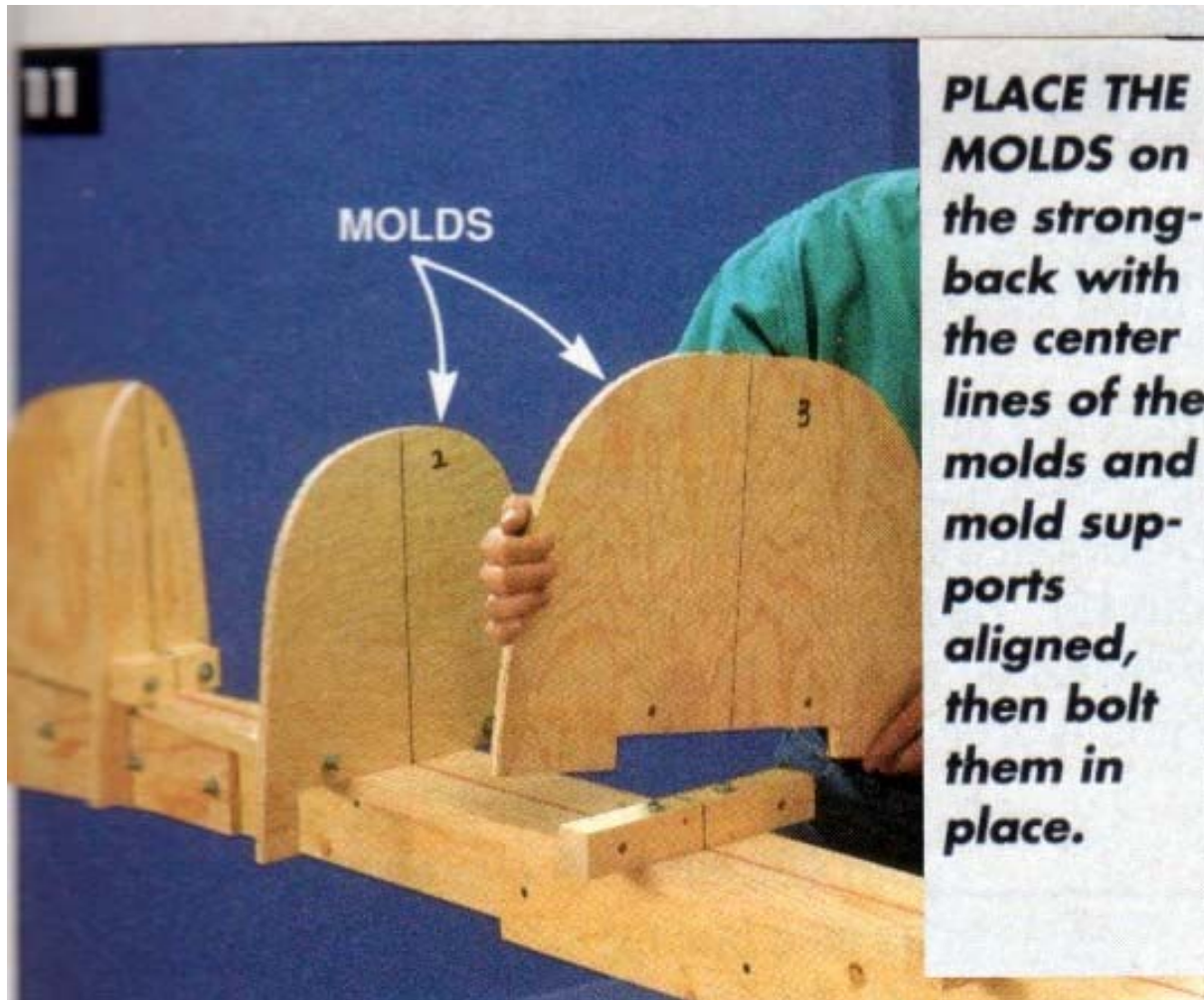
BOLT END MOLD SUPPORTS to the end molds through the front hole, then slide the end molds into the strongback and bolt them down.

Align the end molds so they're parallel to each other and in a straight line (Photo 10). Place poster board shims under the end mold supports to adjust the end molds.



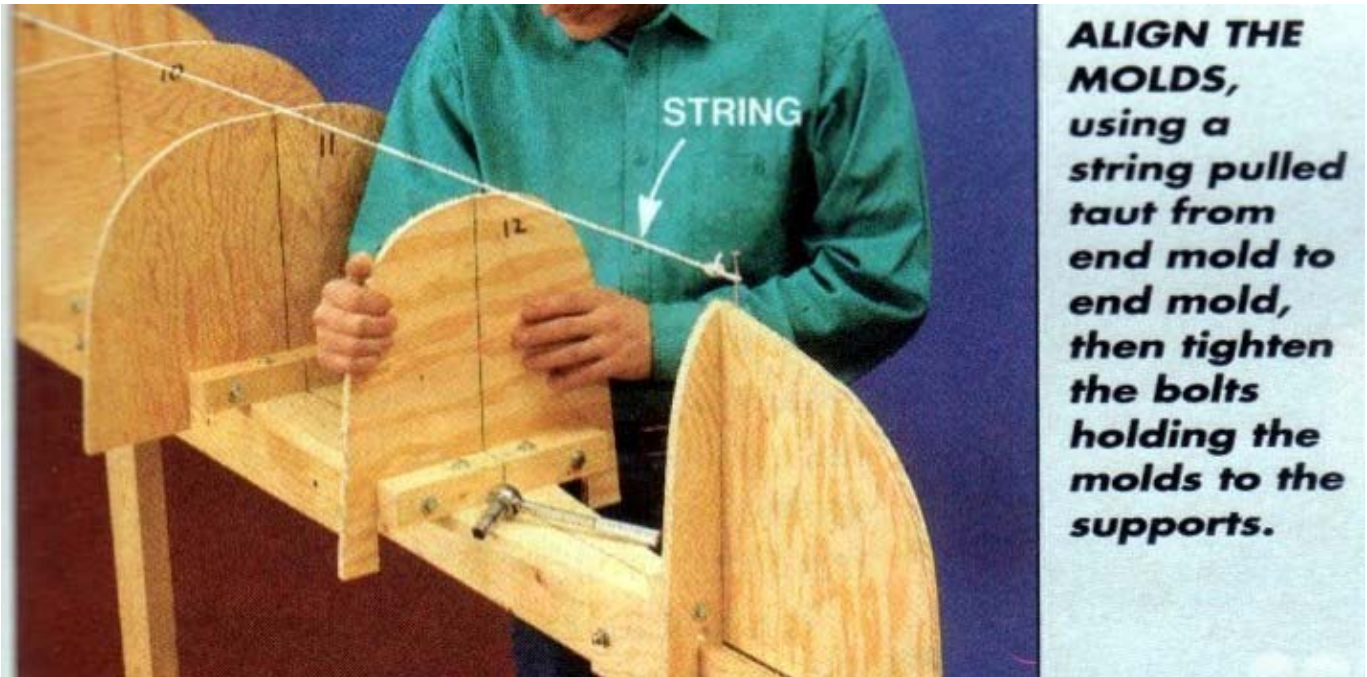
ALIGN THE END MOLDS. Long, straight pieces of wood clamped to the end molds will allow you to do it accurately by eye.

Bolt the molds to the mold supports (Photo 11).



Screw a screw to the top edge of each end mold and tie a string between the screws. Align the center lines of the molds to the string (Photo 12).

IMPORTANT: Be fussy about this step, because the canoe won't paddle straight if all the molds aren't in a straight line.



CHECK THE FAIRNESS OF THE MOLDS

"Fair" is a boat-building term that describes a curve that is smooth, without bumps or hollows. To ensure that your canoe hull is fair, you must carefully align the molds. Start by cutting the cedar strips (V) that will be used to build the hull (Photo 13), and choose one of the strips as a fairing strip.



First, lay it across the last couple of molds and the end mold. Bevel the edges of the end mold at about a 15-degree angle with a rasp so the strip lies flat on it.

Lay the fairing batten across the molds at different positions and look along it to see if it's flat against the molds (Photo 14). Check one area on one side and then the same area on the other side. The batten should lie similarly on both sides. Check all the molds in many places and make any necessary adjustments by shifting the molds slightly on the strongback or by trimming or shimming.



When it looks like the cedar strips will lie smoothly on the molds, you're ready to continue with Part 2 of the plans.