step stool

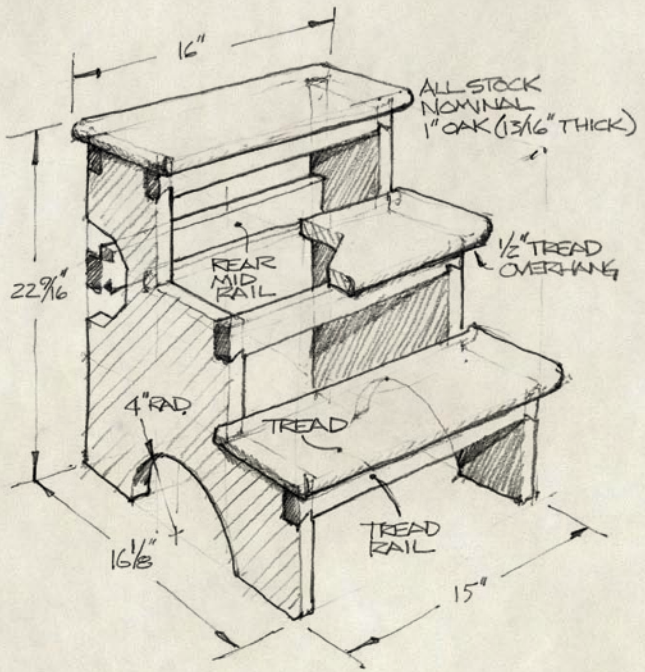
Popular Mechanics

SKETCHBOOK BY THOMAS KLENCK

You can handle most of this project with a few simple hand tools. But with a wood as tough as oak, it's handy to have power when cutting each piece to size. A portable circular saw will do the job, but if you'd prefer increased speed and greater accuracy, start pricing table saws. Even a light-duty benchtop model will make a big difference.

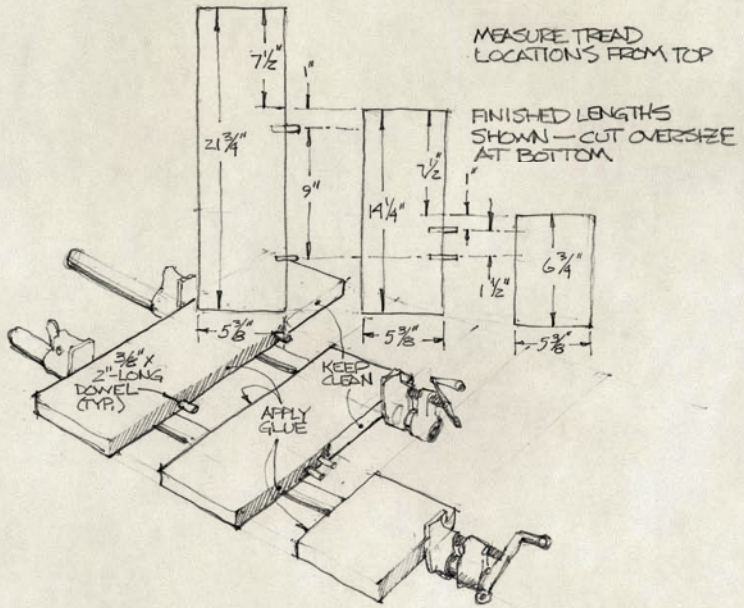
The Tools

1



The stool is made up of two stepped side panels, three treads and five rails. Note that the tread rails are half-dovetails that prevent the sides from spreading. We've cut the dovetails with roughly ¼-in.-deep shoulders to resist racking (wobbling from side to side).

2



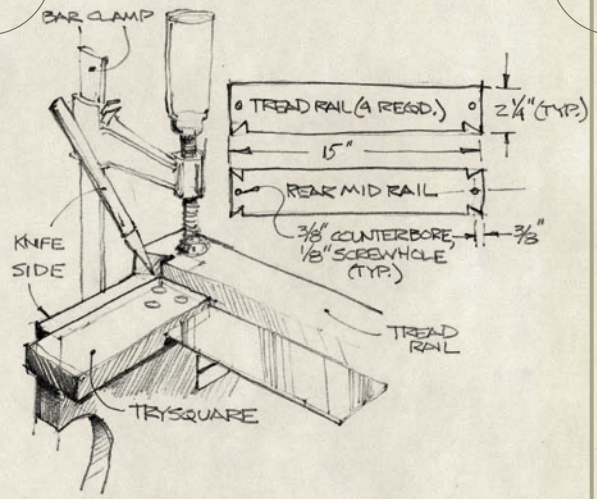
Unlike the Shakers, you won't have access to wood wide enough for the sides—you'll have to glue them up. Instead of laminating each side from random widths of stock, rip pieces so their widths match the tread notches. This way, each stepped side will be formed at assembly and require no shaping. While a good glue joint is plenty strong, we added dowels to reinforce the grain over the arced cutout. You also could use a plate joiner—either option will help keep the boards aligned during glue-up. When the glue is dry, level any small misalignments with a hand plane, and cut the arc with a jigsaw.

Quick Tip

When preparing boards to be assembled into a panel, orient the pieces so they have a common grain direction. This makes planing the finished panel easier.

SMOOTH PLANE: It trims edges for gluing and dresses faces flat. A block plane is handy for trimming.
1-IN. CHISEL: Essential for fine-tuning the joinery—just keep it sharp.
BACKSAW: For straight joint cuts.
COPING SAW: The stressfree way to cut the mid rail notches.
CIRCULAR SAW: For rough ripping and crosscutting.
JIGSAW: It shapes the arced cutouts.
DRILL: To bore screwholes and drive screws.
DOWELING JIG: Keeps your drill in line for dowel joints.
CLAMPS: Two pipe or heavy bar clamps are the minimum.

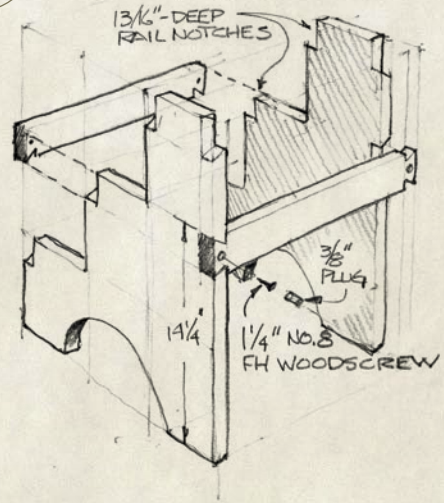
3



Cut the rails to length and use a backsaw to make the ¼-in.-deep dovetails. The cuts don't have to be identical, but they do have to be square to the stock face. If necessary, trim them with a chisel and make sure the inner corners are sharp and clean.

Clamp each dovetail at its place on a side panel and scribe the mating notch with a knife. Use a trysquare to ensure that the rail is square with the side. After marking each angled cutline, use a marking gauge to lay out the remaining notch line. Then, cut the notches and test fit the rails.

4



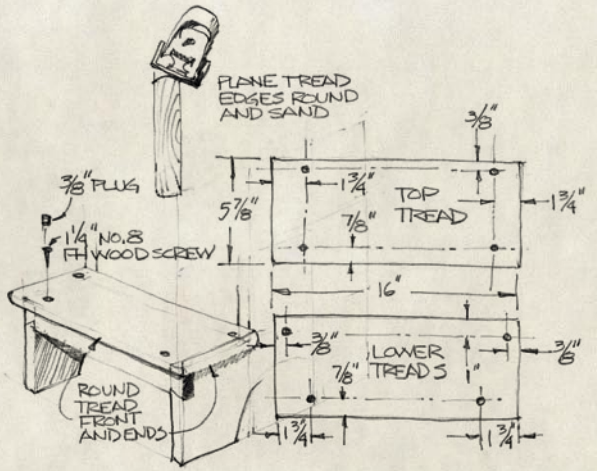
Bore all the screwholes in the rails. We made the hole for the screw shank and a ⅜-in. counterbore in one step with a combination bit. Use these holes as a guide when boring the pilot holes in the stool sides. Join the back mid rail to the sides first, then follow with the second tread rail to create a rigid box. Then, add the three remaining rails.

Apply glue to the counterbores and tap wooden plugs over the screws. Be sure to align the plug grain direction with that of the wood. Carefully pare the plugs flush with a chisel.

5

A simple rounding of the front and end tread edges doesn't require a fancy router setup. Instead, use a plane to first bevel the edges, then round them in a series of facets. Plane endgrain first, working toward the middle from each side. Don't plane straight across the tread end or you'll split the wood as the plane exits the cut. Then, bore the screwholes, add the treads to the stool frame and plug the screw counterbores.

We finished our step stool with three coats of Minwax Tung Oil Finish.



SAW SAVVY

The open-ended half-dovetail notches are easy to cut. Just saw to the waste side of the scribed line, then rip from the end toward the angled cut. To make the full dovetail notch, first make both angled cuts. Then, use a coping saw to cut just above the finished joint line. Trim the remaining surface flat with a chisel and test fit the rail.