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Hoosier Step Stool

In this plan you will be getting:

- Step by Step construction instruction.
- A complete bill of materials.
- Exploded view and elevation drawings.
- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.

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Evoking the thrifty Midwestern economy of effort, the Hoosier Step Saver did dual duty in 1920s kitchens across the country.

Hoosier Step Stool

With strong and sturdy joinery, ash lumber and a nod to the past, Ralph Bagnall, one of our regular contributors, builds a kitchen classic poised for a good old down-home revival. Everyone can use a bit of a step up in the kitchen from time to time.

Many of us are familiar with Hoosier-style baking cabinets, but only a few know that the manufacturers of these cabinets also made a wide range of accessories to outfit the modern kitchen of 1920. A few months ago, Ralph's wife came across one such accessory listed on eBay. It was a dual-purpose piece of kitchen furniture—a classic stool design that Bobby Knight would never have dreamt of tossing across a basketball court floor. This Hoosier Step Saver was a nice-enough looking seat, but it turned out that the stool concept was only half the story: flip the piece over and the three good sized stretchers became rubber-covered steps to help the "vertically challenged" reach that elusive pan on the top cabinet shelf.

With a few calls, Ralph was able to get all the details on the dimensions and construction of this stool.

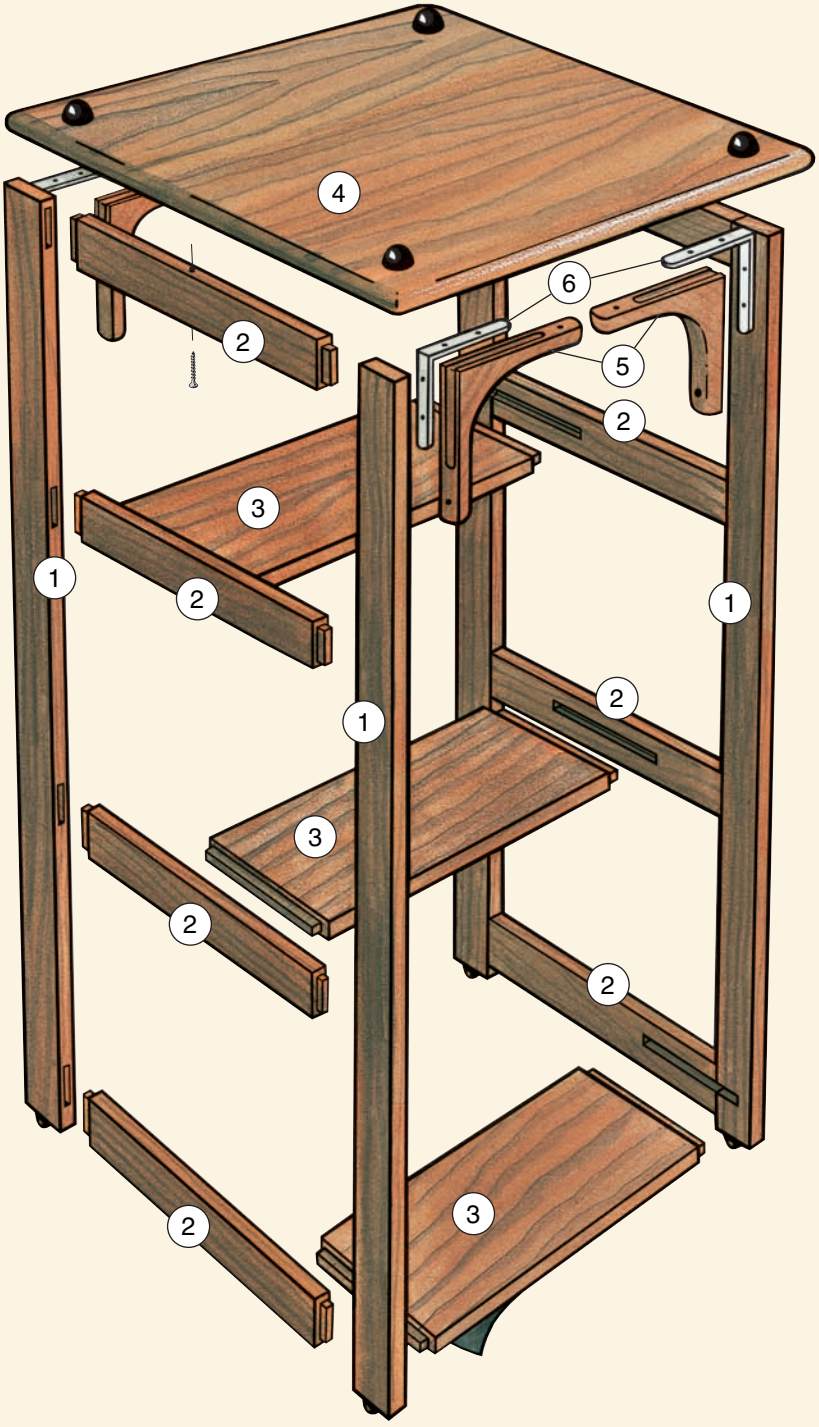
Getting Started

Although the original stool was made from oak, Ralph used ash for this reproduction. Modern red oak tends to be a bit porous, and ash can easily be finished to closely resemble antique oak. All the parts are 3/4" thick, so there is no problem if you need to purchase stock from your local home center. At a grand total of seven board feet to complete the project, it won't break the bank.

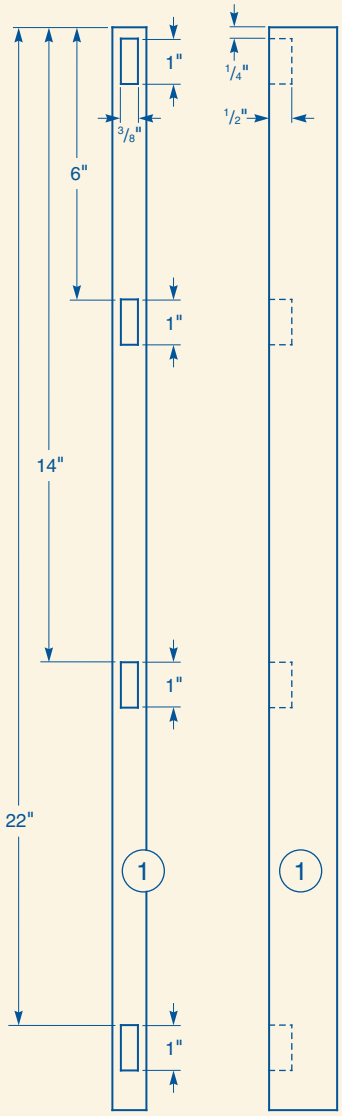
Begin by ripping the stock for the legs and stretchers (pieces 1 and 2). See the *Material List* on page 147 for the complete bill of materials. The legs and stretchers are all cut from 3/4" x 1½" stock. See the *Cutting Diagram* on page 146. The steps and top (pieces 3 and 4) are made up of 5"-wide stock, so take a few minutes and rip the bulk of the stool's parts to their proper width. With that task done, crosscut all the main parts to their final dimension. The only exception Ralph made was to cut the parts for the top to 14½" long (just a little oversized) to make the glue-up an easier task. To keep the process moving smoothly, glue the three seat parts together to make the seat blank and set it aside for now.

When you aren't using this project as a step stool, its second purpose puts kids closer to the action in the kitchen—or parks them safely away from it.

Step Stool Exploded View



Legs
(Inside and Side View)



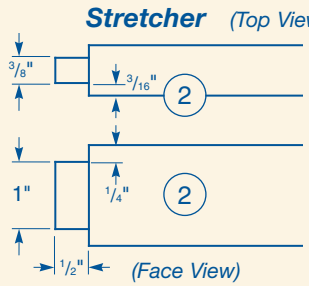
Cutting Diagrams

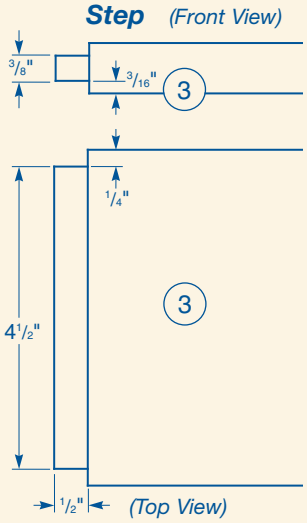
3/4" x 4" stock

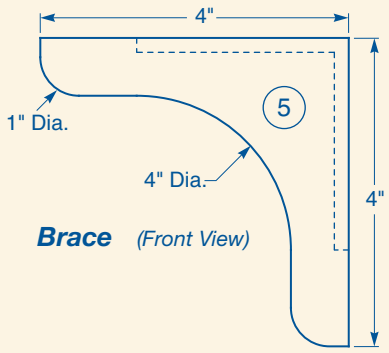
1	1	2	2	2	2
1	1	2	2	2	2

3/4" x 6" stock

3	3	3	4	4	4	5





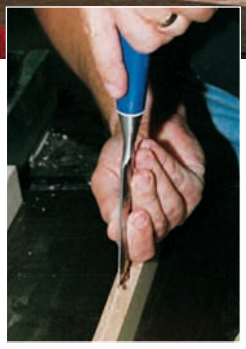


MATERIAL LIST – *Step Stool*

		T x W x L
1	Legs (4)	3/4" x 1½" x 23⅞"
2	Stretchers (8)	3/4" x 1½" x 10"
3	Steps (3)	3/4" x 5" x 11½"
4	Seat (1)	3/4" x 14" x 14"
5	Braces (4)	3/4" x 4" x 4"
6	L-Brackets (4)	Steel

Begin making the mortises by boring out the waste using a sharp Forstner bit. All you need to locate the mortise is a center line and two cross marks indicating the ends of the mortise.

Pare the walls of the mortise smooth and flat with a couple of sharp chisels. It's best to make the mortises first and then form tenons to fit the openings.



Ash lumber is easier to pare than oak, and it is more than sufficiently strong for this step stool's rigorous daily tasks.

Machining Details

We'll follow the usual convention of making mortises first and then tenons to fit them. Use a 3/8" Forstner bit chucked in your drill press to remove the bulk of the waste. Lay out all the mortises with a simple center line and cross marks to indicate their ends. Then hog out the waste, spacing the holes a bit's width apart. Once you've reached the other end of each mortise, drill away the remaining waste. This staggering procedure will help prevent the drill bit from bending.

The next step is to square up the mortises with a chisel. This is another place where the choice of ash over oak is a benefit. If your chisel is sharp, it will cut through ash like a hot knife through butter.

HOOSIER TRIVIA

The original Hoosier step stool was among the products produced by the Hoosier Manufacturing Company of New Castle, Indiana. Hoosier was the leader among more than 40 companies—almost all of them based in Indiana—that made kitchen furniture in the early 20th century.

The tenons are easy to form since they can all be cut from a single setup on the table saw. The shoulders and cheeks are all 3/8" wide. Set up a stacked dado blade with a sacrificial board fastened tight to the rip fence. Use some scrap wood (cut to the same dimension as your project stock) to fine-tune your setup until the tenons fit snug—but not overly tight—then cut tenons on all the stretchers and steps.

You will need to drill pilot holes in the top stretcher to mount the seat. Refer to the *drawings* on the preceding pages. After assembly, a conventional drill will not fit between the stretchers, so use your drill press now to bore a 3/16" through hole in the exact center of the 3/4" face. Finish up these holes with an appropriate countersink.

Beginning Assembly

Assembling the stool is pretty much woodworking by the numbers, but you don't want to get ahead of yourself. Start by gluing up the two side assemblies, checking that all the faces are as flush as possible and that the countersinks in the top stretchers are on the inside of the frame, facing up. Clamp them up, check them for square and set them aside to allow the glue to fully cure.

While you have a moment, now is a good time to cut the seat to final size, radius the corners to 1" and sand the edge smooth all around. For visual effect and to make the seat a bit more comfortable, the top edge is milled with a 1/2" roundover bit and the bottom edge with a 1/4" roundover. All that remains to do for the seat is a final sanding and, of course, applying finish.

Once the side assemblies are dry, they each need three mortises cut to accommodate the steps. You can either carefully mark out and hand-cut these, or make up a template as shown in the *sidebar* on the next page and mill them with a router. Be sure to flip the template over when doing the second side assembly. They must be mirror images of each other.

Creating Clever Corners

The original unit had oak corner braces to help mount the seat. Ralph made his (piece 5) from the remainder of the 6" board as shown in the *Cutting Diagram* on page 146. Now round over the braces, sand them and drill countersunk mounting holes. Because of the hard use this stool will take, add steel corner braces (pieces 6) to reinforce the joint. To keep them from showing, the solution is to undercut or rout out the inside edges of the brackets and screw them in place over the steel braces. Do this on your router table as shown in the *photo* at right.

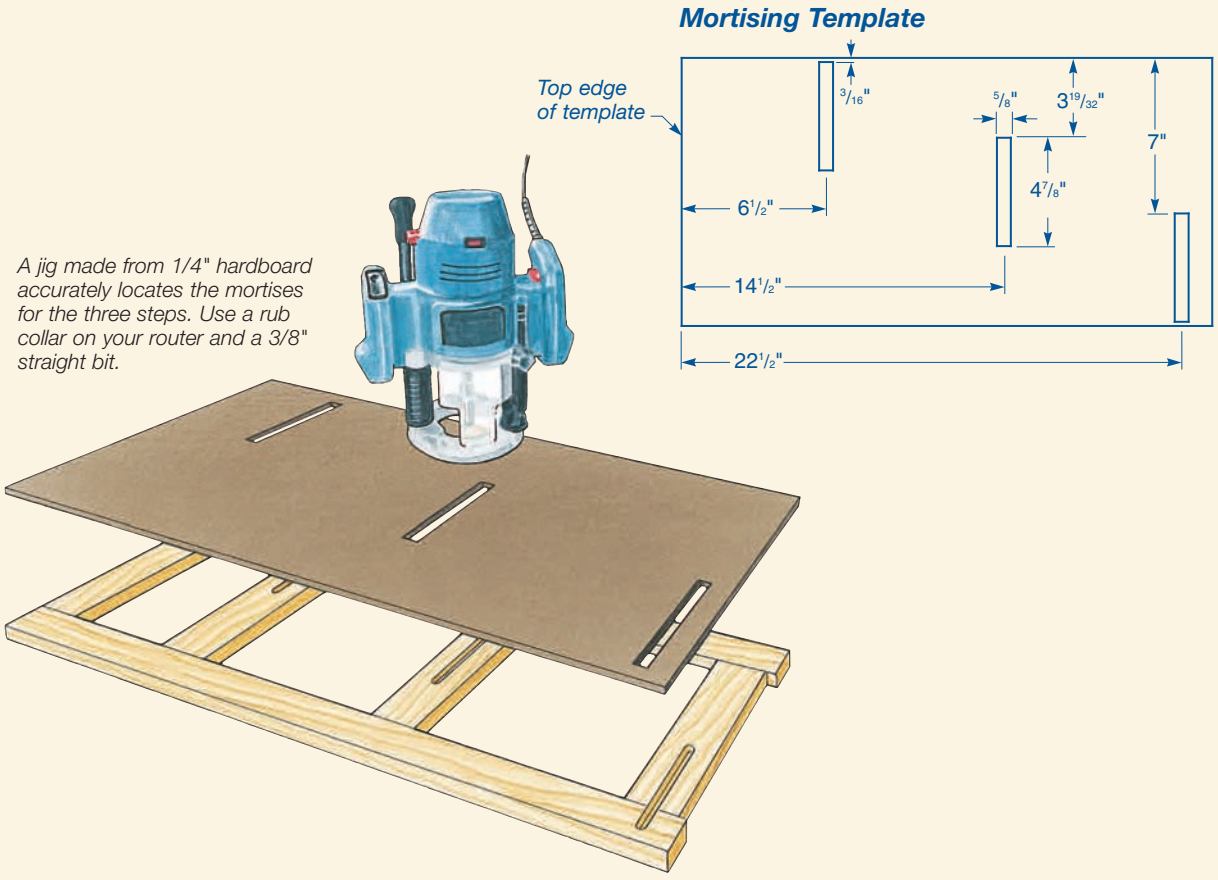
With the pieces prepared for final assembly, it's a good idea to pre-finish the parts. All the corners and possible

QuickTip

Clearing the Air for Safer Finishing

It is absolutely vital to take certain precautions when spraying finishes or applying large amounts of contact cement. Use a NIOSH approved Organic Vapor N95 respirator (95% efficient) with replaceable charcoal canisters. Standard particulate dust masks (the usual style) offer no protection from airborne chemical fumes—you need the maximum possible filtration here. Work in a properly ventilated area, as higher concentrations of many chemicals have been linked to cancer, nerve damage and respiratory diseases. Wear eye protection, and always know where your co-workers are: even HVLP-driven low pressure sprays can penetrate skin. Also, read the mask's precautions carefully before use. If you have facial hair, the mask probably won't form an airtight seal against your face, which compromises your protection.

Mortising Template Detail



glue lines will be more difficult to work with if you stain it after assembly. Be sure to mask off the tenons and mortises or your joints will not glue well.

Finally, the stool begins to take shape. Glue the steps in place and clamp the frame together. Do this on a dead-even surface.

Set the seat face-down on the workbench and center the frame on top. Secure the frame with 2" black finish screws and attach the steel brackets with screws as well. Lastly, mount the wooden braces, effectively hiding the steel brackets.

Adding a Kitchen-safe Finish

With the stool assembled, apply your topcoat. Ralph used two coats of polyurethane with a wax follow-up. Once the finish is fully cured, the rubber treads (rubber carpet runners trimmed to size) can be added to the steps to improve footing. Cut them to size and apply them with contact adhesive. Then add the feet. The original stool had steel pronged feet, but Ralph substituted rubber for the sake of safety. Attach one to each corner of the top about 1" in from the edges, and one to the center of each of the four feet.

This is a fun project to build. Its simple traditional joinery and basic cut list make it an excellent project for beginner and expert alike. Oh, and the original on eBay? It sold for a bit over $300! Why not take the extra you would have spent and invest it on that next piece of shop machinery?

To be sure his stool would stand up to the rigors of everyday use, the author mounted steel L-braces to the seat and legs. He cleverly hid the apocryphal hardware in wooden corner brackets by routing a pocket.