Stickley Magazine Stand

Furniture built without a back can be alarmingly wobbly. We found a simple and sturdy way to make this open shelving unit stand firm.

PHOTO BY AL PARRISH

Before I began building Arts & Crafts furniture I collected Arts & Crafts furniture, and I came to know two key facts about magazine stands: One, they are surprisingly useful pieces of furniture in the modern home that allow you to store books in any available cranny in a room. And two: All of them wobble like a drunken sailor.

This defect is the result of the fact that they have no back, which actually happens to be one of their most charming features. If you place a lamp on top of any magazine stand, the light will flood behind the cabinet and illuminate the wall behind your books, pottery and most-favored objects. And this backlighting, as any photographer will tell you, is positively enchanting.

So the best way to fix this design defect is definitely not to add a plywood or solid-wood back to the piece. So what do you do? After some contemplation and experimentation, we found the solution: Two narrow strips of wood under the top two shelves. These "shelf supports," as we call them, are then screwed to the sides of the case, making them anti-racking devices that are usually invisible. And with the assistance of the two wider stretchers below the bottom shelf, this magazine stand will stay rigid for a long time.

The other bit of engineering in this project is the joint that attaches the shelves to the sides. Dados are the traditional (and best) way to ensure the weight of your book collection doesn't create enough downward force to ruin the unit. Dados, however, do almost nothing to prevent a case from racking, which is where the shelf supports and stretchers lend a hand.

Every good cabinet is a careful balance of these attributes. If you ignore the engineering when designing a project, you run the risk of it dying an ignominious death at the curb of a fraternity house some day. The other sin – almost as serious – is to overbuild a project with unnecessary reinforcement. When you do this, you could be wasting lumber or hardware that could be used in another project. You also could be adding bulk to a project that would benefit from less weight. And you could be pumping up the visual chunkiness of the project by beefing up parts that would look better when slimmed down.

This harmony between function and form is an important component of any project, but it is something to be particularly mindful of as you build Arts & Crafts furniture. Furniture in this style was intended to integrate itself into the turn-of-the century family home.

Harmony Begins in the Wood

There is very little lumber in this adaptation of Gustav Stickley's No. 79 magazine stand; about 15 board feet of white oak would do the job if you're lucky. But when you have so few parts in a project, you should pay close attention to the

quality of the boards that will show. Of the nine parts, you should be concerned with three: the sides and the lower stretcher at the front.

With these three parts you should select boards that show the most dramatic figure. Be willing to waste a few pieces of wood to get it. And be happy to make a couple extra cuts to get the coloring correct and the seams in the right place. To do this, here's what you need to know.

When I started working with quartersawn white oak, I had the fortune of visiting Frank Miller Lumber Co. in Union City, Ind. This huge high-tech mill supplies much of the world with quartersawn lumber. The employees are happy to sell oak by the board foot to the home woodworker and by the train-car load to furniture plants. If you're ever driving through central or eastern Indiana, it's worth a detour.

During my first visit, the guy who was picking our lumber could regularly grab boards with dramatic ray-flake figure on the board's face by looking at the ends of the boards (which were painted brown, by the way).

Bemused, I asked him how he did it. He pointed to the annular ring pattern on the ends of the boards, which was visible under the paint. When these annular rings intersected the face of the board at exactly 90° – in other words, when they were straight up and down – the face of the board was more likely to exhibit the desirable ray flake pattern. Remember this the next time you're at the lumberyard and looking at rough stock.

Once you pick a dramatic board for the lower stretcher, turn your attention to the sides. It's unlikely you'll find a perfect 10"-wide board in quartersawn white oak. They are pretty rare. That means you'll need to glue up two narrower widths to end up with a 10"-wide side piece.

An easy mistake to commit is to make the sides by gluing together a wide board and a narrow one. This might be more material-efficient, but it probably won't look good in the end. The better solution is to make each side using two lengths from the same board that are 5⅛" wide each. By gluing up your side pieces from a single board, the result is likely to look harmonious in grain and color. Matching the color is easy; matching the grain is a matter of flipping the boards over and over on your assembly bench until the result looks good.

Personally, I like it when the grain looks like a "Y" that branches up from the center seam of the side piece. Also note that if you're going to hand plane your parts that you need to pay attention to which way the grain is running on the two pieces. I usually mark an arrow on each face that indicates the grain's direction. These arrows quicken the process of figuring out how to glue the boards together.

Now you can joint the long edges of your boards. But before you crack open the bottle of glue, there is one small detour ahead.

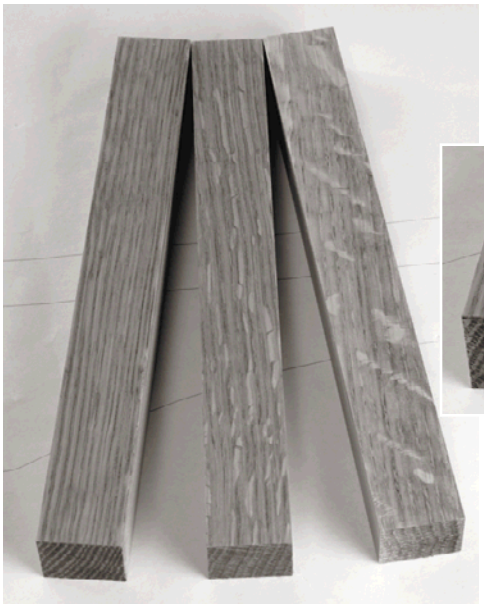
Quicker Cutouts

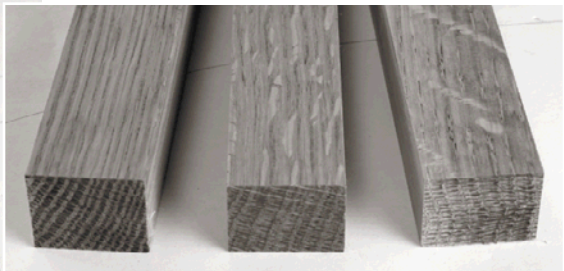
You can save some work for yourself down the road by roughing out the shape of the cutouts at the top of each side piece before gluing up the panel. The half-moon cutouts at the top are easier to rough out before you glue up the panel.

These cutouts will be routed to final shape after the panel is glued up. So to lay out the shape at the top, make plywood templates using ½"-thick plywood material, a compass and a ruler. See the construction drawing for details. Then cut out your shapes using a jigsaw, coping saw or band saw. Sand or rasp the edges of the pattern smooth. Take your time; little bumps will show.

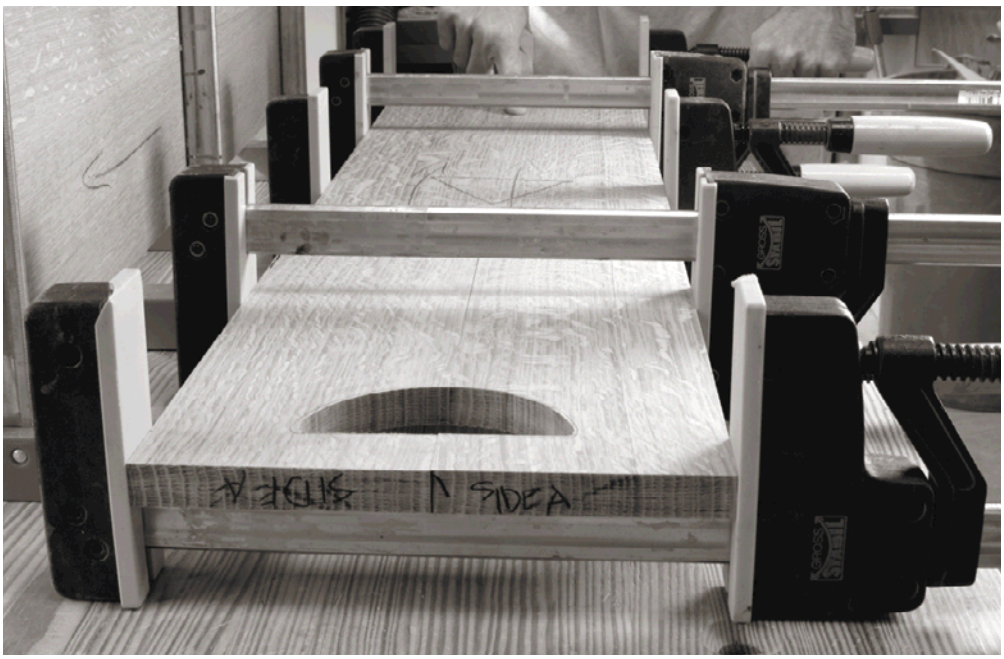
Put your side pieces in place on your bench and pencil in the patterns in the appropriate place. Cut out the shapes on the pieces, but don't get too close to your lines; I'd stay about ⅛" away from your line. Now you can glue up your panels and use the lines from the patterns to help align your parts correctly during assembly.

With a panel of this size, I recommend you apply glue to both faces of the joint and clamp every 12". Begin at the center of the panel and work out. Alternating clamps over and under the panel is always a good idea. When the glue is dry, rip each side to its finished width and cut the ends square. Then it's time to rout the cutouts and shape the curves for the project.





Here you can see three boards. All three are technically quartersawn, which is when the annular rings intersect the face of a board at somewhere between 60° and 90° degrees. As the rings become more vertical, the ray flake becomes more pronounced. The board at left has annular rings at 62°, the middle one is at 72° and the one at right is 90°.



The D-shaped cutouts will be easier to rout to their final shape if you cut them to rough shape before assembling each panel. This step saves you some drilling and some tricky inside cuts. You also can see the arrows I've scrawled on the boards' faces to indicate the grain direction of each piece.

Gustav Stickley No. 79 Magazine Stand

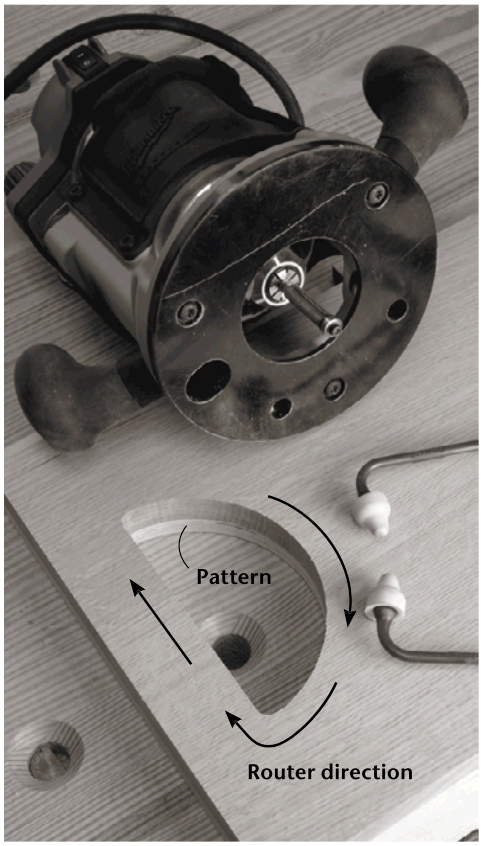
	NO.	PART	SIZES (INCHES) T	W	L	MATERIAL	NOTES
❑	2	Sides	¾	10	40	White oak	
❑	3	Shelves	¾	9⅞	13	White oak	In ¾" x ¼" d. dados
❑	2	Shelf supports	¾	1¼	12½	White oak	Pocket screwed into sides
❑	2	Lower stretchers	¾	2½	12½	White oak	Glued, screwed to case

Patterns Make Perfect

Whenever I have to make more than one tricky cutout in a project, I like to make a plywood pattern and then rout the piece to its final shape. For this project I made a pattern for the cutout at the top and the curve at the base of the sides. The pattern ensures that both cutouts will be identical, and you'll be able to clean them up with just a bit of hand sanding. The other option is to cut the shape close and then use an oscillating spindle sander to sand to your line. If you're a whiz with this machine then feel free. I think a router is the less risky route to a crisp execution.

Clamp the pattern to the side piece and then clamp these two pieces to your bench with the pattern sandwiched between your bench and your side piece. You're going to need a pattern-cutting router bit for this operation, and I generally prefer the pattern-cutting bits that have the bearing on the end of the router bit. This bit reduces the amount of spinning carbide that's exposed below the router base (always a good thing), and it allows you to more easily clamp up your work.

Pattern bits that have the bearing above the cutters generally need everything cantilevered off the end of your bench so the bit doesn't cut into your workbench. These bits are invaluable for blind cuts (where the cut doesn't pass through your work) but they're not needed here.



Here you can see the side and pattern clamped up for routing. When making this cut, move the router clockwise around the opening. Move quickly and smoothly, and try not to hesitate at any point during the cut. This will reduce the chance of scorching the edge.

The two common types of pattern-cutting router bits are shown here. The bit at the top has the bearing above the cutting flutes, which is designed for blind cuts. Below that is a bit with the bearing at the end of the cutter, which I prefer for this operation.

The trick to using a spokeshave is push it in the direction that will push the fibers down, instead of pulling them up, which produces tear-out. Think of the grain as the fur of a cat and the tool as your hand that pets it. It's always best to pet the cat in a manner that smooths its fur.

A Bit of Hand Work

Now shape the curve on the lower stretcher. While you could create a plywood pattern and rout this curve, I encourage you to rough it out first using a saw and try using a spokeshave for this operation. A spokeshave with a slightly curved sole makes short work of this shaping operation. And even if you cannot manage to get your tool to leave a perfect surface that's free of tear-out, the edge will never show because it faces the floor.

If you do not own a spokeshave with a curved sole, there are two excellent modern versions now available that I can recommend. The spokeshaves by Lie-Nielsen and Veritas will open curvaceous new worlds for you. (See the Supplies box for contact information.) I would caution you against purchasing inexpensive spokeshaves, such as those from Kunz and Anant. I have found these tools need a great deal of tuning.

Remember to work with the grain with these tools. In the case of a curve such as this, this means you should almost always work from the hill and into the valley, as shown below.

The final bit of shaping is the slight radius at the top corners that is shown in the construction drawing. Lay this out with a compass, cut it close with a saw and smooth the edge with sandpaper. Start with #100 grit and progress to #220.

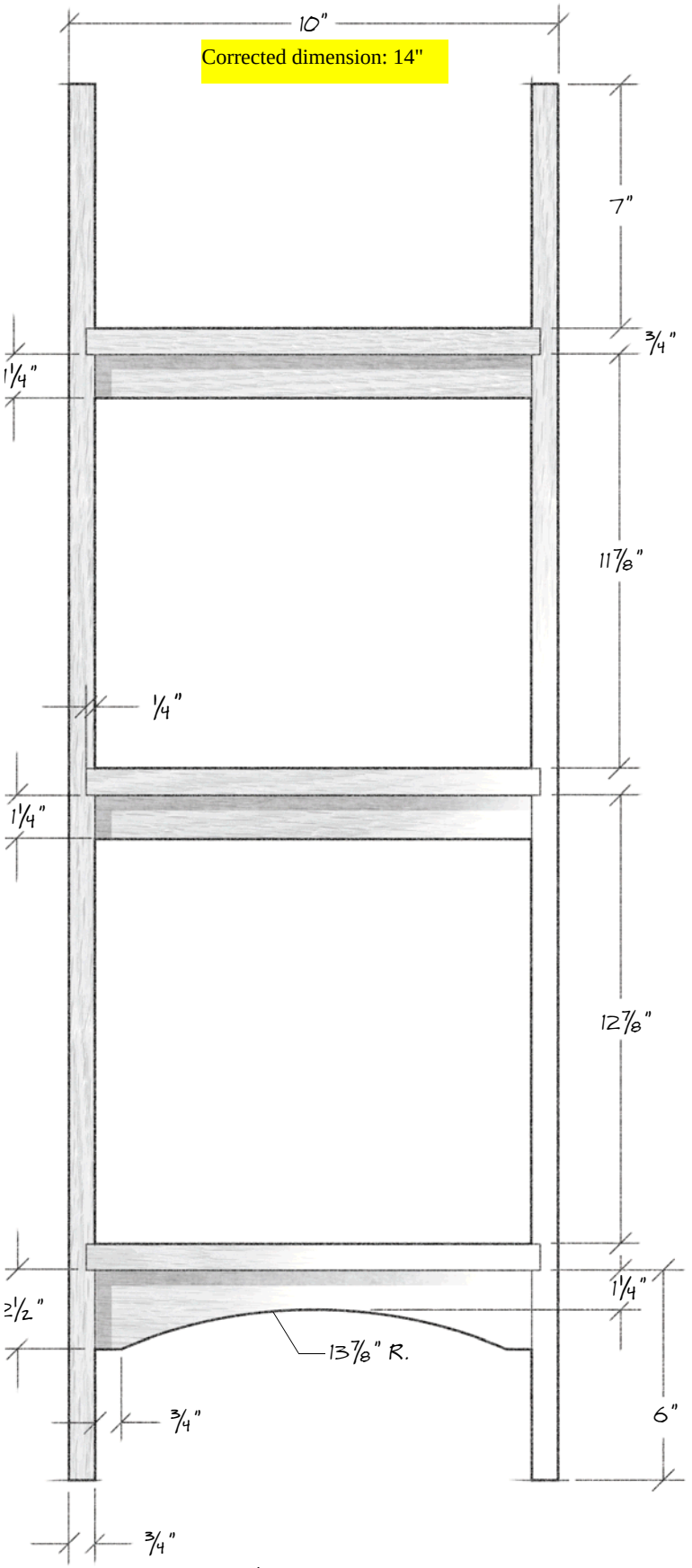
Routing Dados

The best way to rout the ¾"-wide x ¼"-deep dados in the sides is to make the T-square jig shown on page 25 of this issue. You want your dados to begin at the back of the cabinet and stop ¼" in from the front edge. To do this operation consistently six times, I recommend you screw or nail a stop to your T-square jig that will halt the router at the correct place every time. This takes a couple extra minutes of work, but it prevents a careless slip of the hand.

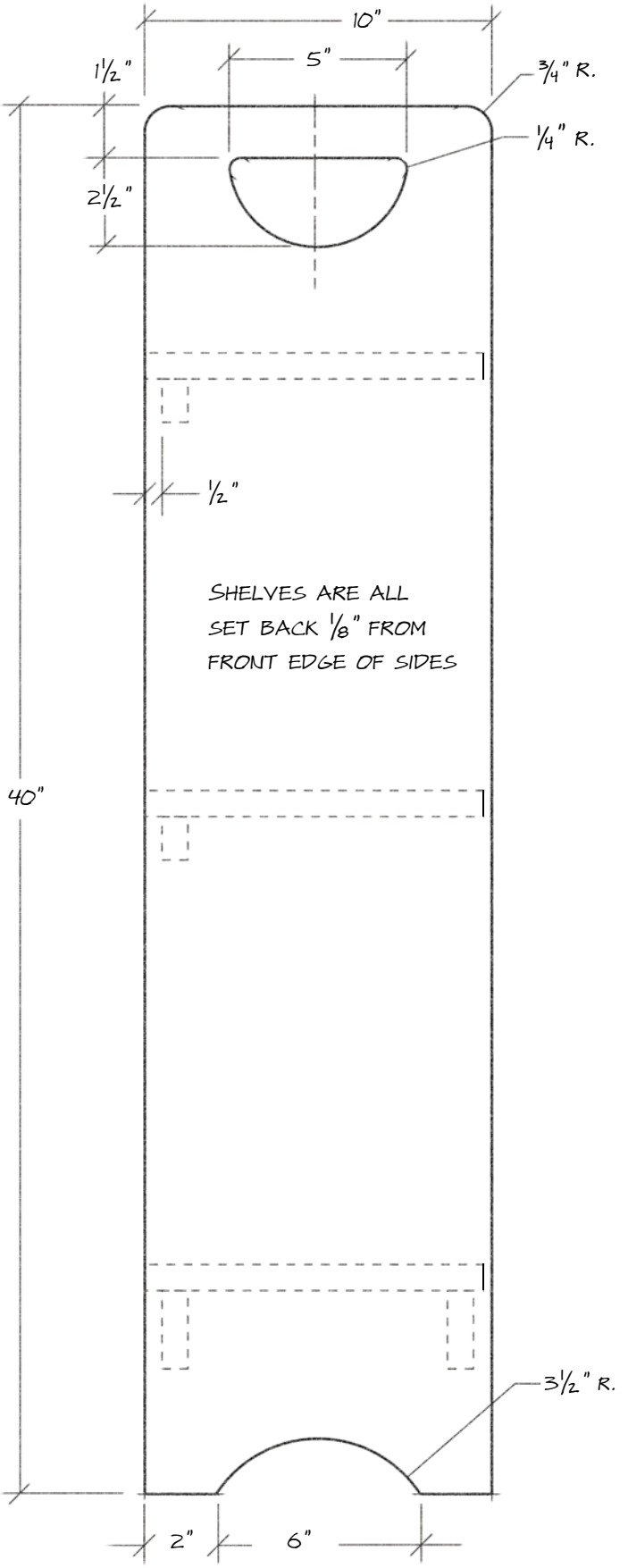
Make each dado in two passes with your plunge router and a ¾"-diameter straight bit: First with the bit set to about ⅛" and then with the bit sent to ¼" below the base of the tool. As always with this tool, move the router swiftly and smoothly for the best results.

"Whether made into a wooden pillow or table, wood with excellent grain is a guarantee of splendid poems, and the composition of perfect documents."

— Liu Sheng
from "Ode to Fine Grained Wood,"
a Chinese text from the second century, B.C.



REAR VIEW



SIDE VIEW

MAGAZINE STAND

Notching the Shelves

Now you need to fit each shelf piece into its dado. If you planed your lumber accurately, it should fit snugly into the dado. If it's a little tight you can either hand plane the shelf to fit, which is my usual method, or carefully send it through your planer for one more light pass – a risky operation. If you overshoot and make the shelf too thin, you can tighten up the dado by gluing a strip of veneer in the dado and fit the shelf again.

Once your shelves fit in your dados, you need to fit the front edges around the rounded routed-out section where each dado terminates. While you could chisel the end of the dado square, any error will show as an ugly gap at the front edge of your shelf. The better option is to saw a notch in each shelf and clean the notch up with a chisel. With a shop-made chiseling guide, your success is almost guaranteed.

The first step is to lay out the ¼" x ½" notches so that the shelves will fit into the dados and sit back ⅛" in from the front edge of the sides. This setback adds another nice shadow line to the project and saves you from having to fit the shelves perfectly flush to the front edge. Lay out your lines with a marking knife and cut the notch, leaving just a sliver of waste.

You can cut this notch with a band saw, but this is an excellent opportunity to instead practice with a hand saw. Sawing to a line is a worthy skill worth developing.

A chiseling guide is a jig that takes about five minutes to fabricate and will make this paring operation a snap. It's made using three pieces of wood: a small scrap of waste wood from the project and two scraps of thin plywood. Nail the plywood to the scrap as shown in the photo at right and clamp the chiseling guide to your shelf.

First Assembly

Now you're almost ready to start putting the pieces together. Before you fit the stretchers and supports, plane or sand your parts so they are about ready for finishing. This is an important point. If you fit the stretchers and supports before sanding or planing, they won't fit as snugly when you assemble the unit at the end.

Clamp up the shelves between the side pieces and stand the unit up on your bench. Now you want to do the critical fitting. Cut the lower stretchers to their final length so they fit snugly between the side pieces of your clamped-up case. Do the same thing for the two shelf supports.

You can do this fitting operation on your table saw. I, however, like to use my shop-made "shooting board." A shooting board guides a hand plane so it trims off small increments. It's my favorite way to sneak up on a tight fit.

Once you get the stretchers and supports fitting snugly, cut the pocket holes for the screws that attach these parts to the side pieces. Using your pocket-hole jig, bore the screw pockets on the bottom edge of each shelf support and on the inside face of the lower stretchers. These screws will add a bit of inexpensive insurance.

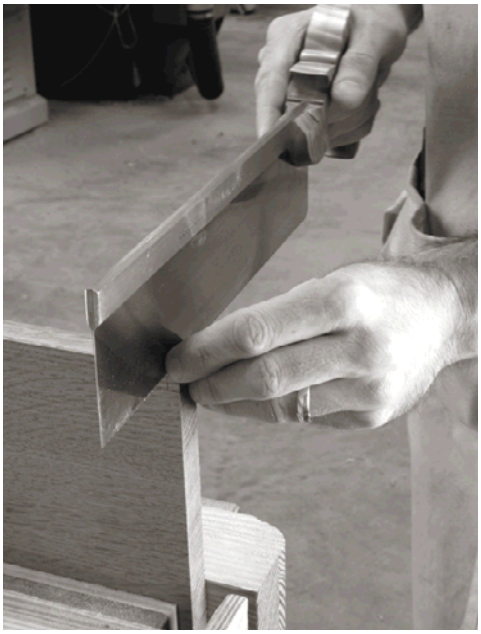
Dry-fit all the parts of the magazine stand on your bench. Clamp it up like you were going to glue things for real. Now glue and clamp the shelf supports and stretchers to the underside of the shelves. I really recommend you do this with the shelves clamped in place between the sides – even though you'll have to take care and not let your glue squeeze out and onto the sides.

Once the glue has dried, you can drive all the pocket screws home. If you are building this project in oak, here's a word of advice: Rub the threads of the screws with a bit of paraffin or beeswax before driving them. Oak is such a dense wood you can easily snap the screw heads off.

After the glue dries, remove the clamps and disassemble all the pieces. Do any final sanding or smoothing at this stage.

Routing the dados in the sides with the T-square jig ensures straight and clean dados that stop exactly where they are supposed to. It is an elegant solution to a thorny problem with case joinery.

A marking knife or chisel is the perfect tool to lay out the notches on the shelves. Assemble and clamp the case, then use the sides as a guide to mark the notches.



When sawing the notches, the best way to ensure your success is to begin the cut correctly. Use your thumb and index finger to guide the saw blade as you begin the cut.

Finishing Decisions

Whenever I finish a shelving unit or cabinet, I like to finish it when the parts are disassembled and then glue it up after the topcoat finish is dry. This process is delayed gratification at its best.

Finishing the parts before assembly makes them easier to finish (everything is flat with no vertical surfaces), but it takes a bit more time. You have to tape off all the joints that will be glued so you don't seal them up with the finish. However, the inconvenience is outweighed by the quality results. The inside surfaces of the project end up well finished – a mark of good construction.

Tape off all the dados and their mating edges with masking tape – I prefer the blue painter's tape that doesn't leave a sticky residue behind.

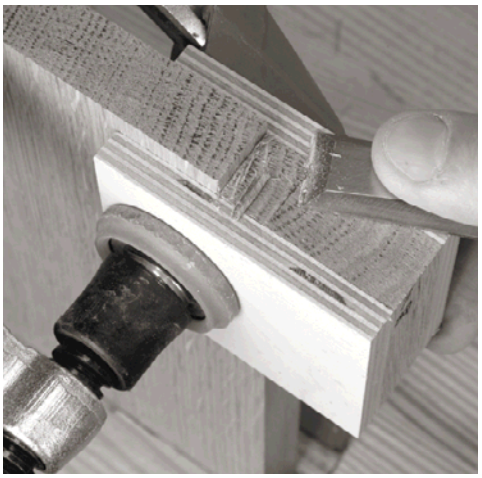
I recommend the finishing technique outlined in this issue on page 30. It's an improved and faster adaptation of a version we have been refining during the last six or seven years. Once the color is dry, add two or three coats of spray lacquer. This project is small enough that a couple aerosol can of spray lacquer will do the job (though the cans are expensive; about $8 each).

Final Assembly

Once the finish is dry, glue up the case. Put glue in the dados and knock the shelves in place. Clamp everything up. Clean up any squeeze-out; it should be easy to wipe up thanks to the already-finished surfaces. Once everything is clamped and square, drive the pocket screws home. Allow the glue to cure and remove the clamps.

This is the fourth magazine stand I've either built or bought for our home. And it's the only one with real backbone. The system works. WM

— Christopher Schwarz



This chiseling guide ensures the chisel cuts exactly where you want and no deeper. Make this paring cut with a couple passes of your tool to get the hang of the operation.

My shooting board is made from a few layers of plywood that are glued and screwed together. Any plane with the sides ground 90° to the sole can be used for shooting, though I find that planes with more mass are more accurate.

I use a smoothing plane to prepare my parts for finishing. Sandpaper or scrapers are the other logical choices. Which method you select will alter how the color is absorbed by the oak. See the article in this issue on Arts & Crafts finishes (page 30) for details.

If you don't have a pocket-hole jig, you can rig up the jig shown here to do the job with a stepped drill bit. The workpiece is angled at 15°. Set the depth of the drill bit to stop cutting right before it breaks through the end of the workpiece. This will take a little trial and error to set right.

Supplies

Frank Miller Lumber Co.
1690 Frank Miller Road
Union City, IN 47390
800-345-5711 or frankmiller.com

Lee Valley Tools
800-871-8158 or leevalley.com
Veritas Round Spokeshave
#05P33.03, $65

Lie-Nielsen Toolworks
800-327-2520 or lie-nielsen.com
Small Curved Bottom Bronze
Spokeshave, $75

Prices correct at publication deadline.