SECRETS TO BUYING THE RIGHT MITERSAW p.46

ISSUE 228 OCTOBER 2014

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Classic Arts and Crafts Bookcase p.26

Easy Routed Inlay p.28

Plus More Great Plans

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- 4-Across Game p.43
- Tool Stand p.10
- Bookends p.62
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Beef Up (and Dress Up) Butt Joints p.6

43 Shop Tips Inside!

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October 2014 Issue 228

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Editor's Angle

Party like it's 1984

Thirty years ago: Michael Jackson won eight Grammys for *Thriller*; Cale Yarborough first cracked the 200-mph barrier at Daytona; President Ronald Reagan was re-elected in a landslide victory over Walter Mondale; and everyone wanted to know, "Where's the beef?"

And *WOOD*® magazine made its debut on newsstands and in mailboxes around the country.

Of course, the world has changed incredibly during the past 30 years: We now carry powerful computers in our pockets, drive cars that run on batteries, and cut wood on tablesaws that can stop automatically before injuring us.

One thing that hasn't changed is *WOOD* magazine's commitment to serving you, the home woodworker. As founding editor Larry Clayton stated in issue #1: "The goal of all of us at *WOOD* is to...provide you with lots of well-designed, useful projects and shop-tested techniques, all presented step-by-step, to enlighten, inform, and entertain."

As an avid *WOOD* reader since that first issue (my Dad is a charter subscriber), I'm proud to continue the traditions started three decades ago, while at the same time looking forward to the future of woodworking. And I today, as Larry did then, always welcome your comments and suggestions to help keep *WOOD* magazine, *your* magazine.

So, it's our birthday, but *you* get the gifts: five free no-strings-attached project plans. Check them out on *page 2.*

See you in the shop!

Dave Campbell
dave.campbell@meredith.com

Sounding Board

Our bulletin board for letters, comments, and timely updates

Fighting form: Martial artist brings the noise

As a woodshop teacher at Metamora High School in Illinois, my students and I are very familiar with your magazine, and enjoy building the projects featured in it. Besides teaching, I'm also a martial arts fighter, and upon seeing the Mobile-Electronics Amplifier in issue 225 (May 2014), decided to make one for getting pumped up in the locker room pre-fight. This one came with me to Brazil for a competition. The other fighters liked it and were surprised to learn I'd built it.

—Kenny Robertson, Washington, Ill.

Michael McCarten, one of Kenny's students, works to cut out the parts for the amplifier's horn.

Cranking the amplifier design to 11

I liked *WOOD*'s® Mobile-Electronics Amplifier, and decided to dress it up a bit. I've since come up with dozens of different designs (such as those shown *below*). The guys in my barbershop chorus were blown away by the simplicity of these amps and how much they improve a phone's sound; several have even asked me to make them one! Thanks for the inspiration.

—Frank Eastman, Dallas

Crude but effective: A lunch break project

When a coworker showed me the Mobile-Electronics Amplifier, I used my 30-minute lunch break, a crosscut saw, coping saw, keyhole saw, plywood, and instant glue to slap one together. It's not much to look at, but it works great!

—Mitchell Holmes, Moline, Ill.

The facts are hard to ignore.

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Develop Your
Shop Skills

Bolster (and Beautify) Basic Butt Joints

The butt joint embodies simplicity, but can fall flat on strength, especially when end grain or thin stock are involved. Splines (shown here) and bowtie keys (*page 8*) reinforce and add elegance to the joint while assisting with alignment during assembly. Here's how to add both elements.

Tablesawn splines keep clean lines

To add this detail to your project, first mount a tall extension to your tablesaw's miter gauge. Then, determine the position and length of the splines. Use your tablesaw's fence to locate the first spline, and then raise the blade to half of the spline's length. Make the mating cuts in all pieces before moving the fence or adjusting the blade height [**Photos A, B**].

Cut spline stock to fit the kerfs [**Photo C**]. To help with alignment during the final assembly of the joint, glue the splines into only one workpiece at a time and let dry before gluing the mating piece in place.

STAND THE FIRST WORKPIECE UP

A Clamp the workpiece to a tall miter-gauge extension with one edge against the tablesaw's fence. Make the cut.

LAY THE SECOND WORKPIECE DOWN

B Without moving the tablesaw's fence, hold the adjoining piece to the miter-gauge extension. Make the matching cuts.

SHOW OFF WITH RAISED SPLINES

C Match the spline stock width to the thickness of the frame for a flush fit, or ⅛" wider so they stand proud.

continued on page 8

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Bowtie keys add a touch of class

First, mount a dovetail bit in your router table. (The bit diameter and cutter angle don't matter.) With a tall extension fastened to your router table's miter gauge, adjust the fence to center the bit on your workpiece and rout the dovetail [**Photo D**]. Repeat for the other half of the joint on the adjoining piece [**Photo E**].

Now, plane a blank of contrasting wood so its thickness matches the width of the dovetail bit. Crosscut the blank to a length twice the depth of the dovetail slot. Without changing the bit height, move the router table fence to cover half of the bit's diameter. Make repeated passes along the length of the bowtie-key blank, flipping the piece end-for-end and over until the bowtie is fully shaped [**Photo F**].

Check the bowtie-key blank's fit in the frame's dovetailed kerf. If the blank is still too wide, nudge the router-table fence back to expose more of the bit and make additional passes until it fits. Rip a key from the blank and glue it in place [**Photo G**].

DOVETAIL THE FIRST HALF

Clamp the first workpiece to the router table's miter-gauge extension with an edge against the fence before cutting through the workpiece.

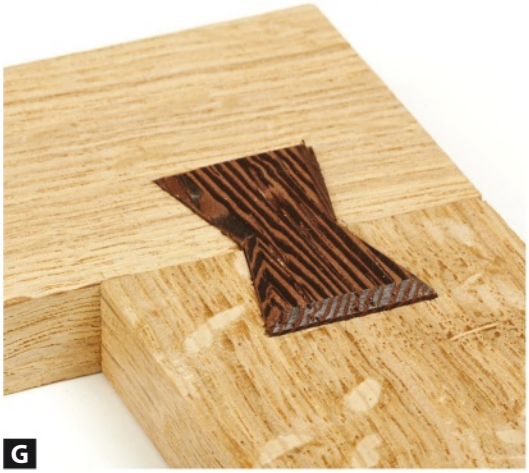
MAKE THE MATING CUT

Without moving the router table's fence, clamp or hold the second piece to the miter-gauge extension and against the fence. Make the matching cut.

MAKE THE PERFECT-FITTING BOWTIE

Use a pair of pushblocks to keep the bowtie key stock tight to the fence. Sneak up on the final width of the key by making additional passes as necessary.

BEVEL THE EDGES FOR A SLEEK LOOK



On raised bowtie keys (and splines) carefully add a bevel to the proud edges using a sharp chisel after the frame has been assembled.

Great Ideas
For Your Shop

Slick, swiveling Sander Stand

Project design: **Jim Whetstone**
New Cumberland, Pa.

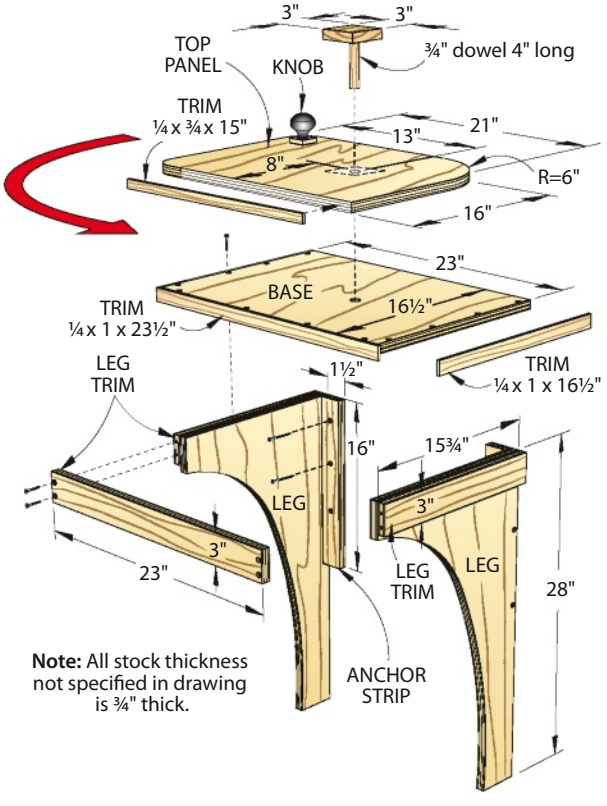
Using only a half sheet of ¾" pine plywood, a few pine scraps, a knob, and a length of ¾" dowel, you can build this low-profile, easy-turning sander stand. Closed, it saves a few inches of space and gives you unfettered access to your combination sander's disc. Open, it makes the sander's belt easy to reach.

To build the stand, begin by cutting the legs, base, and top panel to the size and shape shown in the **drawing**. Trim the top panel and base with solid stock. From your remaining plywood, cut two 3×15¾" strips and one 3×23" strip for the leg trim. Cut two anchor strips and screw the legs to them. Then, screw the anchor strips to the wall, driving one of the anchors' screws into a stud.

Glue the 15¾"-long leg trim to the legs, with their top edges flush. Attach the 23"-long piece of leg trim to the front edges of the legs, and the base to the legs.

Situate the top panel on the base, leaving enough room for your sander to pivot without brushing the wall. Clamp the top panel to the base and drill a ¾" hole. Without changing bits, drill a ⅜"-deep hole centered in a ¾×3×3" piece of scrap and glue a ¾×4" dowel in it. Apply glue to the bottom face of the 3×3" block and slide the dowel through the top panel and base. Let dry.

Mount a knob in the corner of the top panel, and finally, mount your combination sander to the top panel.



Note: All stock thickness not specified in drawing is ¾" thick.

More Resources

Need more room in your compact shop? Try these wall-mounted space savers:

- Fold-flat workbench: **woodmagazine.com/foldflatworkbench**
- Swing-out, fold-flat tool stand: **woodmagazine.com/swingoutstand**
- Cordless tool station: **woodmagazine.com/cordlessstation**

Ding-free Dead-blow Mallets

These handy helpers offer powerful persuasion with a gentle touch.

If you've ever tried to "nudge" a tight joint together with a hammer only to end up denting the wood, you learned the value of a dead-blow mallet. This indispensable striking tool features a one-piece, molded polyurethane plastic head and handle. Metal shot or sand fills most of the hollow cavity inside the head. As the mallet head strikes a surface, the filler material "sloshes" forward inside the head, providing a punch without rebound.

Mallets come in a variety of sizes and weights [**Photo A**], so you can pick the power of persuasion that fits the job. They also come in various colors. The bright-orange model in our shop is easy to find on a cluttered bench.

Use it, don't abuse it

Besides seating dovetail joints, a dead-blow mallet can help align carcase pieces once you have clamps in position [**Photo B**]. They also help you break apart a glued joint, such as a tenoned chair-leg spindle.

However, avoid using the soft, non-marring surfaces for driving nails

FIND ONE THAT'S JUST RIGHT

A

This set of three matching mallets comes in weights from 1 to 3 pounds to provide fine-handed finesse or brute force.

PACK A DAMAGE-FREE PUNCH

B

With wet glue acting as a lubricant, a few taps from a dead-blow mallet help bring clamped-up carcase pieces into alignment.

A BIG HEAD IMPROVES YOUR AIM

C

A wood mallet with a large head requires less precision when striking a chisel, so you can concentrate on making the cut.

or punches. And although they work for driving chisels, the small striking surface requires a careful aim; that concentration would be better directed at the chisel's cutting end. A wooden mallet [**Photo C**] makes more sense when it comes to chisels.

Other no-mar options

Some tools similar to deadblow mallets include mallets with soft rubber heads, *left* in the photo *below*, that provide soft blows, but lack the impact of dead-blow mallets. The non-marring rubber won't damage wood, but can pick up grit and dirt that can leave marks. Reach for this tool and a scrap of wood to close cans of finish or move stubborn shop fixtures or tool fittings.

Mechanic-style mallets, with plastic and rubber striking surfaces on the same tool, at *center,* work well with punches and other metal tools. The tips can be replaced if they become damaged or dirty.

A third option uses a tightly rolled piece of dried rawhide for the head, *right*. Often used by jewelers, they provide a delicate touch, such as when assembling small box joinery.

Make your woodworking make money

Unique items that can be produced quickly and inexpensively en masse make good choices for products.

People love receiving handcrafted gifts—one of the many reasons woodworking is such a satisfying hobby. So regardless of your skill level or experience, friends and family in awe of your prowess with a saw will inevitably say, "You should sell these jewelry boxes!"

"Really? You think people would pay actual money for them?"

At this point, it is perfectly normal to see floating dollar signs, hear cash registers ring, and imagine yourself quitting your day job to pursue your passion.

The reality? You probably won't be sailing around the world with your newfound riches, but you certainly could earn enough extra money to support your hobby and maybe purchase a new tool or two. Here are some tips for selling your projects:

Think unique. Personalized items sell well, as do inexpensive impulse buys. Niche markets are also good to pursue. Woodworker Steve Carmichael (thecarmichaelworkshop.com) hit upon an idea that makes his handmade pens stand out in the crowd of pen makers by targeting a specific market: musicians. He makes beautiful pens from recycled drumsticks (*below*).

Select projects with a high profit margin. Even though it might sell for $200, that beautiful inlaid jewelry box you spent 20 hours building earns you less than minimum wage. Calculate

Look for projects that cater to a special-interest group. For example, musicians—especially percussionists—love pens made from drumsticks. A good brainstorm starting point: your own hobbies.

your cost to produce: Factor in listing fees, transaction fees, materials, shipping supplies, postage, and a reasonable wage for potential for-sale projects. Then consider if a customer would buy it at that price. If not, consider other projects.

Forget about craft shows. Instead, sell online. It is time consuming and difficult to eke out any profit by selling to the relatively small group of potential customers at a local event. One great way to sell handmade wares is on etsy.com, a site that specializes in all things handcrafted. Sales fees are small, and you get worldwide exposure.

Put on your marketing hat. Listing your work for sale online is pointless if people don't know about it. Use social media for getting the word out. When drumstick manufacturer Vic Firth shared a photo of one of Steve's pens with its 500,000 Facebook fans, orders started rolling in. Now, drummers are asking Steve to make custom pens from their own drumsticks.

Skip the high-pressure sales pitch. But share your work honestly and openly. Generate interest on Facebook and Pinterest. If the people who see your work aren't buyers, the friends they share with might be. Find ways to show off your building process in addition to the completed product. Maybe shoot a video. Give away free plans. Don't worry about people "stealing your idea." People will respect your goodwill; your transparency will generate sales. Shoppers want to buy items that have a maker's face and story associated with them. Your job is not only to make a sale but also to make the buyer feel excited about you. You want their friends to ask, "Where did you get that?" as well as, "Who made that?"

Steve Ramsey's quirky woodworking videos and prolific musings can be found at WoodworkingForMereMortals.com where his goal is to reclaim the woodworking hobby for the average guy.

Fixing
Workshop Goofs

Repair a misplaced groove

Salvage a miscut workpiece with this neat fix.

Regardless of whether you set your fence incorrectly or put the wrong workpiece face against it, don't let an off-target groove, like the one at *left,* throw you for a loop. If you don't have enough stock to replace the workpiece or can't find a length that matches the grain of mating pieces, simply fix it following these three steps. No one will be the wiser!

STEP 1: TRIM AWAY THE MISTAKE

Cut off the less-conspicuous side (for example, the inside face of a door stile or the bottom of a tabletop) of the misaligned groove to create a rabbet. Be careful to cut flush with the bottom of the groove.

STEP 2: FILL 'ER UP

Glue a filler strip into the rabbet. For best results, make the filler stand 1/64"–1/32" proud of the adjacent faces. Clamp in two directions for a tight fit along both faces of the rabbet. After the glue dries, sand the filler strip flush.

STEP 3: CUT A NEW GROOVE

Double-check your fence setup and workpiece orientation; then, cut the groove in the proper location. Your mistake may be visible on the end grain, but will appear nearly invisible on the face.

✓Yes

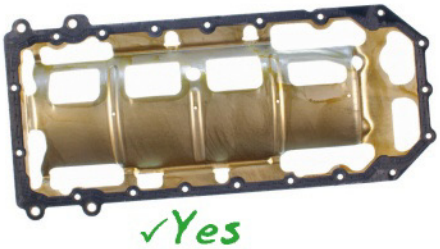
✓Yes

✗No

✓Yes

✓Yes

✓Yes



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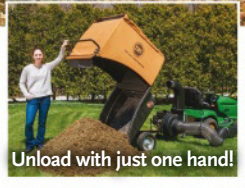

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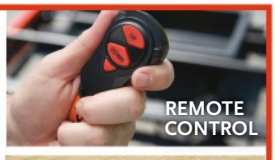

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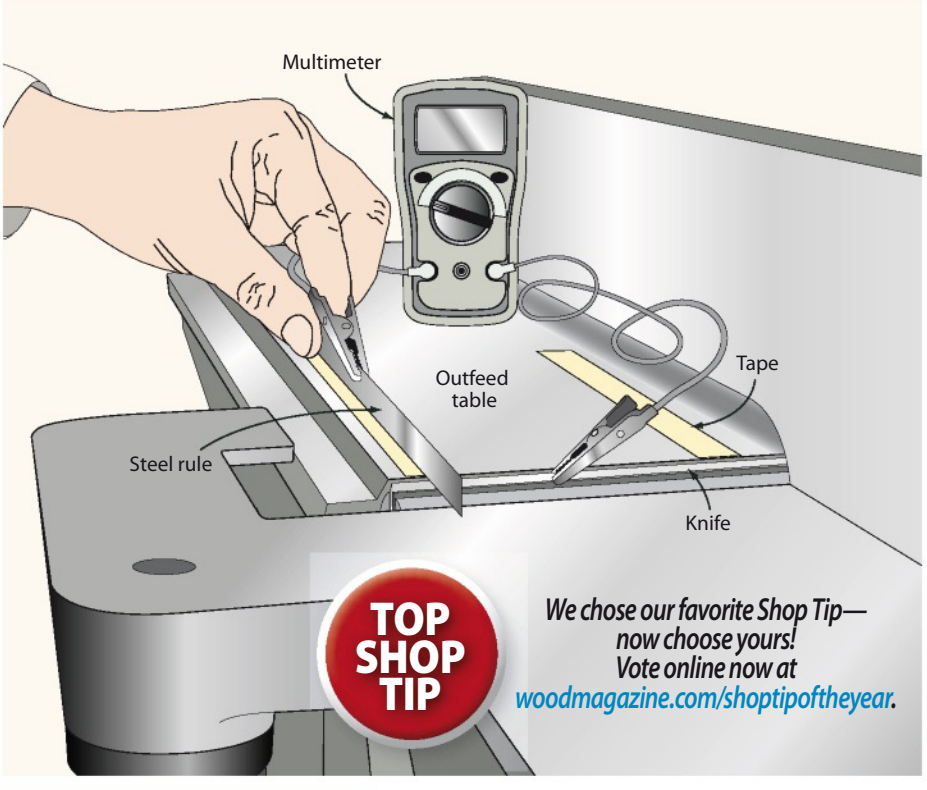
PROFESSIONAL POWER DR DONE RIGHT

The best current way to dial in jointer knife alignment

Precisely aligning jointer knives can be a frustrating and time-consuming experience. Here's a method that's fast, accurate, and requires only an inexpensive multimeter (used to measure voltage, current, and resistance), a steel rule, and a bit of masking tape.

First, apply two parallel strips of the masking tape to the jointer's outfeed table. Clamp one of the multimeter's alligator clips to the rule, the other to the jointer knife at top dead center. Rest the rule on one of the tape strips (which insulates it from the jointer's metal table) and over a jointer knife. Turn on the multimeter and set it to "continuity" mode. Raise the knife until the multimeter beeps or its gauge shows a circuit has been completed. Repeat the process for the other end of the knife.

—Don Doerr, Lawton, Mich.



TOP SHOP TIP

We chose our favorite Shop Tip—now choose yours! Vote online now at woodmagazine.com/shoptipoftheyear.

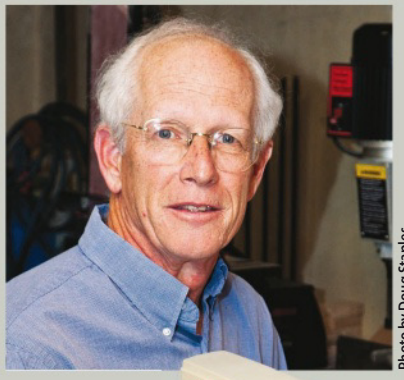


Photo by Doug Staples

For sending this issue's Top Shop Tip, Don receives a Jet 12" drill press with digital readout worth $375.

TIPS EARN $$$

Have a clever trick for overcoming a shop conundrum? Share it with us, and if we print it, you could earn up to $150. If your tip is the best of the issue, it'll win Top Shop Tip honors, and you'll receive a tool prize from Jet Tools worth at least $300!

Send your tip, photos or drawings, and contact info to

shoptips@woodmagazine.com

or snail-mail them to:

Shop Tips, WOOD magazine, 1716 Locust St., LS-221, Des Moines, IA 50309-3023.

Because we try to publish original tips, please send yours only to *WOOD*® magazine. Sorry, submitted materials can't be returned.

continued on page 20

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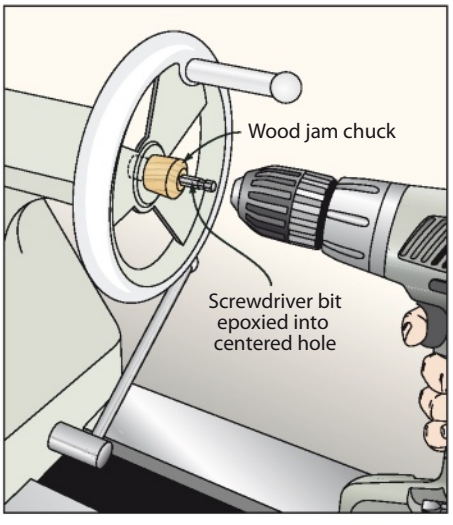
Shop Tips

Take this no-crank lathe trick for a spin

When turning a bunch of pepper grinders as gifts, the regular cranking in and out of my lathe's live center became tiresome. To minimize the nuisance, I turned a small wood jam chuck to fit the center of the lathe's tailstock handwheel, drilled a hole to fit a screwdriver bit, and epoxied the bit into the hole. By chucking the bit into my cordless drill, I can quickly move the live center in and out with just a finger twitch.

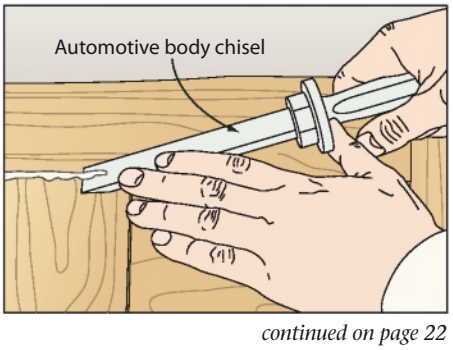
—Mark Heatwole, Annandale, Va.



No-mar glue scraper

Rather than designate one of my good chisels as a glue scraper, I purchased an inexpensive set of automotive body chisels for the job (no. AC833, $14.99, 877-238-2623, advanceautoparts.com). They're made of a hard plastic, so glue doesn't stick to them, they reduce the likelihood of accidentally gouging the wood, and they clean up easily with water.

—Tom Carrell, Metropolis, Ill.



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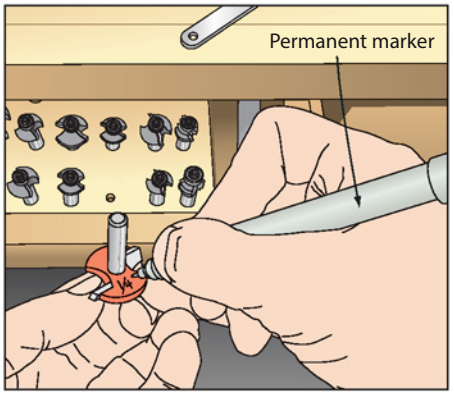
Shop Tips

Too-easy tip to ID bits

Here's a great time saver that takes the guesswork out of selecting the right router bit: Mark your bits with their size using a fine-point permanent marker. Write the information on the body of the bit where it won't wear off during use.

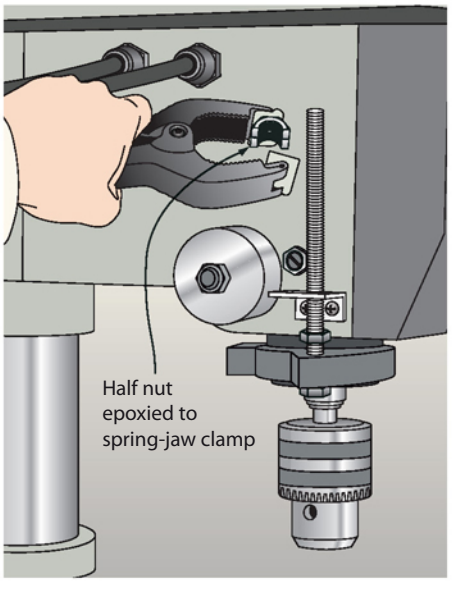
—John Cusimano, Lansdale, Pa.



Clamp down on drill depth

The depth stop on my drill press was a pain to adjust—spinning the stop nut down and up, even an inch or two, was time-consuming and annoying. So I replaced the factory depth stop with a shop-made, clamp-on version. To make it, I found a nut that matched the threads on my drill-press' depth-adjustment rod, cut it in half vertically with a hacksaw, and epoxied the two halves to the jaws of an inexpensive spring clamp.

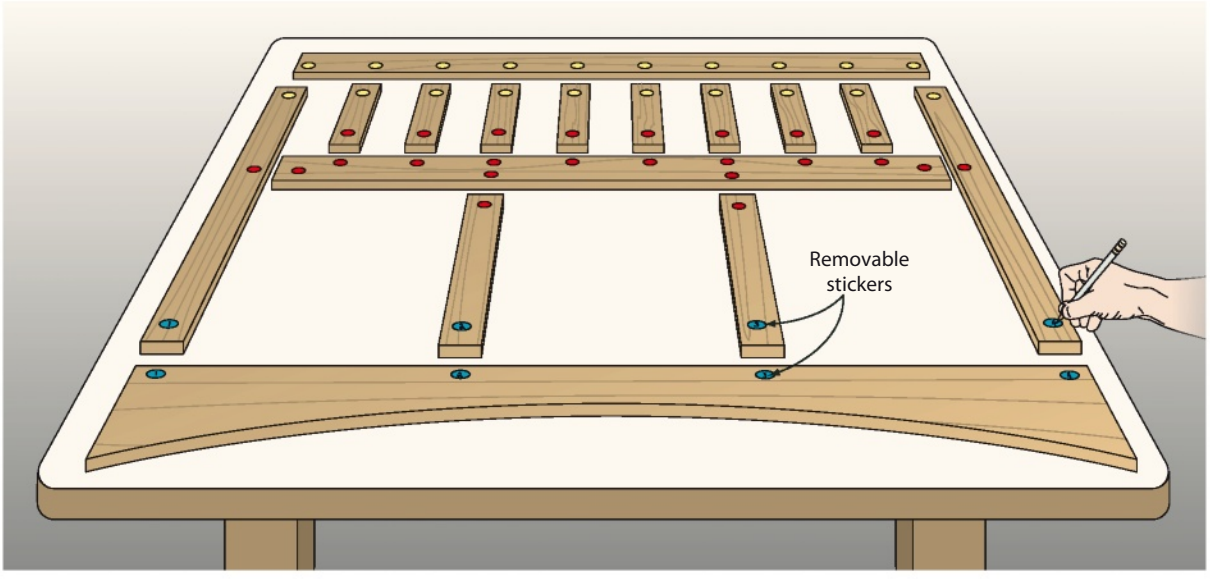
—Dennis Snyder, South Burlington, Vt.



Organize complex assemblies with multi-colored stickers

While building an Arts & Crafts-style headboard requiring more than 25 mortise-and-tenon joints, I needed a way to keep the joints matched up during machining. A package of multi-colored removable stickers—only a few dollars at an office-supply store—did the trick. I used different colors to designate each joinery "zone", and numbered individual joints on the stickers with a pen.

—Hud Peters, Cincinnati



continued on page 24

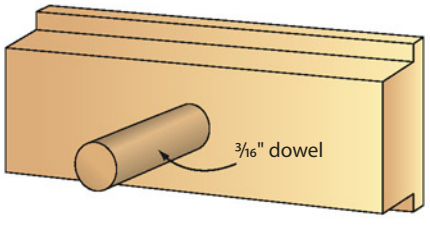
Shop Tips

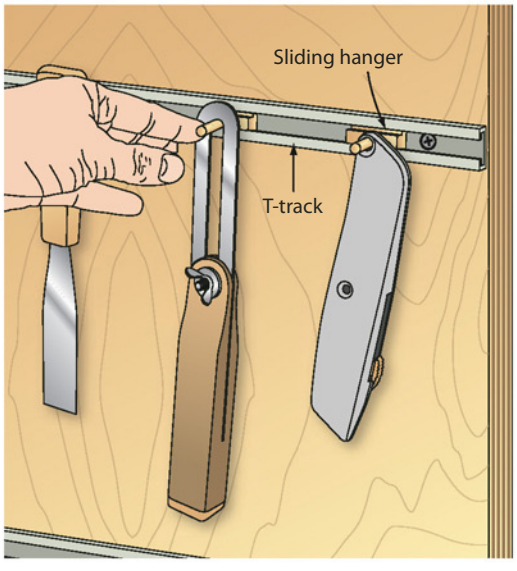
Sliding pegs keep small tools on track

The insides of cabinet doors provide the perfect home for some small tools. But I didn't want to just hang the tools from nails—that offers no flexibility. So I came up with this simple and adjustable T-track tool-hanging system.

First, I mounted parallel lengths of T-track inside the doors. Then, I made a "stick" of hardwood sliders to fit the channel in my T-track and cut off pieces about 2" long for each hanger. I drilled a hole in each at a slight angle to help keep tools from sliding off the pegs, and glued short lengths of dowel in the holes.

—Len Urban, Rancho Mirage, Calif.





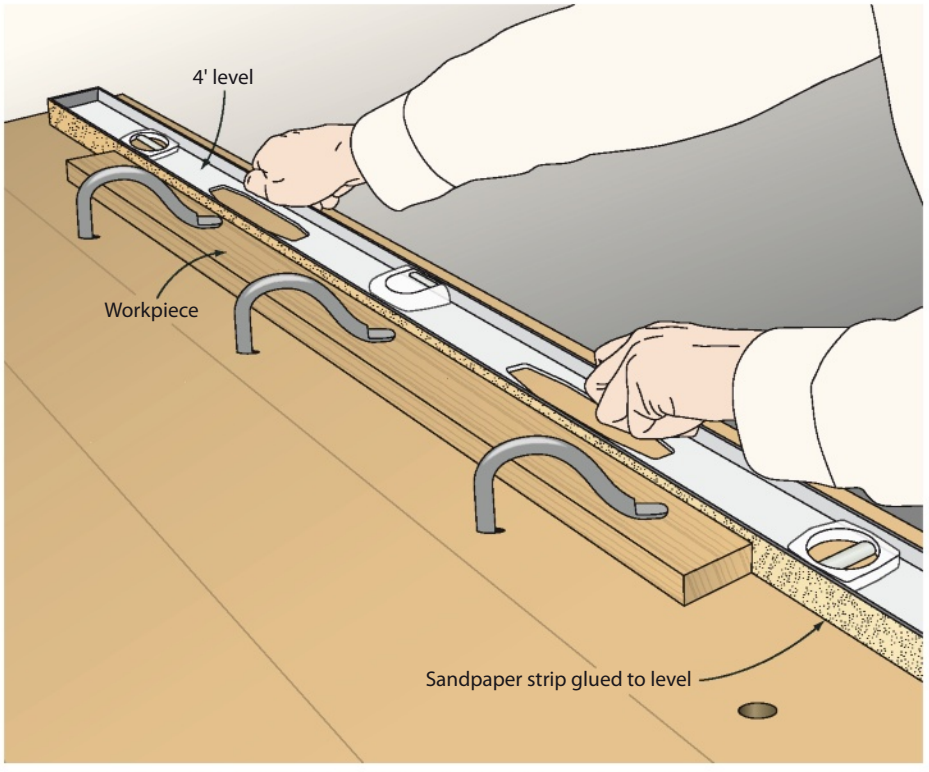
Get a *FREE* daily Shop Tip at woodmagazine.com/tips

Jointer-free way to square edges is on the level

Because my wife and I spend each winter away from our home and shop, I often have to woodwork using a minimal set of tools. When I needed to square up the edges of a few pieces for a panel glue-up without access to a jointer, I came up with this simple trick.

I adhered a strip of 120-grit sandpaper to the edge of a 4' carpenter's level, clamped down the workpiece, and sanded until the workpiece had a flat and square edge.

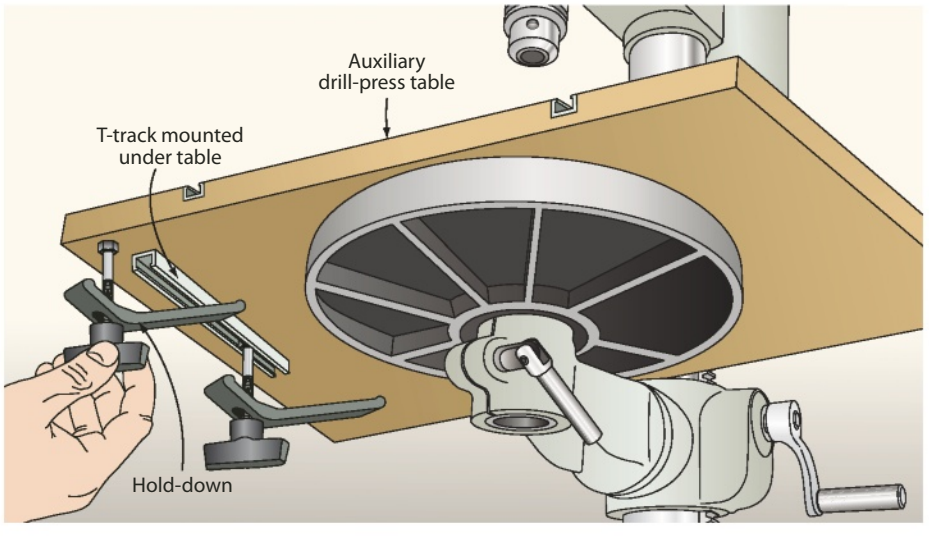
—Charles Hughes, Westfield, Iowa



Simple storage for T-track hold-downs

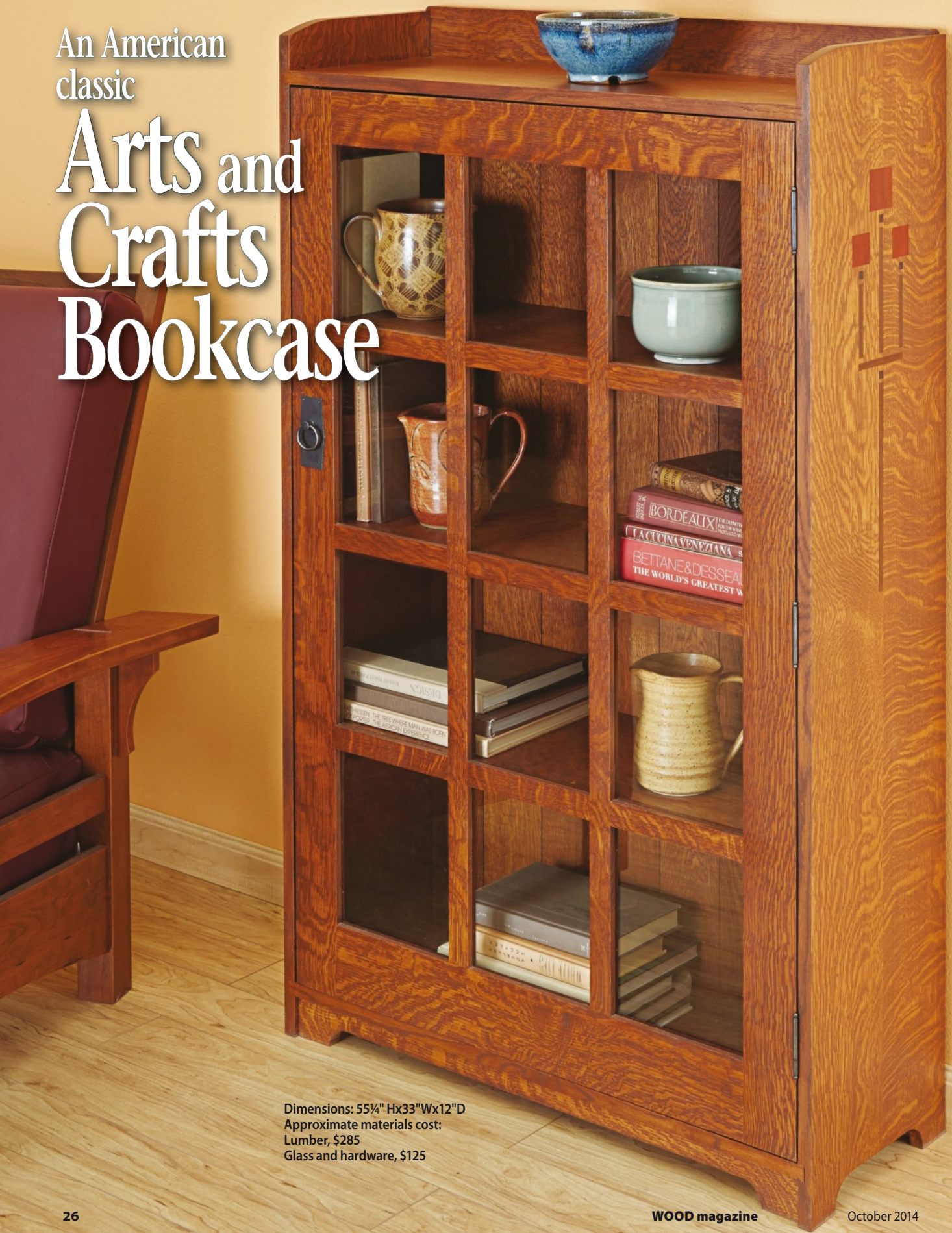
When working on the drill press, T-track hold-downs are handy, but hard to store and easy to misplace when not in use. The solution: Mount a short length of T-track to the underside of your drill-press table. It provides a secure way to store the hold-downs when not in use, and they couldn't be closer.

—John Stahr, Chicago



An American classic

Arts and Crafts Bookcase



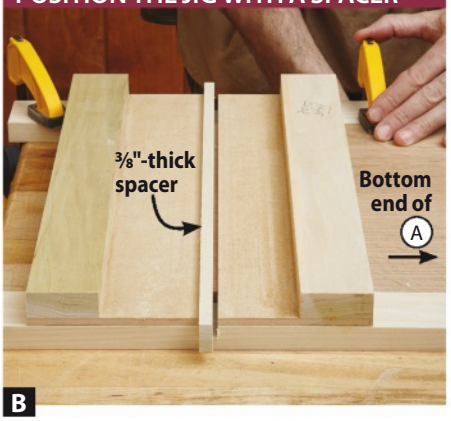
Dimensions: 55¼" Hx33"Wx12"D
Approximate materials cost:
Lumber, $285
Glass and hardware, $125

ROUT THE GROOVE IN THE JIG

A

Install a ½" straight bit in your router to cut the groove across the sliding dovetail jig. Make sure the router slides between the guides without play.

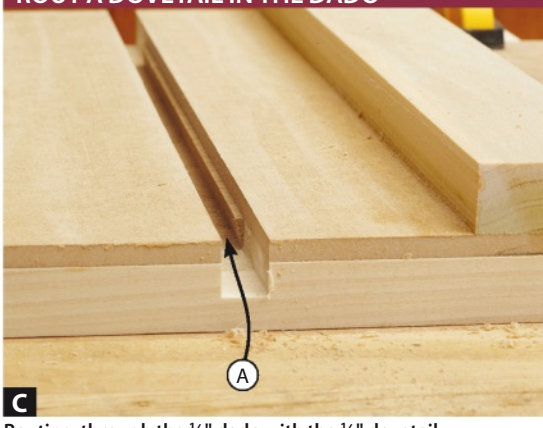
POSITION THE JIG WITH A SPACER



B

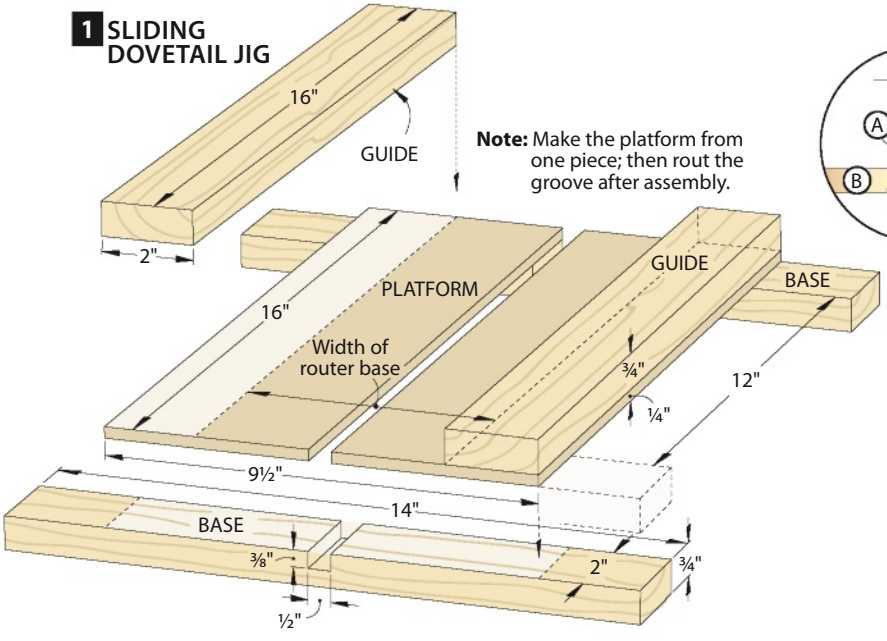
A ⅜"-thick spacer resting against the lower edge of the dado and the top of the groove in the jig sets the jig for routing the dovetail in the dado.

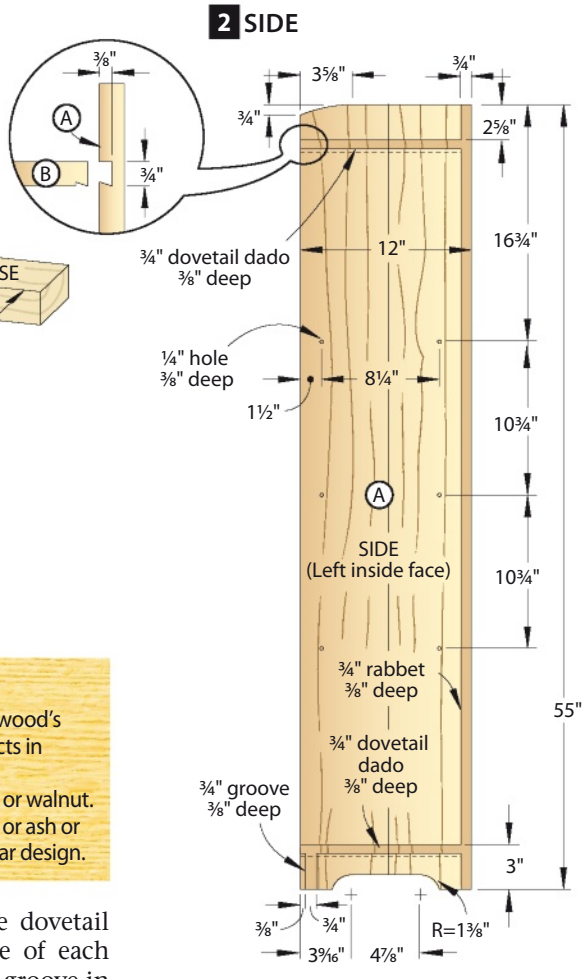
ROUT A DOVETAIL IN THE DADO



C

Routing through the ½" dado with the ½" dovetail bit widens the lower edge of the dado and forms a 14° dovetailed edge.





Historic furniture woods

Arts and Crafts furnituremakers in the early 1900s relied on quartersawn white oak. The wood's straight grain and distinctive ray patterns make it today's go-to choice for creating projects in that ever-popular style.

But oak isn't your only option: Some craftsmen of that time built furniture from cherry or walnut. And if you're not after authenticity, give your bookcase a lighter look by choosing maple or ash or leaving the oak unstained. No matter the species, straight-grain woods enhance the linear design.

Start with the sides

1 Saw and joint enough ¾" quarter-sawn oak to edge-glue stock for the two sides (A) and the top and bottom (B) [**Materials List**, *page 33*]. Cut the sides to size, but make blanks for the top and bottom about 6" longer than listed.

2 Construct the sliding dovetail jig shown in **Drawing 1**. Make sure the jig fits the width of your sides (A) snugly. Rout a ½" groove ⅝" deep across the jig [**Photo A**]. Save the router setup.

3 Mark the locations of the dovetail dadoes on the inside face of each side (A) [**Drawing 2**]. Align the groove in the jig with the first dado position and clamp the jig to one side.

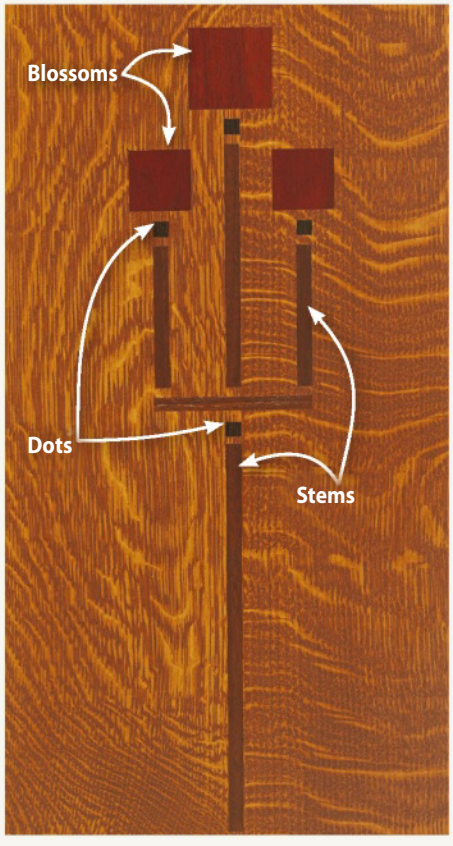
4 With the same router setup you used to rout the jig groove, cut a dado ⅜" deep across the side (A). In the same way, rout the three remaining dadoes.

5 Change to a ½"-diameter 14° dovetail bit in the router. Set the cutting depth the same as it was for the straight bit.

6 Loosen the clamps, place a ⅜×⅞×17" spacer in the dado, and slide the jig toward the bottom of the side (A) until it rests snugly against the spacer. Clamp the side and jig in position [**Photo B**].

7 Rout across the side, forming a half-dovetail in the lower edge of the dado [**Photo C**]. Repeat **Steps 6** and **7** for the three remaining dadoes.

Add an elegant inlay



***Note:** If you prefer sides without the inlaid floral design, skip these eight steps and go to "Assemble the carcase," below.*

1 Cut the parts for the upper and lower side-inlay routing templates [*WOOD Patterns*® insert, *page 39*] from ½" medium-density fiberboard (MDF) or plywood. Assemble the templates [**Shop Tip,** *above*]. Clean away glue squeeze-out.

2 Install a ⅜" outside-diameter guide bushing in your plunge router's base. Then install a ¼" straight bit. Set the cutting depth to 9⁄16" so the bit will cut 1⁄16" deep into the side (A).

3 Position the upper template 4" down from the top on the outside face of one side, placing the template's front edge flush with the front edge of the side (A), and clamp it in place. Rout the three blossom recesses, three straight stem grooves, and the lower dot in the side [**Photo D**].

4 Remove the template. Draw pencil lines to extend the middle stem edges up to the blossom recess [**Photo E**]. Draw another line connecting the edge lines at their centers.

5 Position the lower inlay template on the side (A), centering the top dot over the connecting centerline you drew in **Step 4** [**Photo F**]. Align the front edge of the template with the front edge of the side, clamp in place, and rout the pattern.

6 Square the corners of the inlay recesses with a sharp chisel. Repeat **Steps 3–6** for the other side (A).

7 Resaw stock a little thicker than 1⁄16" and cut it to size for the inlaid blossoms, stems, and dots, identified in the photo, *left*. Make enough inlay stock for both sides.

***Quick Tip!** To more easily and safely make the thin inlay pieces, cut thicker stock to width first, and then resaw it to just over 1⁄16" thick.*

SHOP TIP

Rub a dab of glue for fast bonds

Woodworker's glue sets quickly when it comes into contact with the dry, porous edges of MDF. So skip the clamps and instead apply glue to one part, rub it against its mating part a time or two, and hold the parts together for a few seconds for a quick tack.

Assemble the carcase

1 Cut a ¾" rabbet ⅜" deep along the back inside edge of each side (A) [**Drawing 2**]. For an easy way to cut rabbets accurately, see **More Resources**. Rout a ¾" groove ⅜" deep where shown at the inside bottom front.

2 Cut the top and bottom details on the sides (A) [**Drawing 2**] with a jigsaw and sand them smooth. Drill six shelf-pin holes on the inside face of each side where shown. Finish-sand the sides with progessively finer grits to 220.

3 Install in your table-mounted router the dovetail bit you used for the sides (A) [**Drawing 3**]. Testing your setup on one end of an overlength top/bottom blank (B), adjust the cutting depth and fence position to form a mating dovetail and test its fit in the dovetail dado in a side (A).

4 Cut the top and bottom (B) to length and rout a dovetail on each end. Finish-sand the top and bottom.

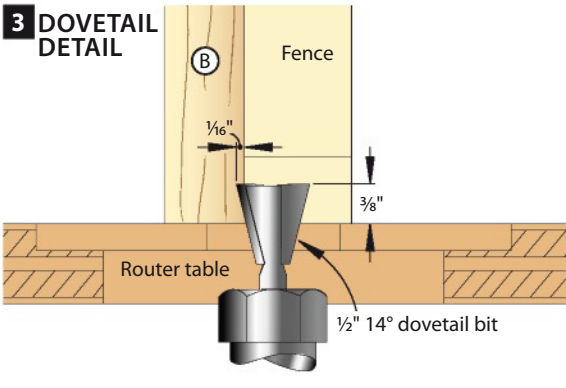
5 Apply glue to the bottom dovetail dado in one side (A) and slide the bottom (B) into place [**Shop Tip,** *next page*]. In the same way, install the top (B) on the same side and square the top and bottom to the side [**Photo I**].

6 After the glue dries on the first side (A), apply glue to the dovetail dadoes in the other side and slide the side onto the top and bottom (B).

7 Cut to size the top rail (C), front base rail (D), and back base rail (E). Lay out and cut the radius on each top corner of the top rail [**Drawing 4**] and cut the front base rail to shape [**Drawing 5**]. Finish-sand the parts.

8 Install the top rail (C), front base rail (D), and back base rail (E) [**Drawing 4**]. The top of C stands ¼" above the top of A.

3 DOVETAIL DETAIL

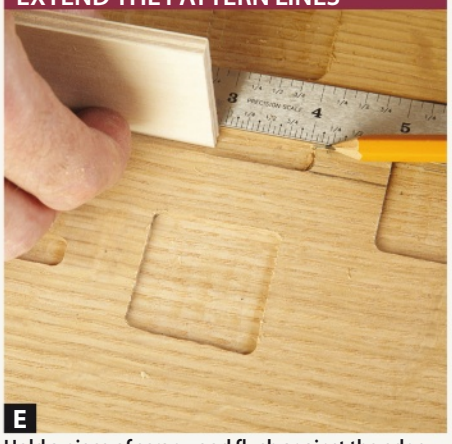


FORM INLAY RECESSES IN THE SIDES

D

Rout overlapping passes in the square recesses to ensure flat bottoms. Cut the grooves for the stem inlays in two passes.

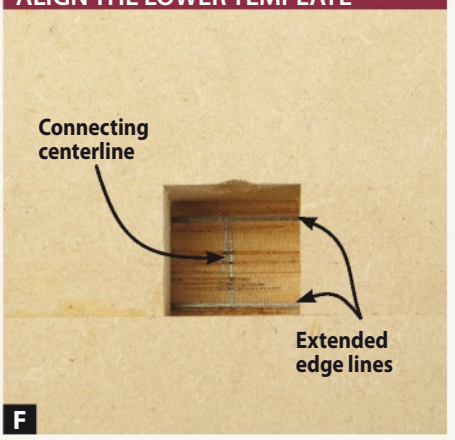
EXTEND THE PATTERN LINES



E

Hold a piece of scrapwood flush against the edge of the routed stem to align a metal rule. Then draw extensions of the recess edges with a pencil.

ALIGN THE LOWER TEMPLATE



F

To align the lower inlay template, sight through the top dot to center it on the extended inlay edge lines and the centerline connecting them.

Measure the recess for the large blossom, and make one blank that width and about 12" long to yield the two large blossom inlays. Similarly, make blanks for the four smaller blossoms, ten stems, and eight dots. We used bloodwood for the blossoms, walnut for the stems, and wenge for the dots.

Cut the inlays to length with a fine-tooth handsaw [**Photo G**].

8 Fit the pieces into the recesses on both sides (A), and glue them in place. Bring each inlay flush to the side surface with a small block plane or random-orbit sander [**Photo H**].

9 Finish-sand the inlaid faces of the sides to 220 grit.

CUT INLAY PIECES PRECISELY

G

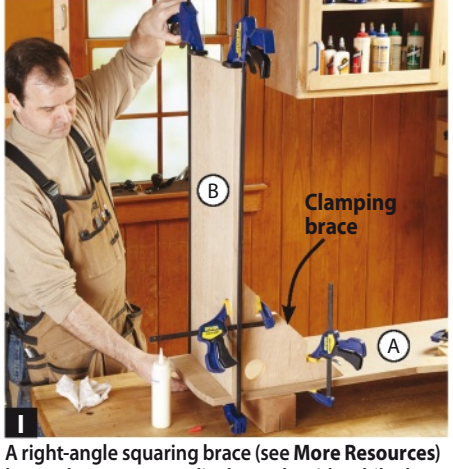
A fine-tooth dovetail saw works well for crosscutting the inlays. Use a miniature miter box or a bench hook with a guide slot for square cuts.

MAKE INLAYS FLUSH WITH SIDES

H

When cutting and fitting the inlays, pay attention to grain direction on the square blossoms so the inlay grain and the side grain align.

SQUARE TOP AND BOTTOM TO SIDE



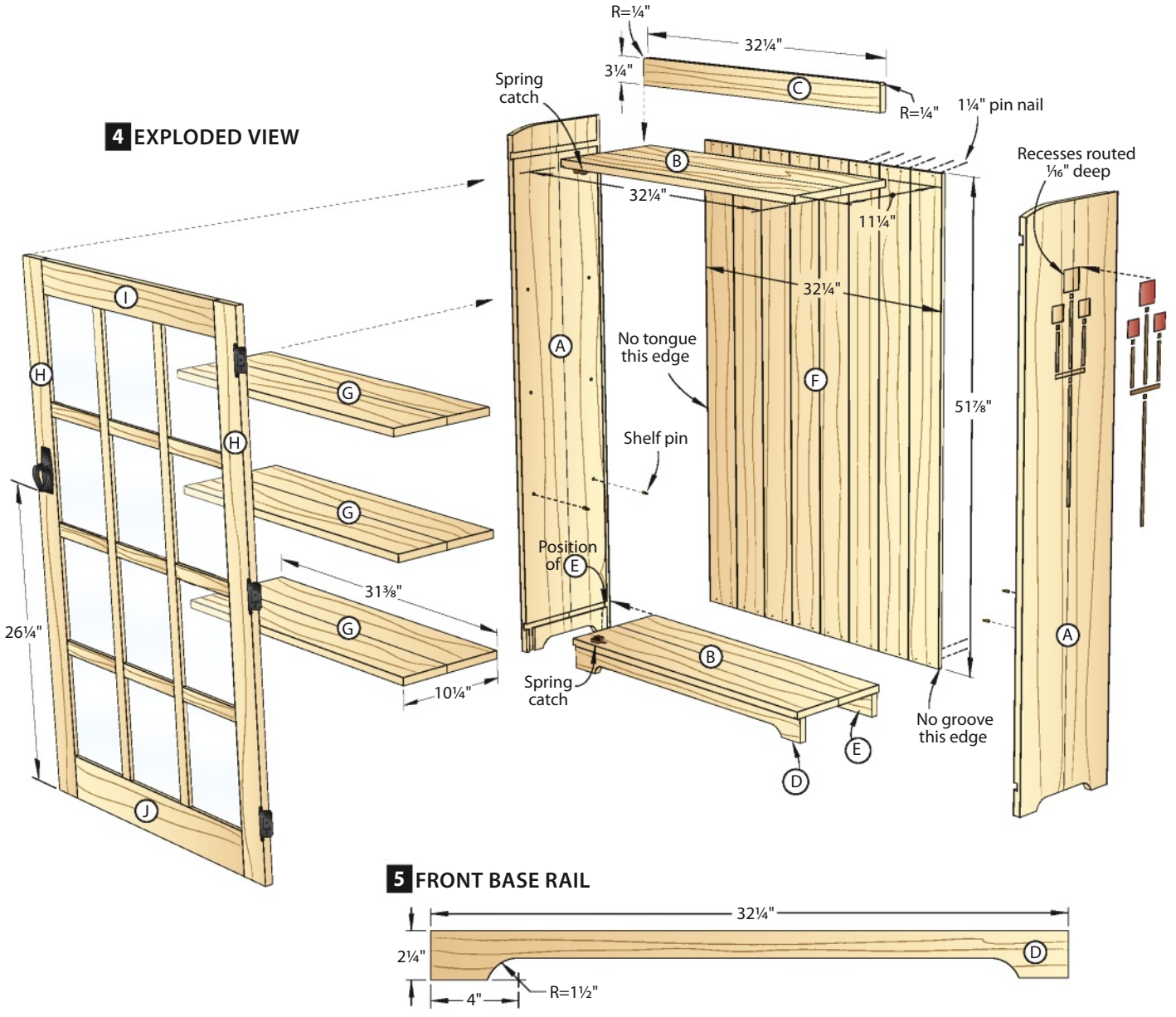
I

A right-angle squaring brace (see **More Resources**) keeps the top perpendicular to the side while the glue dries. Brace both the top and bottom.

SHOP TIP

Draw tight-fitting parts together with a clamp

A clamp helps you apply steady pressure to slide the bottom (B) into the dovetail dado in the side (A). The controlled pressure helps you make the fine adjustment to bring the front edge of the bottom flush with the front edge of the side.



Make the back and shelves

1 Cut the back slats (F) to size [**Materials List**]. Set up a ¼" dado blade in your tablesaw and cut a centered groove ¼" deep along one edge of seven of the slats [**Drawing 6**].

2 Cut ¼" rabbets 3⁄16" deep along the opposite edge on both faces of six grooved back slats (F) and one edge of the ungrooved back slat to form tongues [**Drawing 6**]. Rip the groove-only and tongue-only back slats to 3 15⁄16" wide, cutting off the plain edge. Finish-sand the slats.

3 Saw and joint stock to edge-glue three blanks for the shelves (G) [**Drawing 4**]. After the glue dries, cut the shelves to size and finish-sand them.

Construct the doors

1 Cut the door stiles (H), top rail (I), and bottom rail (J) to size [**Drawing 7**].

2 Drill overlapping ¼" holes or use a mortising machine to form ¼×2¼" mortises at the top and ¼×3" mortises at the bottom of the stiles (H) [**Drawing 8**]. Clean up drilled mortises with a chisel.

3 Cut tenons on the ends of the top and bottom rails (I, J) [**Drawing 8**].

4 Apply glue to the tenons and assemble the door frame. Measure the diagonals to ensure the frame is square, and clamp the H/I/J assembly.

5 After the glue dries, install a ¼" piloted rabbet bit in your router, and rabbet the inside edge on the back of the door (H/I/J) [**Drawing 8**]. Square the rabbet corners with a chisel. Finish-sand the door frame.

6 Cut four ¾×1¼×45" blanks for the vertical and horizontal muntins (K, L). Rabbet both back edges of each blank ⅜" deep [**Drawing 8**], using a table-mounted router.

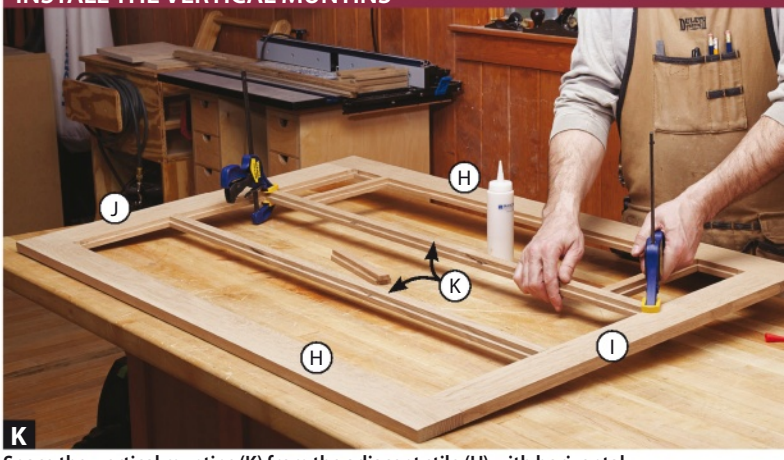
7 Place one end of one blank into the rabbet in the bottom rail (J) and, keeping the blank parallel to the door stiles (H), mark the length for the vertical muntin (K) [**Photo J**]. Mark two blanks this way, cut the two vertical muntins (K) to length, and rabbet the ends [**Drawing 8**].

8 Measure the inside width of the door frame and mark locations for the vertical muntins to divide the opening into

MARK THE VERTICAL MUNTINS

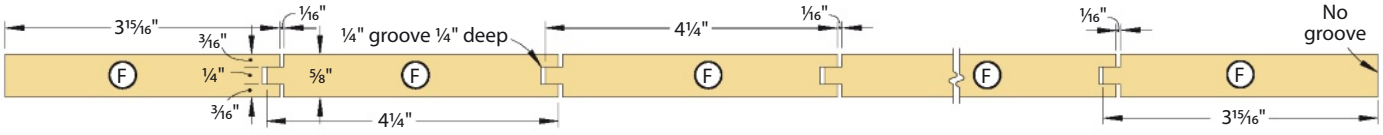
Lay the vertical muntin (K) blank into the rabbet in the door bottom rail (J) with the back facing up. Mark the length with a knife for precision.

INSTALL THE VERTICAL MUNTINS

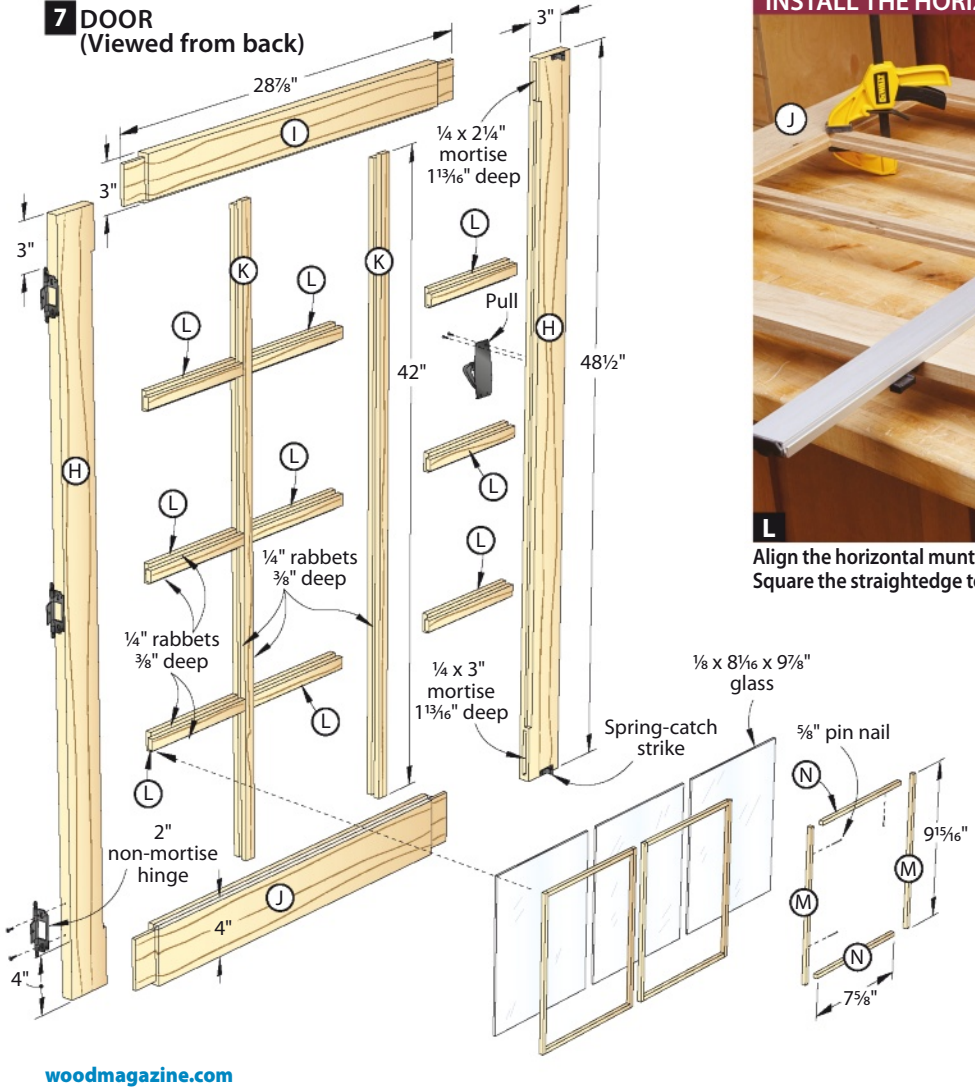


Space the vertical muntins (K) from the adjacent stile (H) with horizontal muntins (L). Glue the verticals to the door top and bottom rails (I, J).

6 BACK TOP VIEW



7 DOOR (Viewed from back)



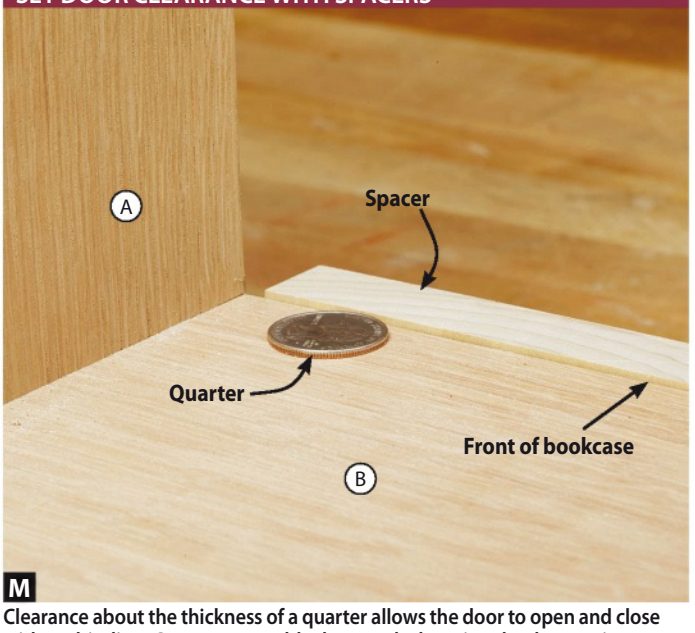
INSTALL THE HORIZONTAL MUNTINS

Align the horizontal muntins (L) across the door opening with a straightedge. Square the straightedge to the door stiles (H).

equal thirds. Clamp the vertical muntins in place and adjust to make the horizontal muntins (L) the same length. Cut the horizontal muntins to length and rabbet their ends [**Drawing 8**]. Finish-sand the vertical (K) and horizontal muntins.

9 Glue the vertical muntins (K) in place [**Photo K**]. Install the horizontal muntins (L), starting at the middle of the door opening [**Photo L**]. Install the other rows midway between the middle row and the top and bottom rails [**Drawing 7**]. Measure carefully so you make equal-size openings.

SET DOOR CLEARANCE WITH SPACERS



Clearance about the thickness of a quarter allows the door to open and close without binding. Cut two spacer blocks to make hanging the door easier.

ATTACH THE HINGES TO THE SIDE

Stand the door on the spacer blocks; then drill pilot holes and screw the hinges to the bookcase side. A self-centering bit accurately places the holes.

Install the doors

1 Stand the bookcase on a flat surface and cut two ¾×6" blocks long enough to extend above the bookcase bottom (B) by the thickness of a 25-cent piece (1⁄16") [**Photo M**].

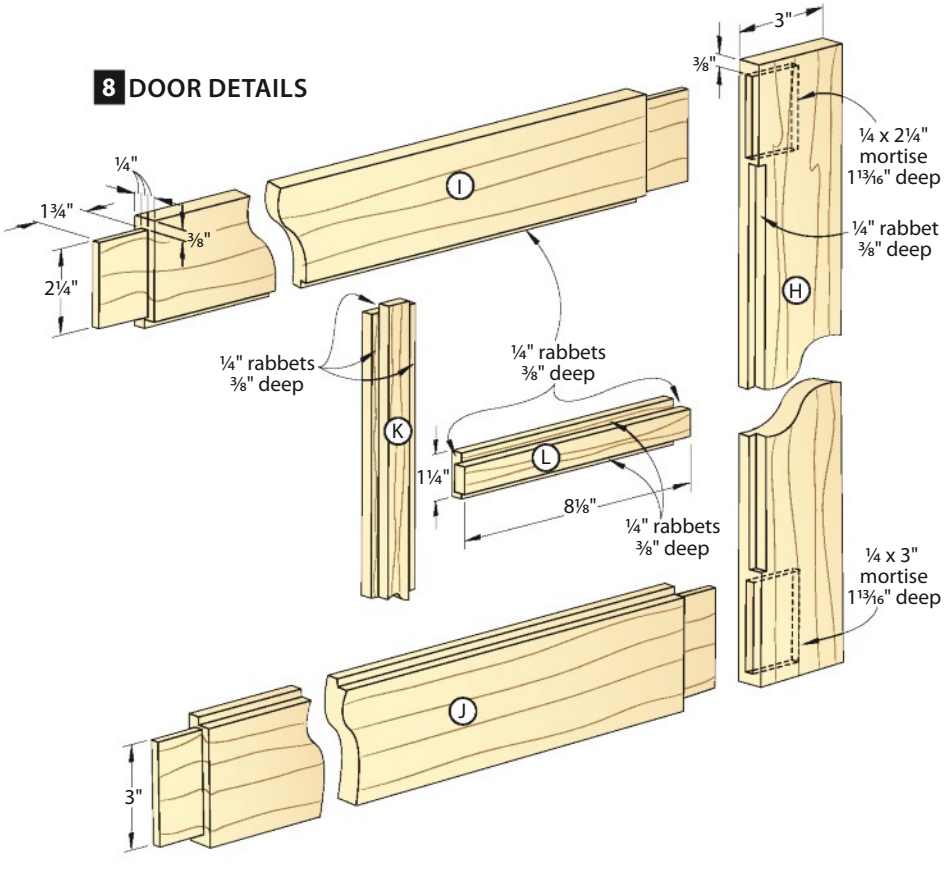
2 Attach three non-mortise hinges [**Sources**] to the door {**Drawing 7**]. We attached the hinges to the right edge of the door, but you can put them on the left if that works better for your room.

3 Stand the door on the two spacer blocks and attach the hinge leaves to the bookcase side (A) [**Photo N**]. A helper holding the door makes this job easier.

4 Remove the spacers and close the door. Shim the hinges or plane the door edges as necessary to equalize gaps all around the door. Remove the door and take off the hinges, marking them so you can replace them in the same positions.

5 Cut ¼×¼" stock for the vertical and horizontal glass stops (M, N). Each of the 12 door openings requires about 36" of stop material. Finish-sand the stop blanks. Measure the openings, and have 12 pieces of ⅛" glass cut to fit.

8 DOOR DETAILS



Complete the bookcase

1 Touch up the finish-sanding as necessary on all parts and assemblies and apply the stain and finish of your choice. We stained the bookcase shown with Lockwood no. 144 Early American maple golden amber water-soluble dye, mixed 1 ounce of dye to 1 quart of hot water.

Quick Tip! *Before applying water-soluble dye, raise the grain by wiping the wood with a water-dampened sponge. Let the wood dry, and sand with 320-grit sandpaper for a smooth surface.*

We applied a coat of Varathane Gunstock wood stain over the dyed wood, followed by three coats of Old Masters satin polyurethane.

2 Lay the door face down, and place the glass panes in the door openings. Mark each stop (M, N) for length and cut it. Press each stop firmly against the glass, and pin-nail it [**Photo O**].

3 Reinstall the hinges on the door, and install the door pull [**Drawing 4**, **Sources**]. Attach the spring catches to

O

Keep the glass stops (M, N) tightly against the glass so it won't rattle. Protect the glass with a piece of cardboard as you pin-nail the stops.

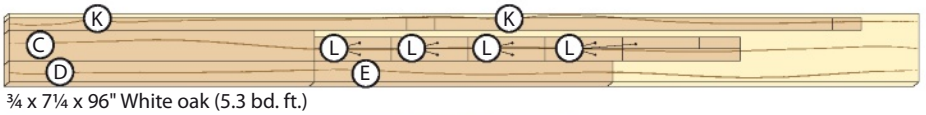
More Resources

▶ See a method for cutting rabbets easily on a tablesaw at **woodmagazine.com/ rabbets**.

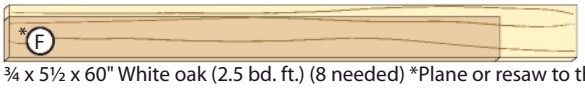
▶ See how to make simple squaring braces for assembly at **woodmagazine.com/ brace**.

Cutting Diagram

¾ x 7¼ x 96" White oak (5.3 bd. ft.) (4 needed)



¾ x 7¼ x 96" White oak (5.3 bd. ft.)



¾ x 5½ x 60" White oak (2.5 bd. ft.) (8 needed) *Plane or resaw to thickness listed in Materials List.

¾ x 5½ x 96" White oak (4 bd. ft.) (2 needed)

¾ x 7¼ x 84" White oak (4.7 bd. ft.)

¼ x 5½ x 36" White oak (.7 bd. ft.)

the top and bottom (B) and screw the strikes to the door. Attach the hinged door to the carcase, again positioning the spacer blocks to ensure clearance.

4 With the case resting on a flat surface, pin-nail the back slats (F) in place [**Drawing 4**], leaving 1/16" gaps at the edges and between the slats. Rip the final slat to fit, if necessary.

5 Place shelf supports in the holes in the sides, and lay the shelves (G) on them. Place the bookcase, arrange books or artifacts on the shelves, and close the door on your latest masterpiece.

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
Carcase						
A	sides	¾"	12"	55"	EO	2
B*	top and bottom	¾"	11¼"	32¼"	EO	2
C	top rail	¾"	3¼"	32¼"	O	1
D	front base rail	¾"	2¼"	32¼"	O	1
E	back base rail	¾"	2¼"	31½"	O	1
F	back slats	⅝"	4¼"	51⅞"	O	8
G	shelves	¾"	10¼"	31⅜"	EO	3
Door						
H	stiles	¾"	3"	48½"	O	2
I	top rail	¾"	3"	28⅞"	O	1
J	bottom rail	¾"	4"	28⅞"	O	1
K*	vert. muntins	¾"	1¼"	42"	O	2
L*	horiz. muntins	¾"	1¼"	8⅛"	O	9
M*	vert. glass stops	¼"	¼"	9 15/16"	O	24
N*	horiz. glass stops	¼"	¼"	7⅝"	O	24

*Parts initially cut oversize. See the instructions.

Materials key: O–quartersawn white oak, EO–edge-glued quartersawn white oak.
Supplies: 12 pieces ⅛" glass approx. 8×10", ⅝" and 1¼"pin nails.
Blade and bits: Stack dado set; ½" straight, ¼" and ¾" rabbet, ½"-diameter 14° dovetail router bits.

Sources

Hardware: Ring pull (1) no. MS-26, $21; hinges (3) no. NM-3 DA, $14 [pair], www.horton-brasses.com, 800-754-9127. Large spring catches, (2) no. 00W11.02, $1.30 ea; 1 bag shelf supports, 63Z06.04, $9.90/bag, leevalley.com, 800-871-8158.

Produced by **Larry Johnston** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Lorna Johnson**

Supersize Job-site Tablesaw Crosscut Sled

Overall dimensions:
46" W × 30" D × 2½" H

A job-site tablesaw gives you the portability of a benchtop tool with most of the functionality of a stationary tool. Most. This simple sled doubles the crosscut capacity of most job-site saws while improving cut quality. The sled coasts smoothly on waxed runners, the offcut plate catches waste pieces, and shop-made toggles keep both plates firmly attached to your saw, but quick to remove. It's a slick setup, and you need only a sheet of ½" Baltic birch plywood and some scraps of hard maple to build it!

Nate

Nate Granzow
General-Interest Editor

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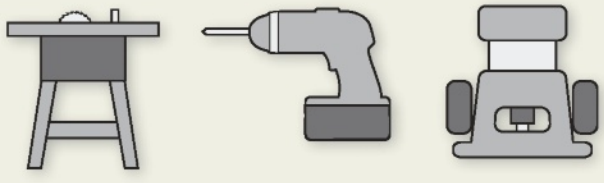
TOOLS NEEDED



Cut and mount the plates

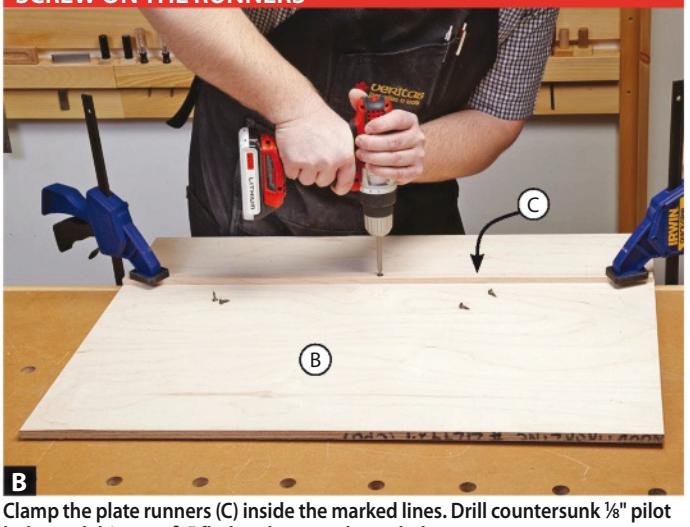
1 From the ½" plywood, cut three 22½×30" blanks. Laminate two of them to make the offcut plate (A) [**Drawing 1**]; the other is the crosscut plate (B).

2 Rip ⅜"-wide strips from the edge of a ¾" hard maple board for use as plate runners (C). These should fit in your saw's miter slots. Measure the distance from the miter slot to the blade and add ½" to determine the location of the plate runners on the bottom faces of the offcut plate (A) and the crosscut plate (B). Mark the mounting locations for the plate runners [**Drawings 1** and **2, Photo A**]

MARK THE PLATE RUNNER LOCATIONS

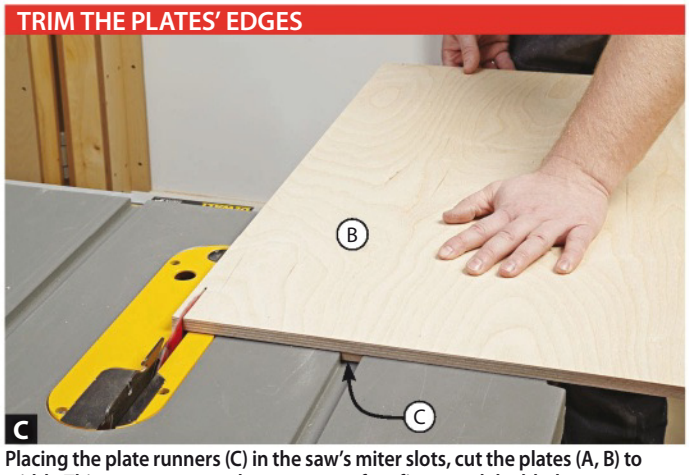
Transfer the plate-runner (C) locations to the undersides of the plates (A, B). Use a combination square to ensure straight lines parallel to the edges.

SCREW ON THE RUNNERS



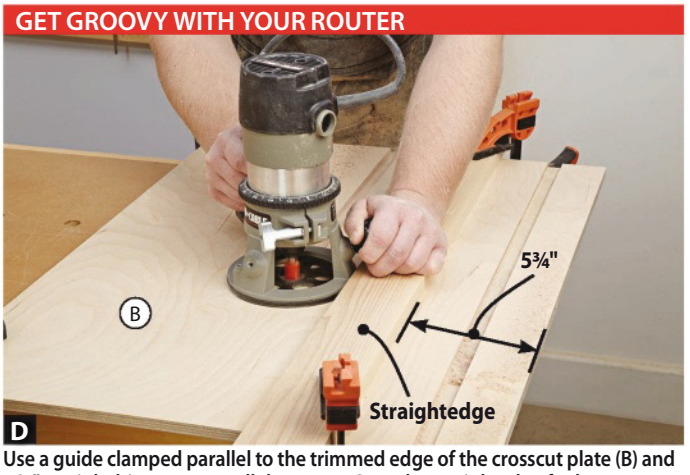
Clamp the plate runners (C) inside the marked lines. Drill countersunk ⅛" pilot holes and drive #8×⅝" flathead screws through the runners.

TRIM THE PLATES' EDGES



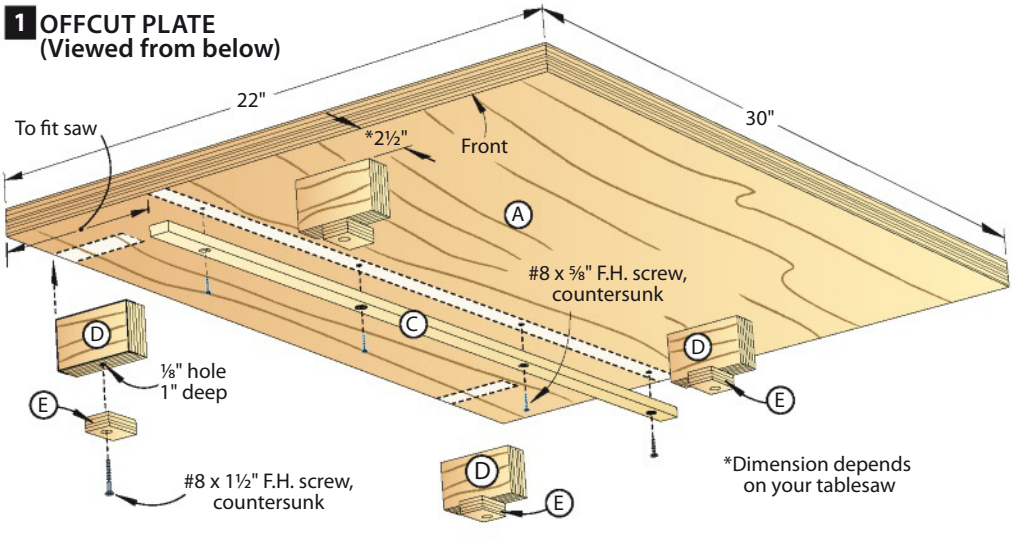
Placing the plate runners (C) in the saw's miter slots, cut the plates (A, B) to width. This creates a zero-clearance, gap-free fit around the blade.

GET GROOVY WITH YOUR ROUTER

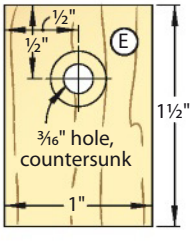


Use a guide clamped parallel to the trimmed edge of the crosscut plate (B) and a ¾" straight bit to rout parallel grooves. Save the straightedge for later.

1 OFFCUT PLATE
(Viewed from below)



1a TAB DETAIL



on the bottom faces of the plates. Screw the runners to the plates [**Photo B**]. Trim the edges of the offcut plate and the crosscut plate by running them through the tablesaw [**Photo C**].

3 On the top face of the crosscut plate (B), clamp a ¾×3×36" length of hardwood scrap with straight, parallel edges 5¾" from the just-cut edge. Rout the first of the ¼"-deep ¾" grooves; then, without moving the straightedge, rout the second groove [**Drawing 2, Photo D**]. Set the guide aside for later use. Make and mount the toggles (D/E) as described in "**Toggles lock down the plates**" on *page 36*.

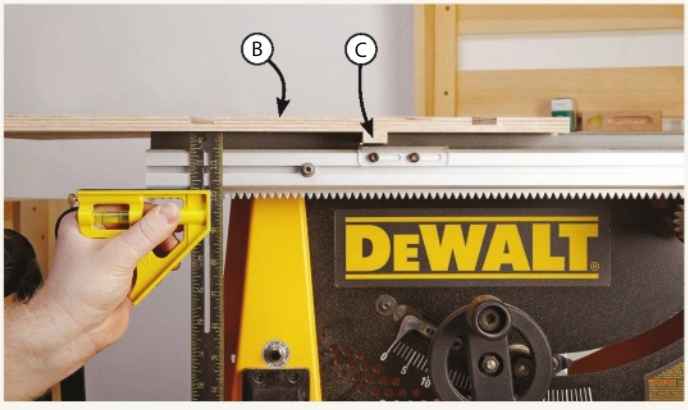
Toggles lock down the plates

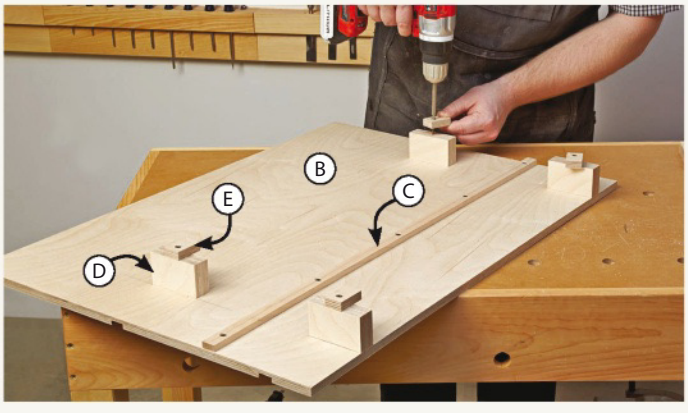
To achieve consistent and accurate results with this crosscut sled, you need to securely fasten its removable plates to your tablesaw. Shop-made toggles keep the plates rock-steady during use, yet make the sled quick to install and remove.

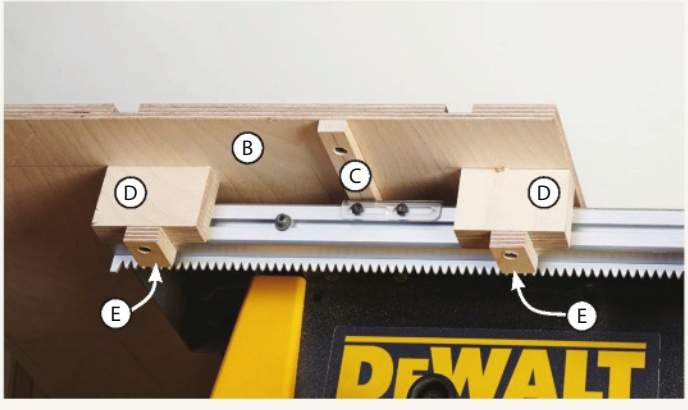
Because tablesaw designs differ, first set the crosscut-plate assembly (B/C) on your saw and measure the distance from the bottom of the plate to the bottom edge of your saw's fence rail (*right*). Then, make the cleats (D) by ripping two 30"-long strips of ½"-thick plywood ¼" wider than your measurement. Glue the strips together, face to face. Rip this lamination to equal your earlier measurement. Then, crosscut 3"-long cleats from it.

Before gluing the cleats to the underside of the crosscut-plate assembly and offcut-plate assembly (A/C), position those plates on the tablesaw so they overhang the front and back of the saw equally. Mark the locations of the cleats. Remove the plate assemblies and glue the cleats to their marked locations. Cut and drill the tabs (E) [**Drawing 1a**]. Drill pilot holes into the bottom edges of the cleats, and screw the tabs to the cleats (*below*) [**Drawing 1**].

Tighten the screws to the point where the tabs can just swivel—when you place the plate assemblies on your saw, you should be able to turn the tabs to lock the assemblies in place (*below right*).





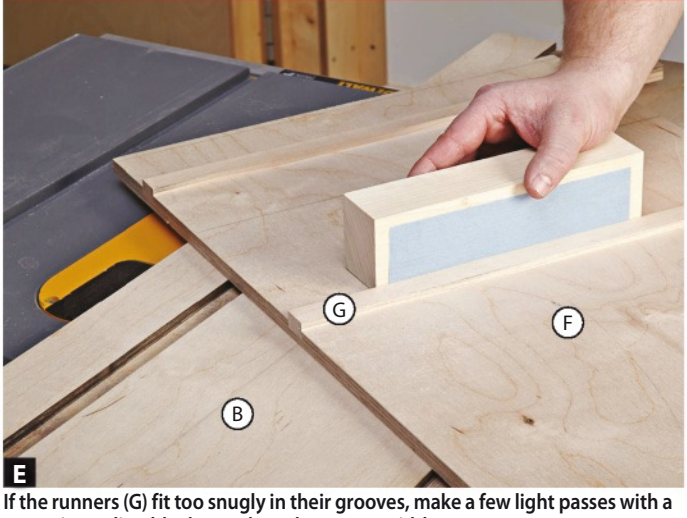


Fit the sled to the saw

1 Cut the sled (F) ¼" longer than listed. Place it atop the crosscut-plate assembly (B–E), the blade-side edge hanging over the assembly by ¼". Clamp the hardwood straightedge 6" from the end of the crosscut plate.

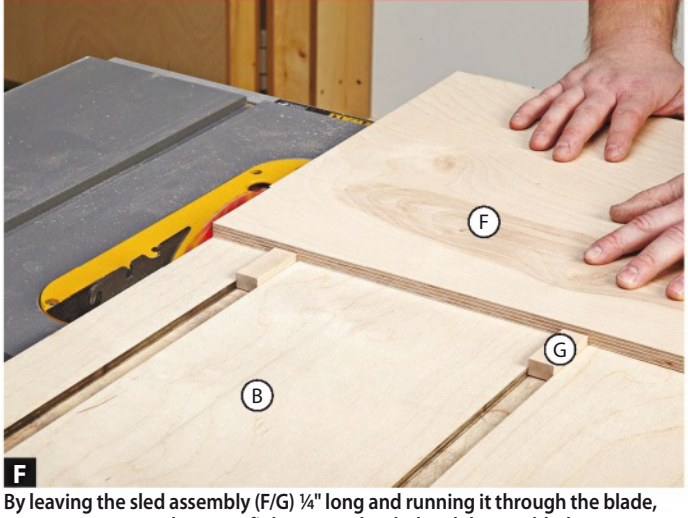
2 Rout ¾" grooves in the bottom face of the sled (F) to correspond with those in the crosscut plate [**Drawing 2**]. Rip ½"-wide strips from the edge of a ¾" hard maple board for a pair of sled runners (G). Glue and clamp them in the sled (F) grooves, flush with the sled's front edge. After the glue dries, check the sled assembly (F/G) for smooth operation in the crosscut-plate assembly's (B–E) grooves and adjust the fit as necessary [**Photo E**].

ADJUST THE SLED RUNNERS

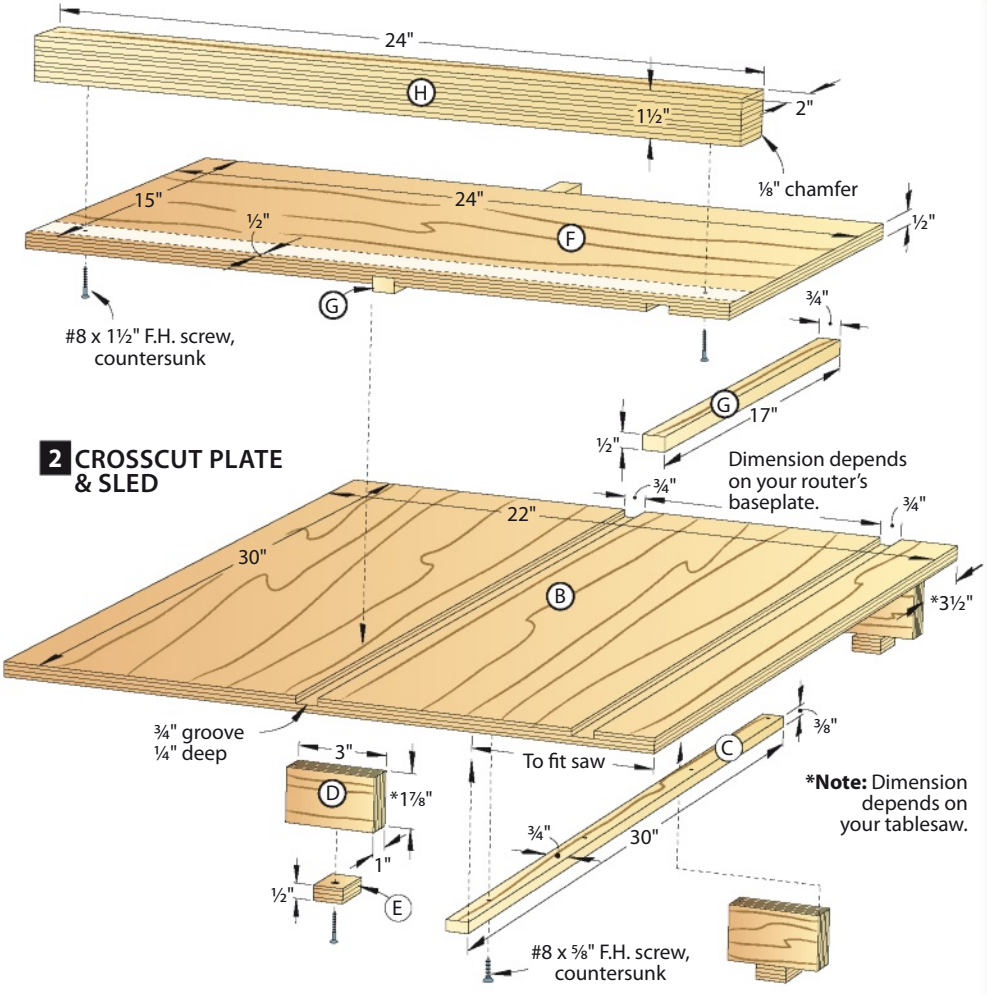


If the runners (G) fit too snugly in their grooves, make a few light passes with a 150-grit sanding block to reduce the runner width.

CUT THE SLED TO PERFECT SIZE



By leaving the sled assembly (F/G) ¼" long and running it through the blade, you ensure a zero-clearance fit between the sled and the saw blade.



***Quick Tip!** Apply a little paste wax to the grooves to improve the smoothness of the sled's movement.*

Trim the sled to final length [**Photo F**].

3 From ½" Baltic birch plywood, cut three 2¼×24¼" blanks for the fence (H) [**Drawing 2**]. Glue and clamp the fence blanks face to face, aligning their edges. When dry, cut the fence to its final dimensions [**Materials List**].

***Quick Tip!** Plane or sand a chamfer on the bottom leading edge of the fence to serve as a place for dust to escape so it doesn't prevent workpieces from fully contacting the fence.*

4 Countersink and drive one screw through the bottom face of the sled assembly (F/G), into the fence (H) on the end nearest the tablesaw blade [**Drawing 2**]. Clamp the opposite end of the fence to the sled. Then, adjust the fence as necessary to square it to the blade [**Shop Tip,** *above right*]. When satisfied with the resulting cut, leave the clamp in place as you countersink and drive a second screw into the fence on the end opposite the blade. Now, you're ready to make clean, safe, and accurate crosscuts, even in wide stock.

Produced by **Nate Granzow** with **John Olson**
Project design: **John Olson**
Illustrations: **Lorna Johnson**

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
*A	offcut plate	1"	22"	30"	BP	1
*B	crosscut plate	½"	22"	30"	BP	1
C	plate runners	¾"	⅜"	30"	M	2
*D	cleats	1"	1⅞"**	3"	BP	8
E	tabs	½"	1"	1½"	BP	8
*F	sled	½"	15"	24"	BP	1
G	sled runners	¾"	½"	17"	M	2
*H	fence	1½"	2"	24"	BP	1

*Parts initially cut oversize. See the instructions.
**Width will vary from saw to saw.
Materials key: BP–Baltic birch plywood, M–hard maple.
Supplies: #8×1½" flathead screws (10), #8×⅝" flathead screws (8), paste finishing wax.
Bits: ⅛", 3/16" drill bits; ¾" straight router bit; countersink.

SHOP TIP

To determine fence squareness to the blade, try this simple tip. Crosscut a piece of scrap with square edges and fold the pieces' bottom faces together. With the pieces resting on a perfectly flat surface, look directly at their faces. If you can see both pieces at the same time (their top edges will form a subtle V-shape if the fence isn't square), adjust the sled's fence (H) and test again. Repeat the process until the "V" completely disappears.

Exaggerated for clarity

More Resources

- Get a FREE miter-cutting sled plan at **woodmagazine.com/mitersled**.
- Try a low-dough plan for a mobile saw base that transforms into a router table: **woodmagazine.com/mobileroutersaw**.
- Read reviews of our favorite job-site tablesaws at **woodmagazine.com/jobsitesaws**.

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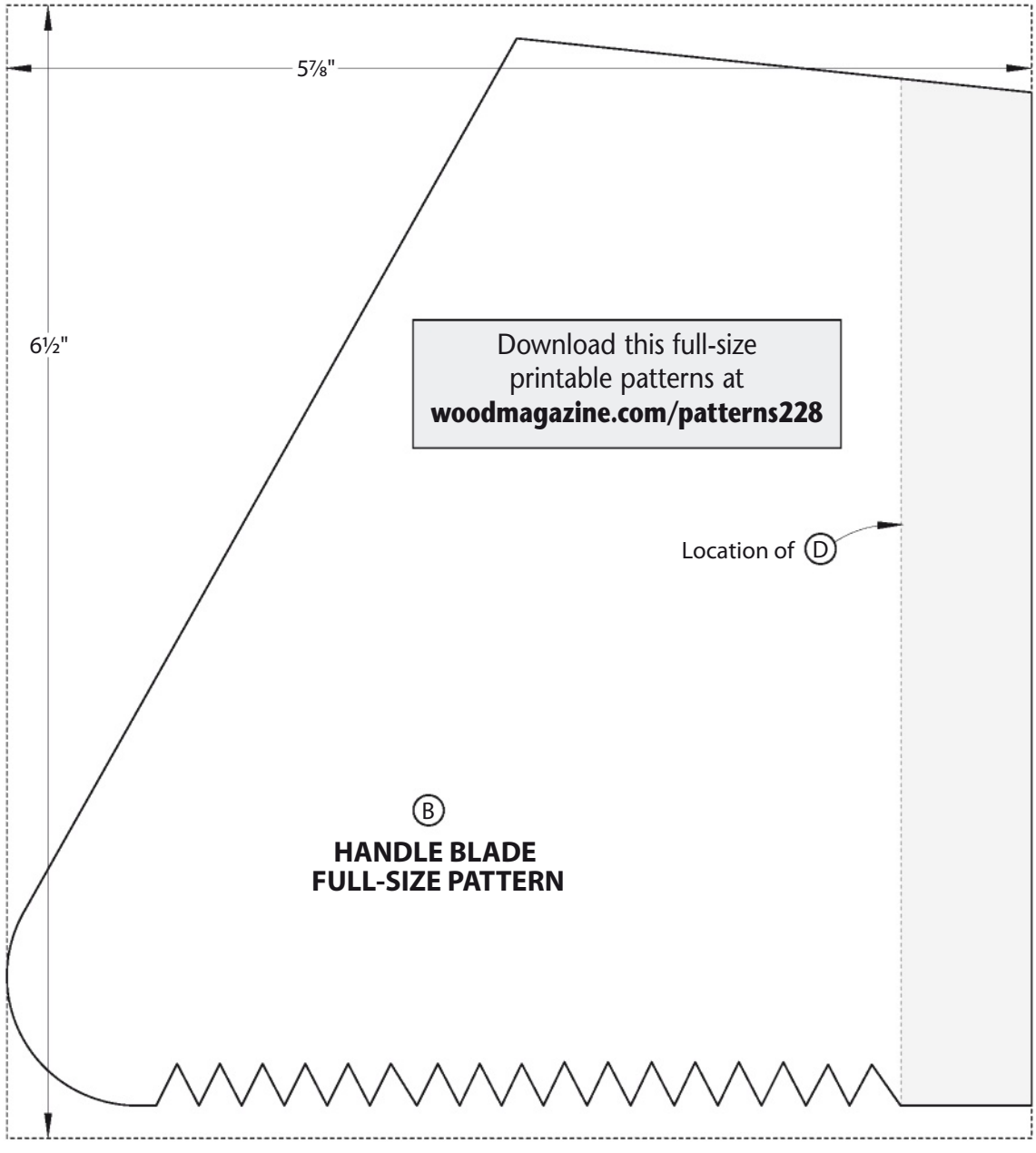
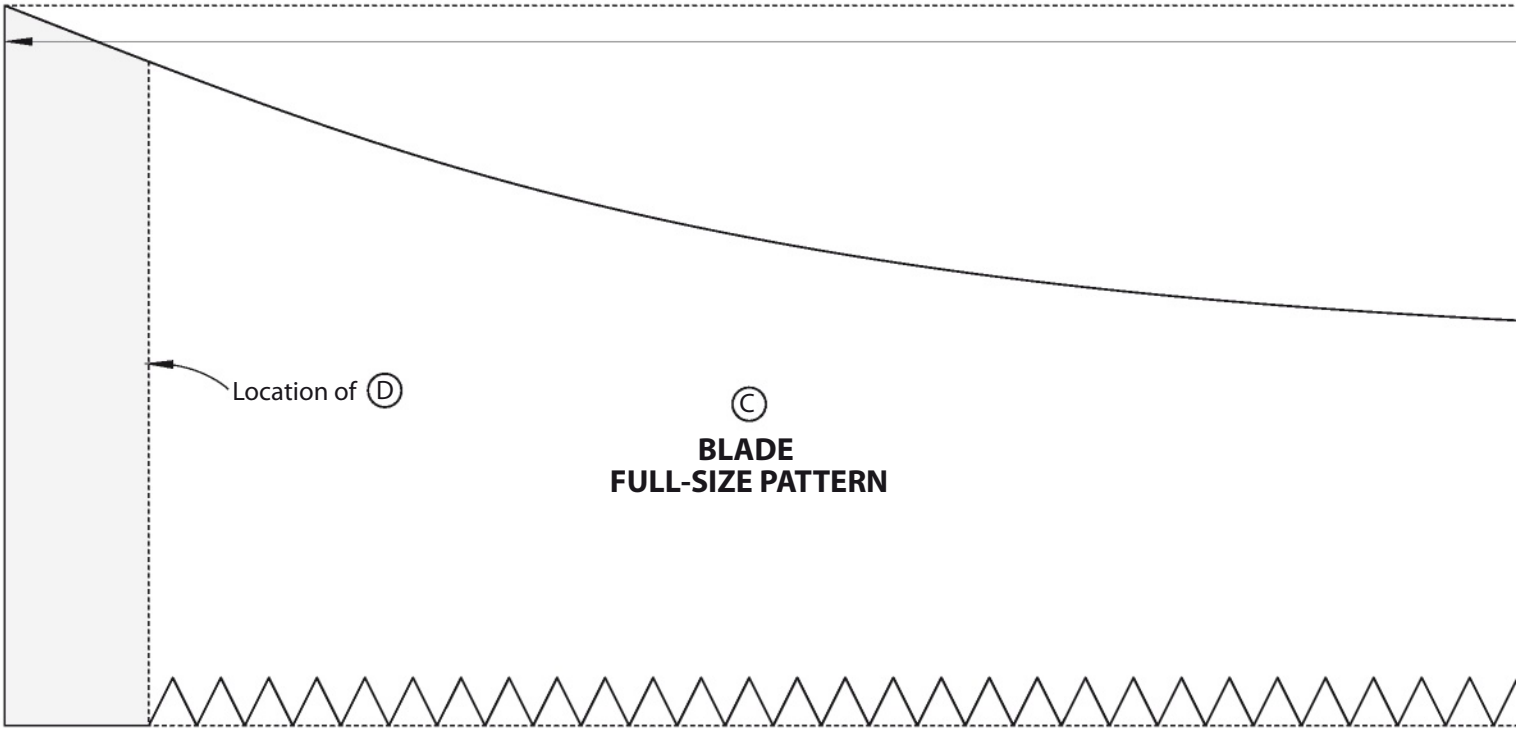
A-cut-above Bookends
Page 62

Better Homes and Gardens®
WOOD® PATTERNS®
October 2014 *Issue 228*

Dear Reader: As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Materials List and the drawings accompanying the project you're building.





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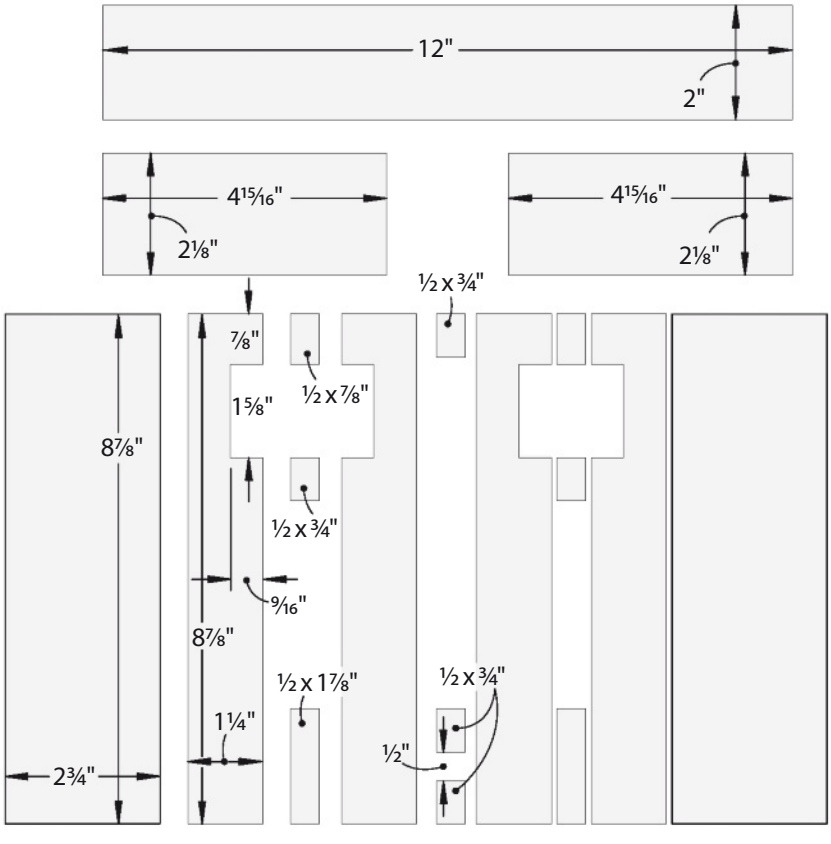
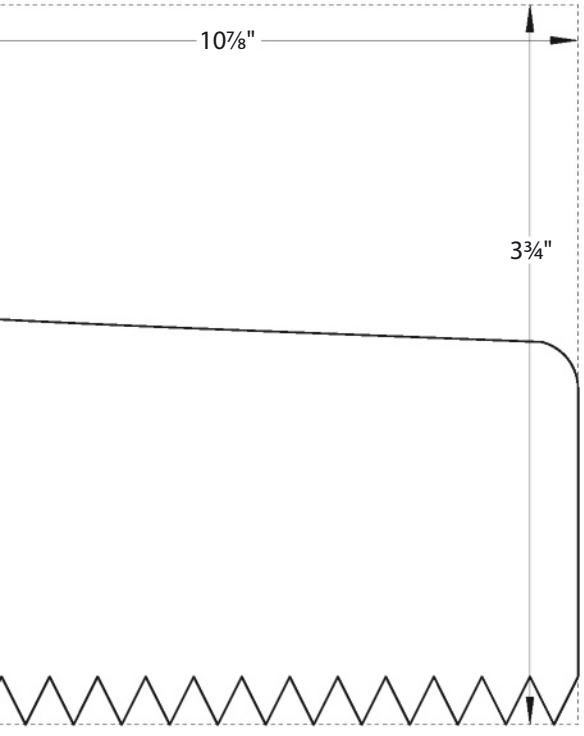
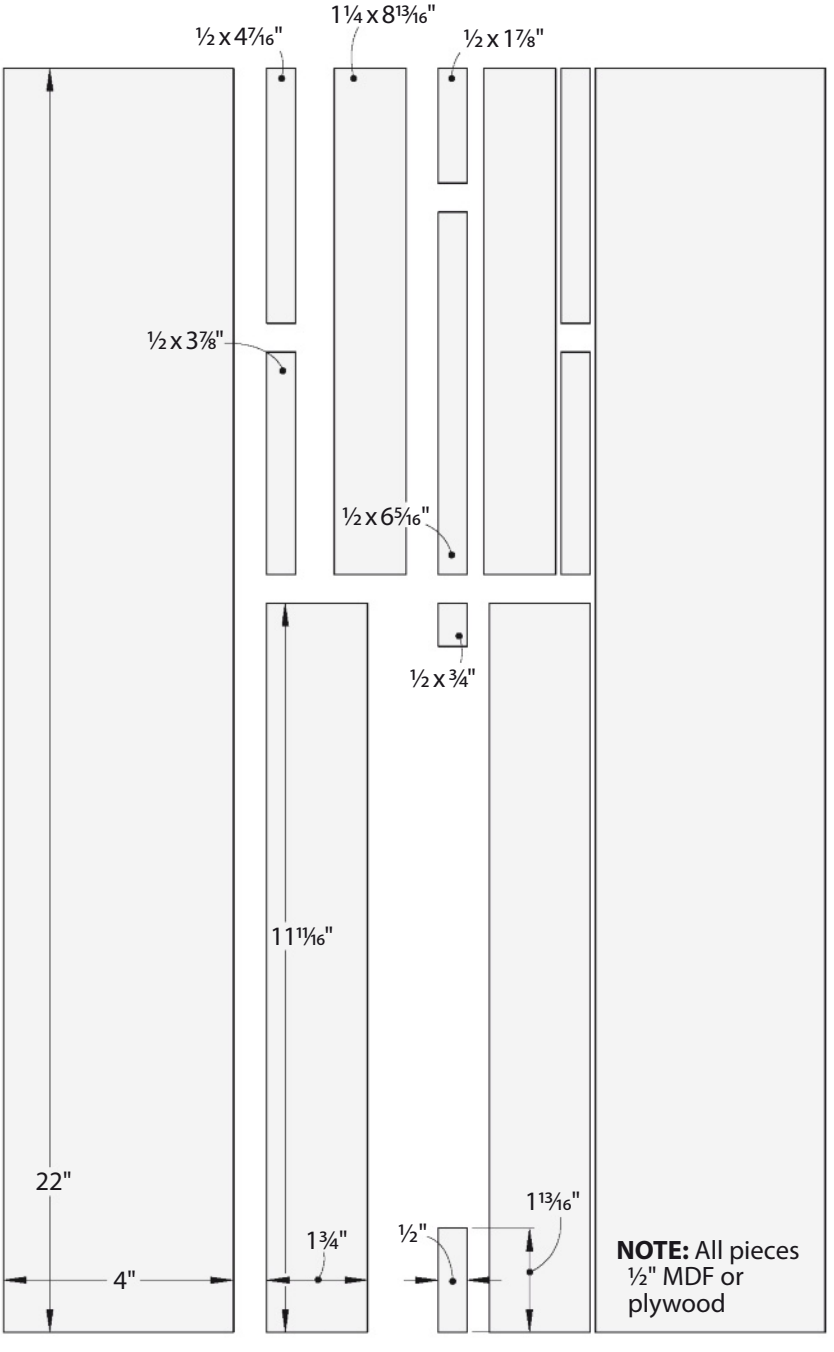
Arts and Crafts Bookcase
Page 26
Upper inlay routing template





Arts and Crafts Bookcase
Page 26
Lower inlay routing template



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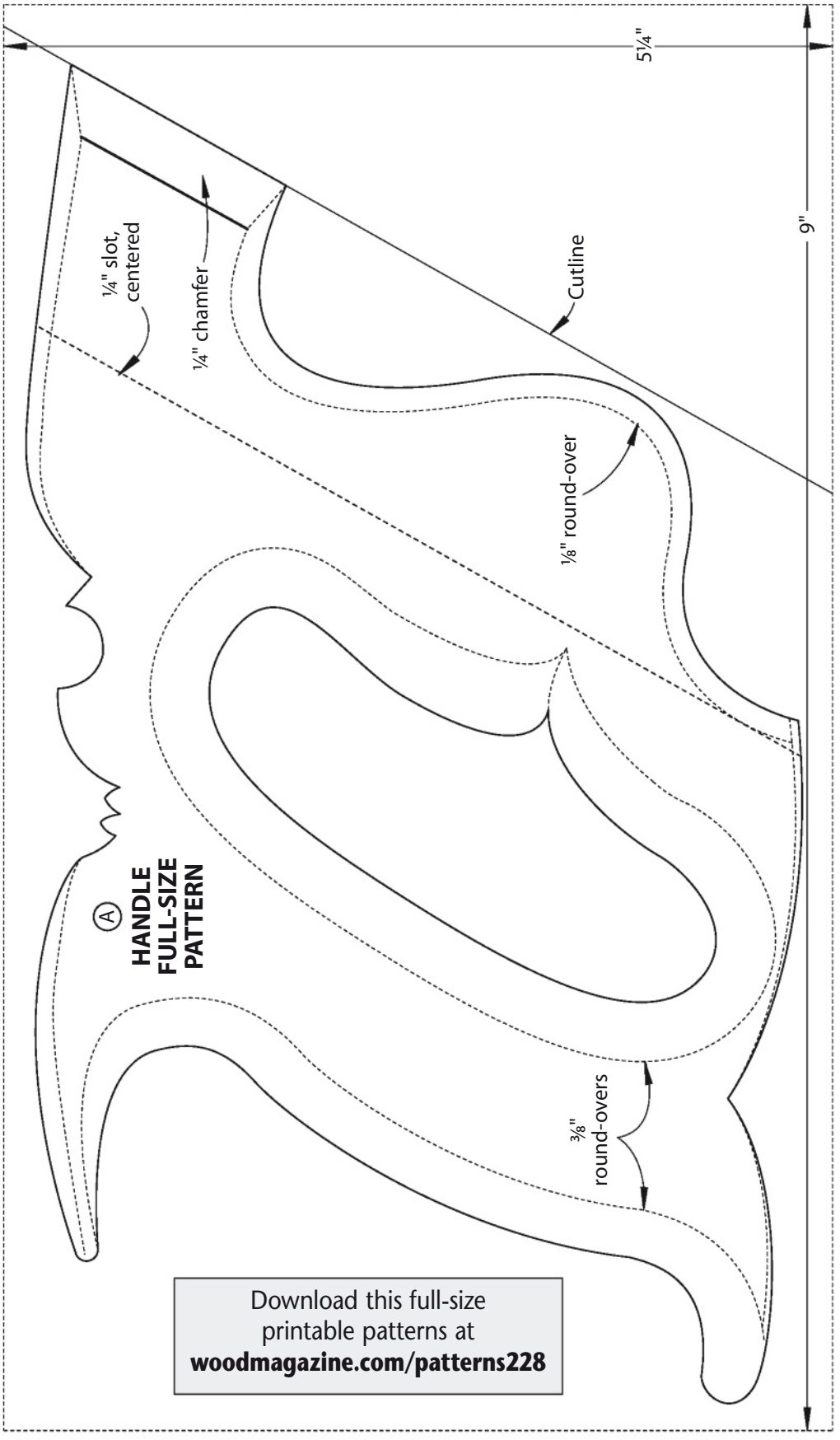
5¼"
9"
¼" slot, centered
¼" chamfer
Cutline
⅛" round-over
⅜" round-overs
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Line 'em up
4-Across Game

My teenage daughter and I have enjoyed playing board games since before she was in school. One of our favorites: this 4-across game. It's simple to play (see ***Game on!****,* page 45*), but winning requires concentration and strategy. My daughter loves that, with a bit of luck and by creating a few distractions, she can easily beat me.*

When our game wraps up, the discs store inside the game board, which then slides neatly into the base, below.

Craig Ruegsegger
Deputy Editor

Dimensions:
11½"D×14¹³⁄₁₆"W×11"H (playing position)
11½"D×14¹³⁄₁₆"W×1⁷⁄₁₆"H (stored)

Start with the game board

1 From ¼" Baltic birch plywood cut the faces (A) to size [**Drawing 1, Materials List**]. Join the two faces with double-faced tape with their inside faces touching, and ends and edges flush. Lay out the center-points of the holes [**Drawing 2**].

2 Make the drilling jig shown on the *next page*. With a Forstner bit, drill the holes. Then, rout 1⁄16" chamfers around their edges [**Photo A**]. Carefully separate the faces (A) and sand their inside faces to 220 grit.

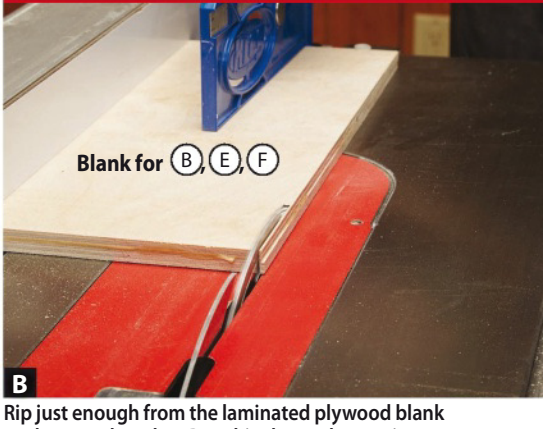
3 Laminate two 6×14" pieces of ¼" plywood. After the glue dries, true up one edge at the tablesaw [**Photo B**]. Rip and crosscut the game-board sides (B),

ROUND AND ROUND SHE GOES

A

After drilling the holes and before separating the faces (A), rout a 1⁄16" chamfer around the outside face of each hole.

GIVE YOURSELF AN EDGE



B

Rip just enough from the laminated plywood blank to clean up the edge. Run this clean edge against the fence when ripping parts from the blank.

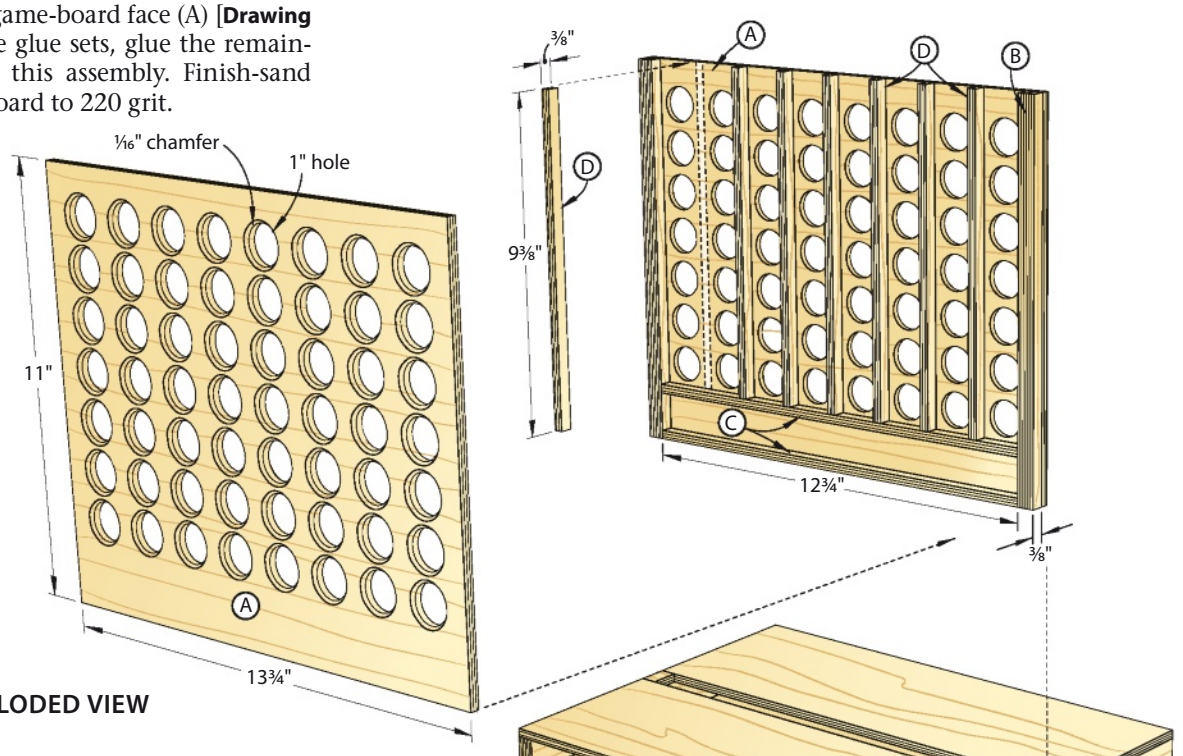
case sides (E), and case back (F) to size [**Drawings 1** and **3**]. Set the case sides and back aside for now. Cut the bottoms (C) and dividers (D) to size from ¼" plywood.

4 Glue and clamp the game-board sides (B), bottoms (C), and dividers (D) to one game-board face (A) [**Drawing 2**]. After the glue sets, glue the remaining face to this assembly. Finish-sand the game board to 220 grit.

Make a slipcase

1 Cut the case panels (G) and spacers (H) to size. With a 1" Forstner bit, drill finger holes in one edge of two case panels [**Drawing 3**]. Sand the edges of the holes to create U-shaped openings.

2 To assemble the case, retrieve the case sides (E) and case back (F) and glue and clamp them to one of the undrilled case panels (G) [**Drawing 3**]. Glue a spacer (H) in place on each case side, tight to the case panel. Then, glue a

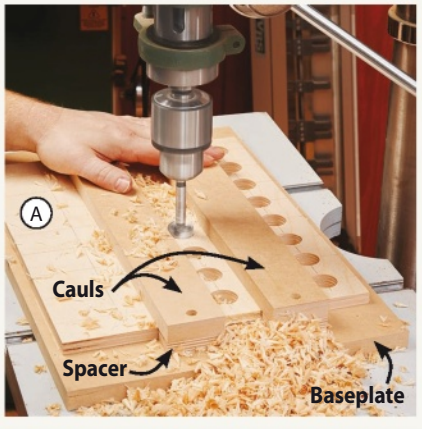


1 EXPLODED VIEW

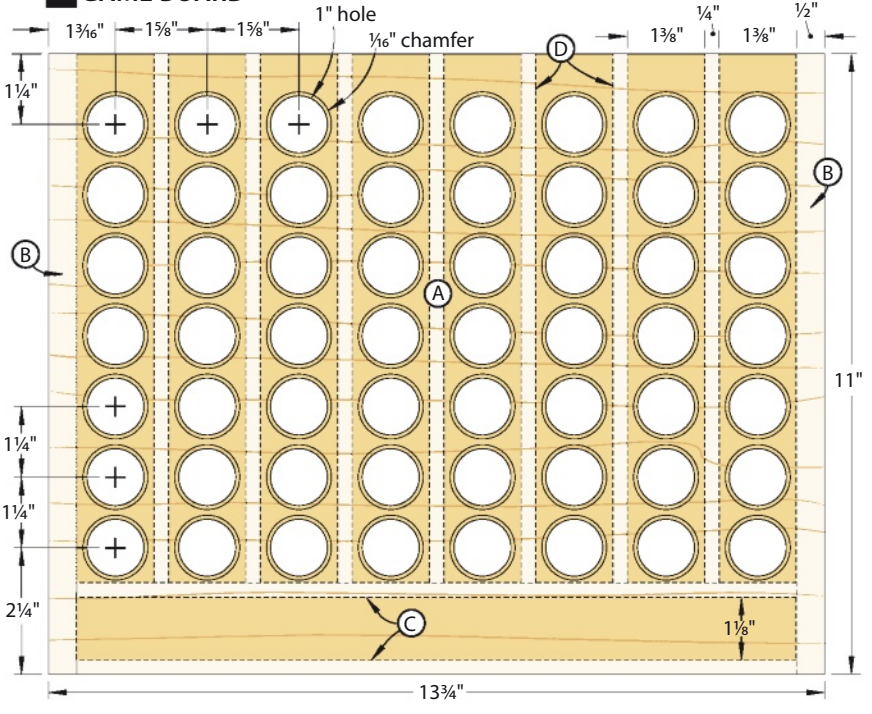
Jig up for a hole lot of drilling

This jig holds the faces (A) securely while you drill and provides a clean backing surface for each hole, preventing tear-out. To make it, cut from ¾" MDF a 12×18" baseplate and two 2×15" cauls. Glue a ½×¾×2" spacer flush with each end of each caul.

To use the jig, center the stacked faces (A) on the baseplate, securing them with double-faced tape. Screw the cauls to the baseplate as shown, straddling a row of layout marks, and leaving enough room between them to drill the holes. Drill across the row, then reposition the cauls for the next row.



2 GAME BOARD



drilled case panel to the case sides, pressed against the spacers. Allow the glue to dry; then, attach the remaining panels and spacers to the opposite side of the assembly. Finish-sand the case (E–H) to 220 grit.

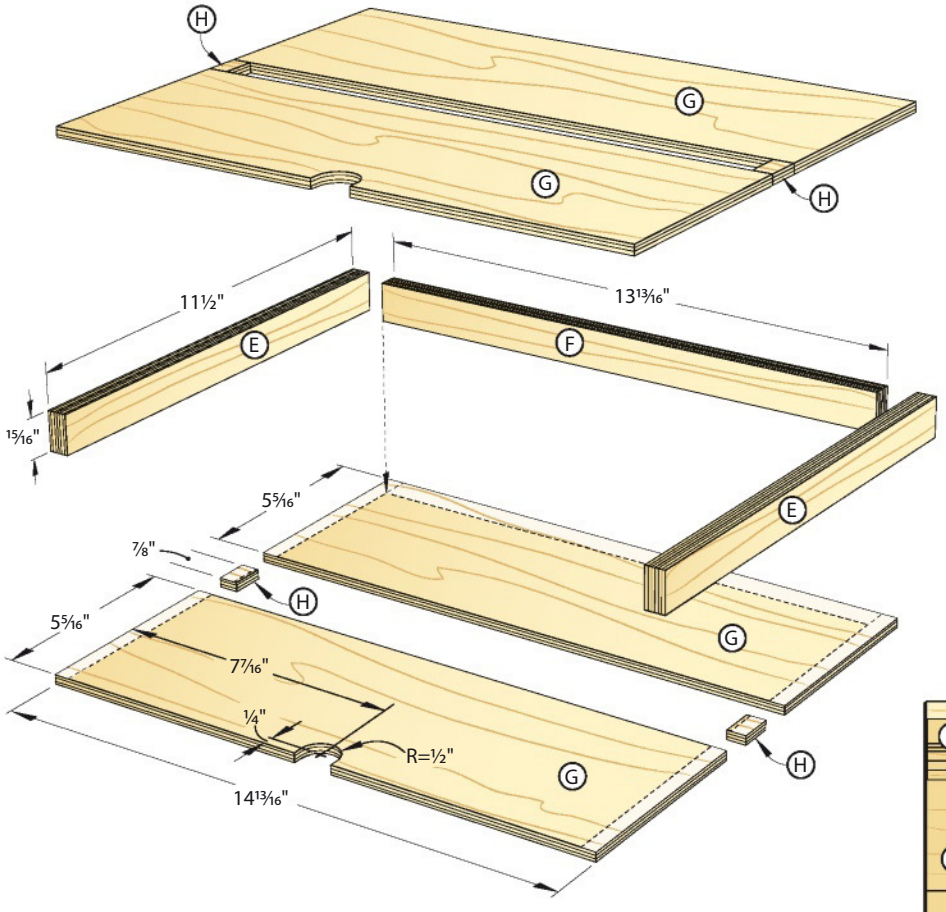
Prep the playing pieces

1 You'll need 56 1¼"-diameter game pieces. (We found wood checkers that fit the bill. See **Source**.) Stain or dye 28 of them. We immersed ours in a dark walnut, water-based dye [**Photo C**]. (Our pieces required a second dunking for even coloring.)

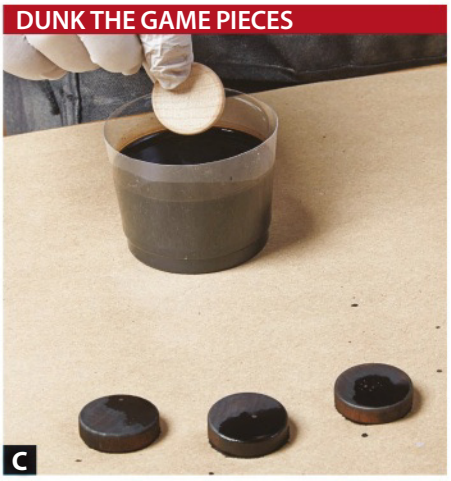
2 Apply a finish to the game board (A–D), case (E–H), and game pieces. (We sprayed on three coats of a satin-finish lacquer, sanding lightly between coats with 400-grit sandpaper.) After the finish dries, get ready to play.

Produced by **Craig Ruegsegger** with **John Olson**
Project design: **John Olson**
Illustrations: **Roxanne LeMoine**, **Lorna Johnson**

3 CASE EXPLODED VIEW



DUNK THE GAME PIECES



C

In a wide-mouthed container, mix up a water-based dye in your desired color. Wipe excess liquid from each game piece before laying it down to dry.

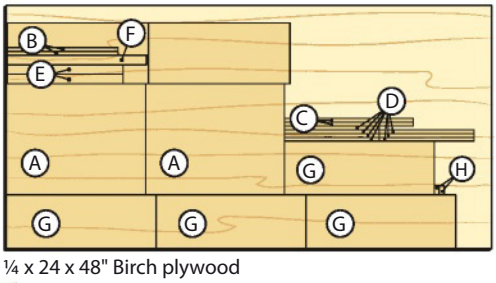
Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
Game board						
A	faces	¼"	11"	13¾"	BP	2
B	sides	½"	⅜"	11"	LBP	2
C	bottoms	¼"	⅜"	12¾"	BP	2
D	dividers	¼"	⅜"	9⅜"	BP	7
Case						
E	sides	½"	15⁄16"	11½"	LBP	2
F	back	½"	15⁄16"	13¹³⁄₁₆"	LBP	1
G	panels	¼"	5⁵⁄₁₆"	14¹³⁄₁₆"	BP	4
H	spacers	¼"	⅞"	½"	BP	4

Materials key: BP–birch plywood, LBP–laminated birch plywood.
Bits: 1" Forstner bit, 45° chamfer router bit.

Source: 1¼"-diameter checkers (56), $.26 each, 41K01.56, Lee Valley, 800-871-8158, leevalley.com.

Cutting Diagram



¼ x 24 x 48" Birch plywood

Game on!

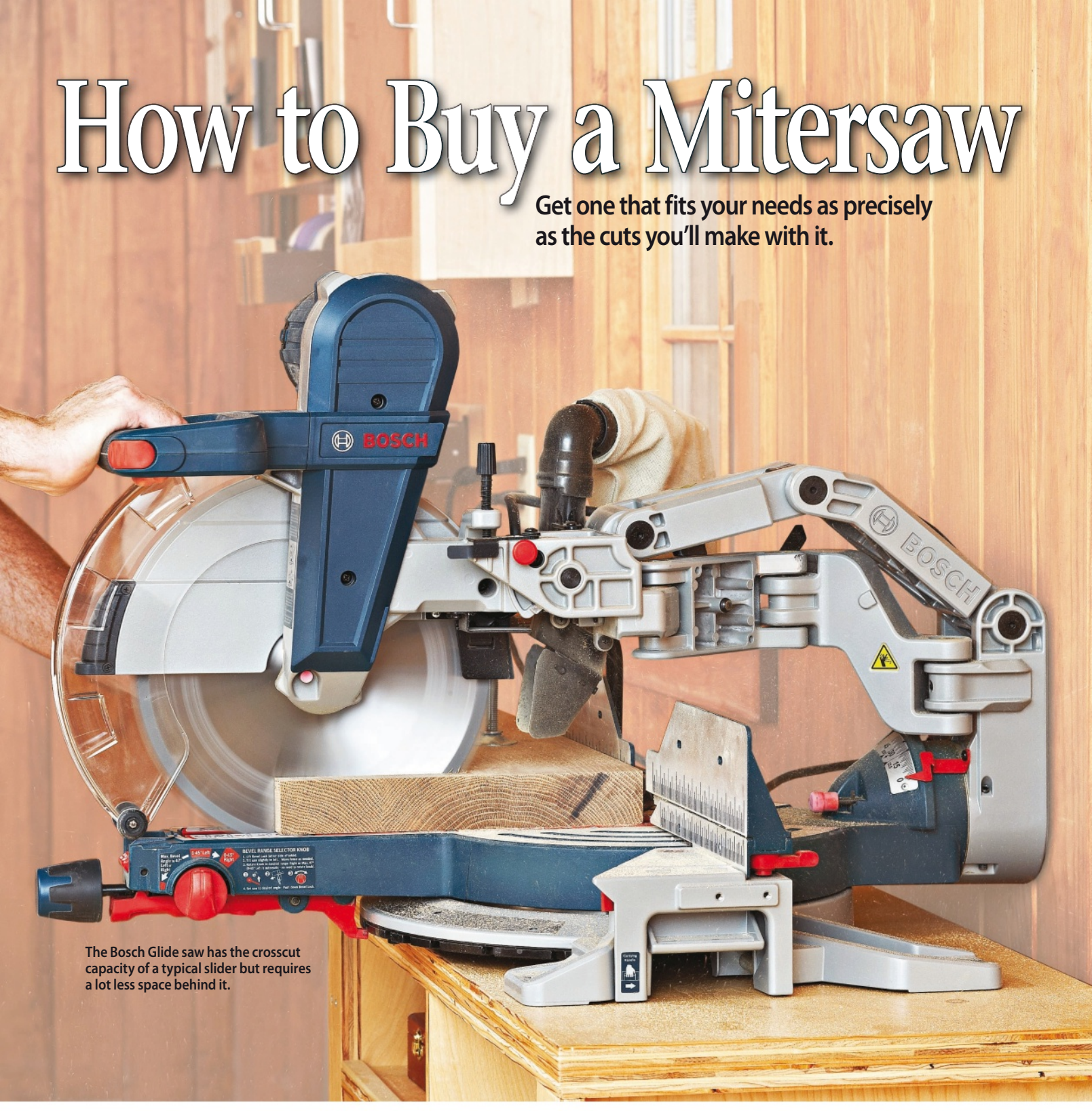
The rules of 4-across are simple. Players choose game pieces of one color, and then take turns dropping them into the game board. The first to line up four of their game pieces horizontally, vertically, or diagonally wins. Watch closely! You might line up four pieces and not even realize it. If you want a greater challenge, play for 5-across.

More Resources

▶ Find more games and kid's projects at **woodmagazine.com/kids**.

How to Buy a Mitersaw

Get one that fits your needs as precisely as the cuts you'll make with it.



The Bosch Glide saw has the crosscut capacity of a typical slider but requires a lot less space behind it.

For quick, clean, spot-on crosscuts in everything from picture-frame stock to crown moldings, deck boards, and building rafters, nothing tops a mitersaw. And though there's no mystery about its handiness, choosing the mitersaw best suited to your needs can be confusing, given the many options. To clear things up, let's take a close look at the different types of mitersaws, as well as the essential features that will make you a happy woodworker.

Decide to let it slide—or not

Mitersaws with motor/blade assemblies that slide forward and back, as well as arc up and down, known as "sliders," have grown in popularity over the past decade for one reason: increased cutting capacity. For example, a 12" sliding mitersaw (12" refers to the diameter of its blade) will typically crosscut a 12"-wide ¾" board or a 2×12, whereas a 12" nonsliding mitersaw will cut ¾"-thick

SLIDERS EAT UP WOOD—AND SPACE

You'll need up to a couple feet of extra room behind a sliding mitersaw to accommodate its sliding mechanism and dust bag. Consider that if you plan to place the saw against a wall.

stock up to only about 8" wide or a 2×8. Similarly, a 10" slider will crosscut a 12" board or 2×12, whereas a 10" nonslider's crosscut capacity maxes out at about 6" on a ¾" board or a 2×6.

Consider those capacities when thinking about the widest stock you'll ever crosscut. If you plan to cut wide stair treads, shelves, or baseboards, there's likely a sliding mitersaw in your future.

Of course, sliders have a few downsides, so don't spend the extra money (often twice the cost of comparable nonsliders) unless you really need that extra capacity. Sliders weigh 25–50 percent more than nonsliders, and prove considerably more difficult to lug around. And their extra moving parts create more wear points, which can go out of adjustment over time.

Also, keep in mind that should you decide to mount a slider to a benchtop that backs to a wall, the saw will require at least an extra foot of bench depth compared to a nonslider. (See photo *above*.) Outfitted with a dust bag, a 12" slider can consume nearly 4' of benchtop depth, with a full 28" of space between the wall and saw fence. That said, one unique slider—the Bosch Glide, available in 10" and 12" versions—requires far less space in back because its motor/blade assembly moves forward and back on a hinge-like mechanism, as shown *left*, rather than on rods.

Consider cutting angles

Nearly every mitersaw—sliding or not—on today's market is a compound saw, meaning its blade will angle to the left or right while simultaneously beveling (tilting from vertical) in one or two directions. Single-bevel compound saws tilt in only one direction (shown *bottom left*), but dual-bevel saws tilt left *and* right (shown *bottom right*). That ability to tilt in both directions increases your options for quickly positioning large workpieces without having to flip the material or reset the saw's angle. You can make any cut you need with a single-bevel saw, but doing so might require a little more time or effort when working with tricky trim, such as crown moldings, or wide roof rafters with complex end cuts.

There's another benefit to dual-bevel saws that few buyers consider: The blade can plunge deeper into cuts. That's because the motor—mounted above and to the back of the saw's blade arbor—doesn't interfere with cuts in either bevel direction. For example, a DeWalt 12" dual-bevel saw will enable you to cut a 45° miter in a 4×6, or crosscut a 10"-wide baseboard lying flat. With DeWalt's 12" single-bevel saw, those capacities go down to a 4×4 for the same miter cut, and an 8" board when crosscutting.

And before you plunk down your money for a saw, check how far it miters both left and right. Better saws miter up to 52° left and 60° right. Those extra degrees prove mighty handy for complex framing cuts, or when wrapping trim around out-of-square walls. The extra range may save you from having to shim workpieces about to be cut, a practice that can be unsafe and lead to poor-quality results.

DUAL-BEVEL DOUBLES YOUR PLEASURE

Most mitersaws, like the one above, have a motor/blade head that tilts in one direction to provide compound-cutting action with the table/head rotated at an angle. Dual-bevel saws, like the one at right, tilt both left and right, making it easier to cut large and bulky workpieces with less repositioning.

More miter-important points

▶Blade size and quality. Most mitersaws accommodate 10" or 12" blades, though a few sliders are designed for 7½" or 8½" blades. Here, too, your choice comes down to cut capacity. Our advice: Make a list of the largest workpieces you'll cut, and how you would orient them on the saw (horizontally, vertically, or at a spring angle). Then, go to the websites of the major mitersaw manufacturers, where you will find listed cutting capacities for their machines. Buy a saw that meets or surpasses your needs.

Today's mitersaws come with blades in a wide quality range. Some better-quality factory-supplied blades will make clean cuts, while others suffice for rough carpentry tasks only. Generally speaking, high-end saws come with better blades—something to keep in mind when weighing the value of a lower-price machine. If you get the saw home and discover you have to buy a $100 blade to get sufficient-quality cuts, that saw may not be the bargain you imagined. Also, know that blades designed for sliders have teeth with a negative hook angle (see the illustrations at *right)* to reduce the blade's aggressiveness. Nonsliders work best with positive-hook-angle teeth.

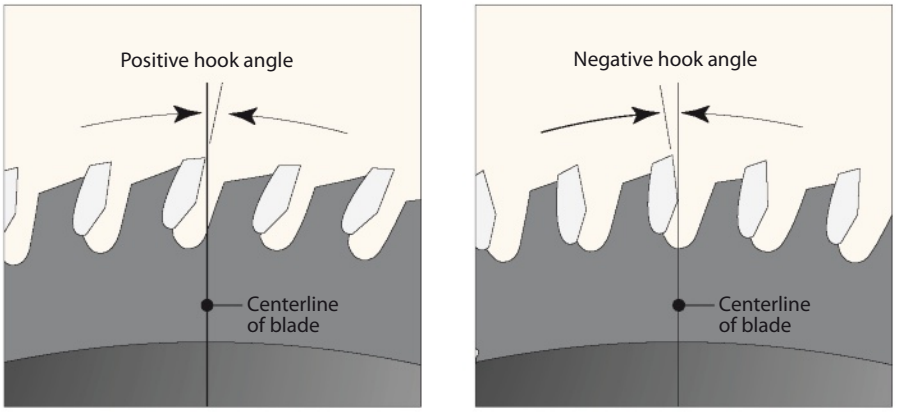
▶Fence features. If you plan to cut wide stock on edge, or crown molding at a spring (installed) angle to the fence, make sure the saw of your dreams has a fence tall enough to support the workpiece. (See middle photo on *next page*) Also, look for a fence that locks square to the table. And, choose a fence that slides inward to support crosscuts, and adjusts out of the way for beveled and mitered cuts.

▶Readable, easy-to-adjust scales. You'll rely heavily on a mitersaw's scales, especially the one up front that indicates miter angle. Check its readability; if you need to squint to line up its angle marking with the hairline cursor, move on to another machine. That scale may have to be calibrated for accuracy—a procedure you might need to do repeatedly if the saw gets knocked around. The best miter scales slide back and forth for quick adjustments as shown *next page, top*. Some saws require you to angle the fence to the blade, or adjust the saw head to a fixed fence. Both procedures require extra time and effort.

▶Options that help make the cut. Mitersaws require few accessories, but the ones you use frequently can make a big difference in the effectiveness and enjoyment you get from the machine. So choose a saw with a hold-down that gets out of your way with ease when necessary and applies ample force.

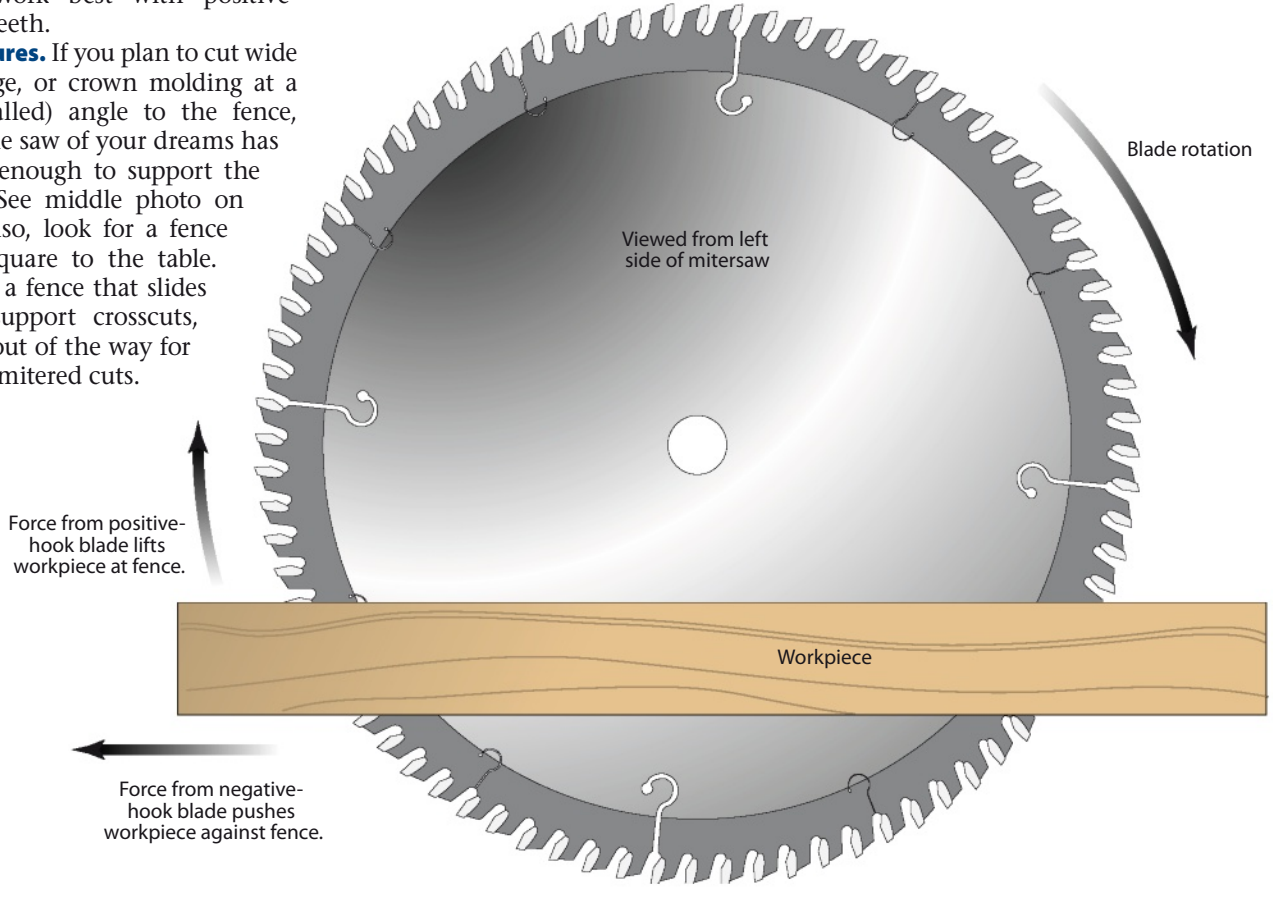
Good hold-downs don't just improve your margin of safety; they also enhance

GET A MITERSAW BLADE WITH THE CORRECT HOOK ANGLE



BEST FOR NONSLIDERS

BEST FOR SLIDERS



cut quality by holding workpieces much more solidly than by hand.

If you plan to cut crown-molding trim, the easiest way—in our opinion—is still the good, old-fashioned way: Prop the molding at a spring angle between the mitersaw table and fence. Crown-molding stops help position the molding at the correct angle as shown at *right, middle photo*.

And no discussion of options would be complete without a mention of laser cutline indicators. They come standard on some machines and can be purchased as accessories for others. Put bluntly, we don't like them. Though lasers might be helpful in making fast rough-carpentry cuts, they just aren't accurate enough for fine woodworking or finish carpentry. For best results simply line up the blade with your cutline.

▶Plan for portability. With added cutting capacity comes increased weight and bulk, so avoid the "bigger is better" mind-set unless you plan to mount the mitersaw to a worksurface and leave it there. If possible, go to a store and pick up the saw you plan to buy. Imagine yourself wrestling it up stairs, through doorways, or in and out of a truck.

No matter the size of the saw, if you have a small shop or do your work on the go, it pays to invest in a fold-up mobile stand. Most unfold in no time and with little effort to give you a solid platform for making cuts at a comfortable working height, complete with work-support extensions for long stock. For the ultimate in convenience and space savings, look for a saw that stands up in its folded position and has wheels like the one at *right*.

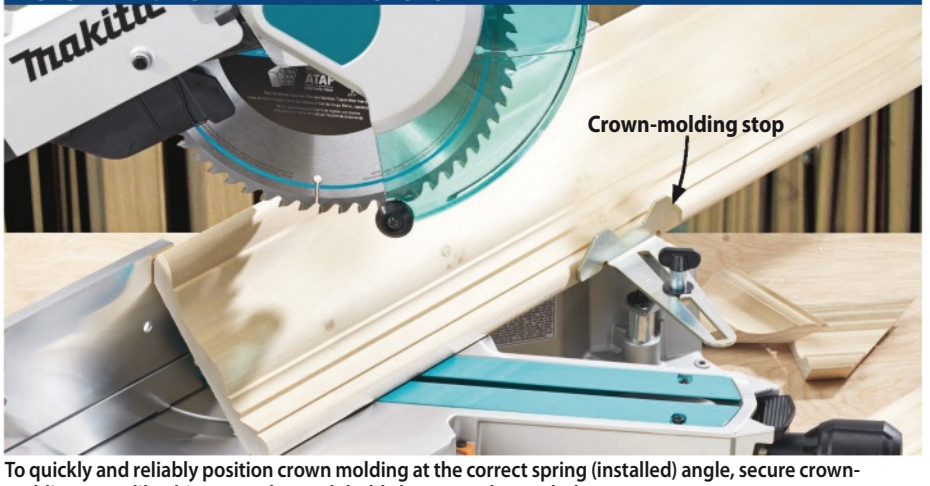
▶Price matters. You've probably seen the ads for mitersaws with extremely low price tags, such as sliders under $100. Tempting as these "bargains" may be, we recommend you resist the urge to save now—you'll surely pay later. Buy a low-dough saw and you'll likely wind up with a rough-cutting machine that doesn't stay in adjustment, bogs down in heavy cuts, and wears out prematurely. On the other hand, a professional-duty or high-end consumer saw will serve you faithfully for decades of occasional use. Top brands include Bosch, DeWalt, Hitachi, Makita, Milwaukee, and Ridgid.

Produced by **Bill Krier** with **Bob Hunter**
Illustrations: **Roxanne LeMoine**

LOOK FOR EASY-ADJUST SCALES

For the ultimate in convenience and spot-on accuracy, seek a saw—like this DeWalt— with a miter scale that adjusts by simply loosening a few screws with an onboard driver.

A CROWNING ACHIEVEMENT IN STOPS



To quickly and reliably position crown molding at the correct spring (installed) angle, secure crown-molding stops like this one to the saw's hold-down attachment holes.

BETTER STANDS MAKE YOUR SAW MOBILE *AND* STOWABLE

If you do remodeling or other work outside your shop, or are space challenged, get a mobile mitersaw stand that folds up vertically and stays upright on its own for storing against a wall.

4 simple, no-hinge Box Tops That Rock

Box lids can be made as complex as you like, but you just can't beat the simplicity of lift lids requiring no hinges, locks, or stays. Doug Stowe, *below right*, specializes in crafting wooden boxes with lids and has developed a host of simple techniques for making your lids stand out. Try your hand at these four designs to fit the box project on *page 55*. ***Note:*** *All of Doug's designs have rabbeted edges so the lids nest securely inside the box, and are finished with several coats of wiped-on clear Danish oil.*

1. Use a simple slab

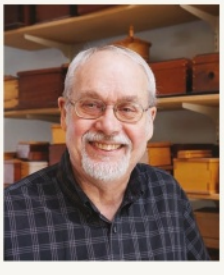
A top made from one piece of highly figured stock (*right*) can be as beautiful as a complicated multipiece design. Some craftsmen will warn that a wide slab of solid wood—particularly a highly figured one with lots of inherent stress—should be ripped and reglued to ensure it remains flat. But Doug says, "I'd rather take my chances with possible warp than disturb the figure with kerf lines."

To make this style top, begin by planing the stock to thickness. Doug planed the maple for this lid to 9/16" thick, jointed one edge, and then ripped and crosscut the lid to size—allowing for a ¼" overhang on each side.

Stowe's Suggestion: *A relatively thick top may feel heavy when opening the box, but resists warping better than a thin top.*

With the top cut to size, cut rabbets in the lid's bottom face [**Photo A**] so it nests into the top edges of the box. Although Doug used a tablesaw to cut the rabbets in this lid, given the large amount of material being removed, a router table and straight bit works, too, but may require multiple shallow passes.

The author of seven woodworking books and a professional furniture designer/craftsman and boxmaker, Doug Stowe founded the woodworking program at the Clear Spring School in Eureka Springs, Arkansas (clearspringschool.org). In 2009 he was named an "Arkansas Living Treasure" by the Arkansas Department of Heritage and Arkansas Arts Council for his contributions to traditional crafts and craft education. He advocates for hands-on learning through his blog, Wisdom of the Hands (wisdomofhands.blogspot.com).



Round over the top's edges [**Photo B**] and sand it to 220 grit. Apply a finish. Then, further embellish this simple top with an interesting or unusual pull. Doug found this one at the hardware store—sold as a kitchen cabinet pull. He liked its delicate appearance and how it fit the scale of the box.

Stowe's Suggestion: *On a small box, a delicate pull works fine as a two-finger lift, but for larger boxes and heavier lids, a larger pull or a two-handed approach may make more sense.*

CUT RABBETS IN THE TOP

A

A tall auxiliary fence on your tablesaw supports the top during machining and prevents any damage to the fence when running the blade flush against it.

TAKE A LITTLE OFF THE EDGES

B

Use a 3/16" round-over bit in your router table to break the lid's underside edges. Use a ⅛" round-over bit on the top edges.

2. Incorporate a rustic element

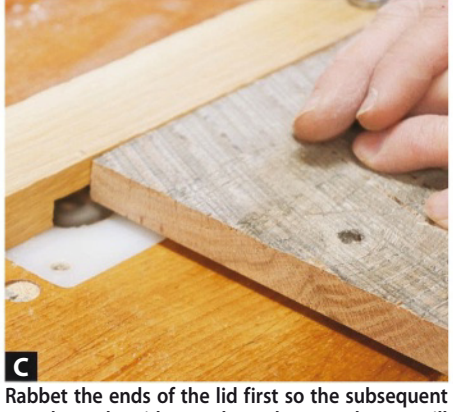
If you like the eclectic look of contrasting surfaces, try implementing a piece of roughsawn stock, such as this weathered red oak barnwood.

When preparing your stock, plane only one face, and reduce the thickness to ⅝". Then, cut the piece to size. In this case, Doug made the lid ¼" smaller than the box's outside dimensions so, rather than overhanging the sides of the box, it nests within the box's perimeter. Next, cut a rabbet around the lid's bottom face [**Photo C**]. To lighten the look of this heavy top, bevel its edges as you would a raised panel [**Photo D**]. Sand all but the weathered part of the top to 220 grit.

Stowe's Suggestion: *Use an extra-fine synthetic steel-wool pad to polish the roughsawn surface smooth to the touch without losing any of the patina.*

For this lid's handle, save time by using a stationary belt or disc sander to remove an equal amount of material from opposite sides of an inexpensive, round wooden drawer pull such as the one shown *below, right*, found at most home centers [**Photo E**]. Doing this gives it a handcrafted appearance. Secure the pull with a countersunk screw.

INSET THE LID



C

Rabbet the ends of the lid first so the subsequent cut along the sides, such as the one shown, will remove any end-grain tear-out that may occur.

LIGHTEN THE LID WITH BEVEL CUTS

D

Tilt the tablesaw's blade to 17°, attach a tall auxiliary fence to support the box top during the cut, and set the fence 5/16" from the blade.

SAND SMALL PARTS SAFELY

E

When sanding a small part, such as this drawer pull, secure it to a piece of scrap with a screw or double-faced tape to keep your fingertips safe.

continued on page 52

3. Get fancy with a frame-and-panel lid

This design offers more woodworking challenges and plenty of visual details. Make the floating panel, splines, and lift tabs from a species that contrasts with the rest of the box (walnut and maple shown).

Begin by miter-cutting the frame pieces to length on the tablesaw [**Photo F**]. Dry-assemble the frame and tape the corners together. Measure inside the frame and add ⅜" to these dimensions to determine the size of the panel; then, cut it to size.

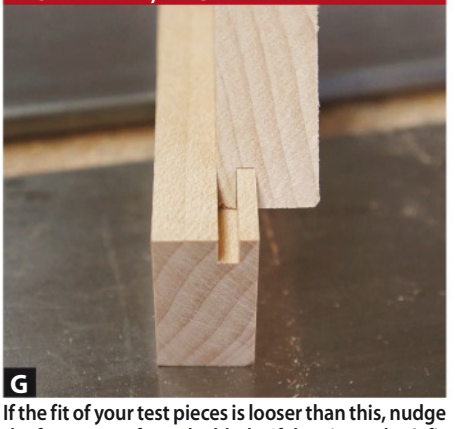
To make a tight-fitting tongue-and-groove joint between the frame and panel, set the saw blade 3/16" above the table and adjust the distance from the blade to the fence to equal the blade's kerf. Test your setup by cutting a kerf along the edge of two pieces of scrap stock. Check their fit [**Photo G**] and adjust the fence accordingly. Cut grooves along the frame's inside edges [**Photo H**]. Then, without changing the blade depth or fence location, cut matching grooves on all four edges of the panel. With the grooves cut, bevel the panel's face [**Photo I**] and sand the bevels to 220 grit. Then, glue the panel in the frame [**Photo J**]. After the glue dries, bevel the frame [**Photo K**].

Build the jig shown on the *next page* and use it to cut centered kerfs for splines in the lid's corners [**Photo L**]. Set the blade height so it won't cut into the panel. Cut stock for splines to fit the kerfs, glue them in place, and trim and sand them flush with the top's edges. Then, rabbet the underside of the lid so it fits the inside dimensions of the box as was done with lids 1 and 2.

CUT DEAD-ON MITERS

For tight joints, set your miter gauge to exactly 45° and clamp on a stopblock to make certain opposing sides come out the same length.

TEST THE FIT, FIRST



If the fit of your test pieces is looser than this, nudge the fence away from the blade. If the pieces don't fit together, nudge the fence closer.

MACHINE THE GROOVES

Use a pushstick and featherboards when cutting grooves in the frame pieces to keep hands safe. Apply even pressure throughout the cut.

BEVEL THE PANEL

Tilt your tablesaw's blade to 15° to cut bevels in the panel. By cutting the end grain first, the long-grain cuts will remove any tear-out.

Rather than clutter this lid with pulls on top, Doug added walnut lift tabs at each end to indicate where to place hands when opening the box. To install these, first use a ⅛" spiral upcut bit in your router table to cut centered slots for the tabs [**Photo M**]. Then, cut ⅛×⅝×2" stock for the lift tabs and fit them to the slot [**Photo N**]. Glue the tabs in place and sand the entire top to 220 grit.

Stowe's Suggestion: *Use a disc sander or bandsaw to give the tabs a simple pentagonal shape, emulating the bevels cut in the raised panel lid.*

ASSEMBLE THE FRAME AND PANEL

J

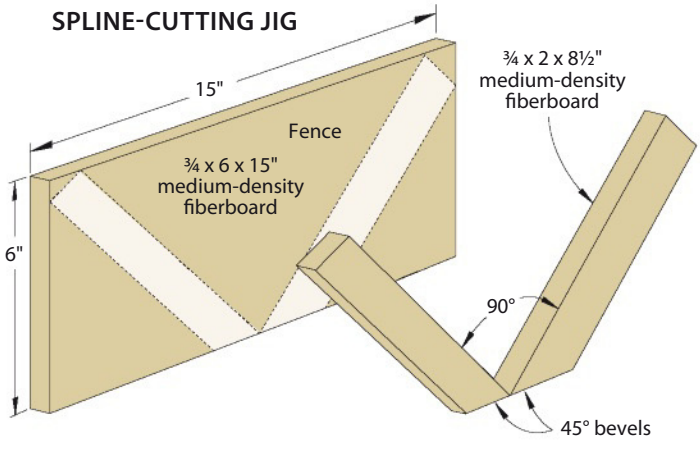
Apply a small amount of glue to the grooves in the frame and to the frame's miters. Use corner or framing clamps to keep the assembly tight as it dries.

BEVEL THE FRAME

K

After adjusting your tablesaw's blade to 17°, use a tall auxiliary fence to support the top as you cut bevels in the frame's top face.

SPLINE-CUTTING JIG



CUT GROOVES FOR THE SPLINES

L

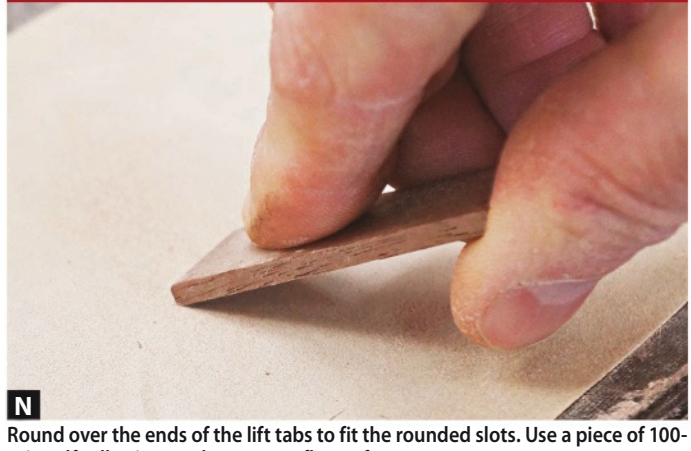
A simple splining jig made of scrap sheet goods will help you cut kerfs for holding accent splines. Those splines also strengthen the top's miter joints.

ROUT THE LIFT-TAB SLOTS

M

Adjust the router-table fence so the slot aligns with the top's splines. Set the bit 3⁄16" high and use stopblocks to center the cut.

SHAPE THE LIFT TABS



N

Round over the ends of the lift tabs to fit the rounded slots. Use a piece of 100-grit, self-adhesive sandpaper on a flat surface.

4. Rock a stone-accented top

As woodworkers, it's easy to think wood can be our only medium. But other materials—coins, seashells, or smooth stones, for example—add eye-catching contrast to woodworking projects.

To build this lid, Doug used two pieces of ⅜"-thick stock: one sized to fit the box's inside dimensions (the lid's base) the other cut 1½" longer and 1" wider than the box's outside dimensions (the lid's top). Arrange the stones on this larger piece; then hold each in place as you trace around it [**Photo O**].

Stowe's Suggestion: *Snap a quick photo of the stones' orientation so you'll be able to position them exactly as you had them laid out originally following the cut.*

Scrollsaw away the marked areas, cutting the lid's top into two pieces. Rout or sand a 1/16" chamfer on the top inside edges of the two pieces, and then glue them to the top's base [**Photo P**]. While the glue dries, create a template from ¼" scrap to use when routing the handles. The single-sided template ensures identical handles centered on each end [**Photo Q**]. Finally, epoxy the stones inside their cutouts.

Produced by **Nate Granzow** with **Doug Stowe**
Illustrations: **Lorna Johnson**

MARK A WANDERING PATH OF STONES

O

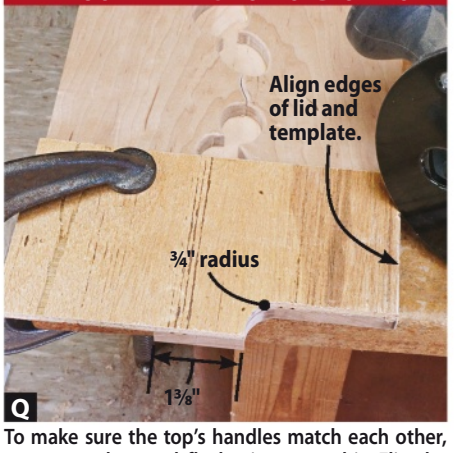
Lay the stones on the upper layer, mark around each one with a pencil, and draw a meandering line from end to end connecting the outlines.

GLUE ON THE LID'S BASE

P

Mark the location of the lid base on the underside of the lid top. Apply masking tape along the outline to prevent squeeze-out from sticking to the wood.

MAKE SOMETHING TO HOLD ON TO



Q

To make sure the top's handles match each other, use a template and flush-trim router bit. Flip the template over to rout the other side.

More Resources

▶ Watch a video on thin-strip ripping tips: **woodmagazine.com/thinstrips**.

▶ Find a FREE keepsake box plan at **woodmagazine.com/freebox**.

continued on page 54

Dimensions: 10¼"W × 7¼"D × 3⅜"H

Rippling-waves Keepsake Box

Extended, pinned finger joints and a progressive-arc lid (cut using a simple router jig) set this weekend project several notches above other boxes.

As an admitted wood hoarder, I can't bring myself to toss out wood cutoffs that might prove ideal for pint-size projects, such as this box. To build it you need only a few small pieces of contrasting solid stock (we chose maple and walnut) and ¼" plywood. If you can dig from your stash a piece of figured stock for the lid, you'll be pleased by how its distinctive grain gets amplified by the rippling arcs. And for more lid options, check out the creatively crafted lids by renowned boxmaker Doug Stowe on page 50.

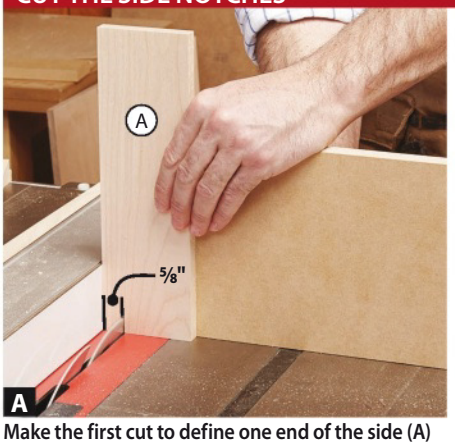
Bob Hunter
Tools Editor

Build the box first

1 From ½" stock, cut the sides (A) and ends (B) to size [**Drawing 1**], as well as an extra piece for making test cuts.

2 Raise your tablesaw blade for a ⅝" cut, and lock the rip fence in position ⅝" from the *near* side of the blade. Attach a tall extension to your miter gauge so it extends about ⅜" past the blade. Cut the outer edges of each side

CUT THE SIDE NOTCHES



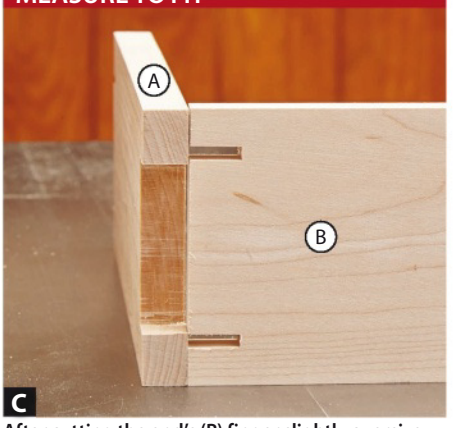
A

Make the first cut to define one end of the side (A) notch. Rotate the board and cut the other notch end. Flip the side and repeat for the other end.

B

Slide the fence aside and nibble away the remaining waste in the notches with a slide-and-cut technique. Clean up the notches with a chisel.

MEASURE TO FIT



C

After cutting the end's (B) finger slightly oversize, check its fit against the notch in the side (A). Shave a little more off until it fits snugly.

(A) notch [**Photo A**]; then clean up the waste between them [**Photo B**].

3 Without changing the blade height, reset the rip fence 9⁄16" from the *far* side of the blade. Then, using the test piece cut earlier, cut a pair of kerfs that define the width of the finger in the ends (B) [**Drawing 1**]. Check the fit against one of the sides (A) [**Photo C**], and adjust the fence, if needed, to get a tight-fitting joint. Cut these kerfs in each end of the ends. Next, attach a stopblock to the miter-gauge extension and finish cutting the notches [**Photo D**].

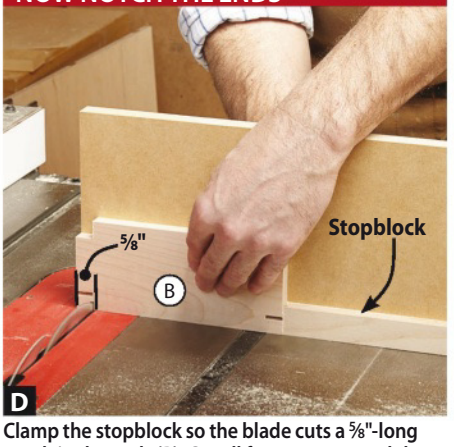
4 Dry-assemble the box. Install a ¼" box-slotting bit [**Source**] in your router table and rout a groove for the bottom (C) [**Drawing 1, Photo E**].

5 Cut the bottom (C) to size [**Drawing 1**], and radius the corners to fit in the box groove. Reassemble the box with the bottom in place to check its fit; trim as needed.

6 Sand all parts to 180 grit, and then sand 1⁄32" chamfers around the ends of the fingers on the sides (A) and ends (B). Glue and clamp the box together, wiping away squeeze-out with a damp rag.

7 After the glue dries, drill 1⁄8" holes 1" deep in the top and bottom of each joint [**Drawing 1**]. Cut 1" lengths of 1⁄8"

NOW NOTCH THE ENDS



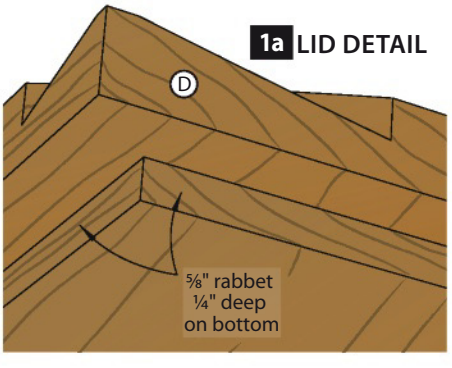
D

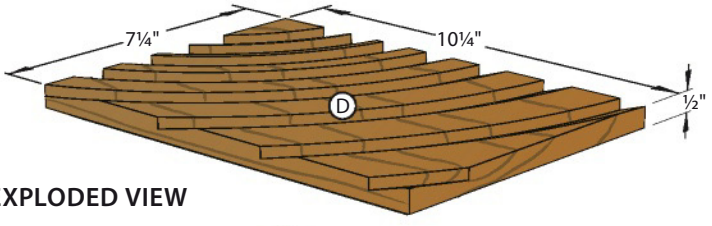
Clamp the stopblock so the blade cuts a 5⁄8"-long notch in the ends (B). Cut all four corners, and then repeat for the other piece.

ROUT THE BOTTOM GROOVE

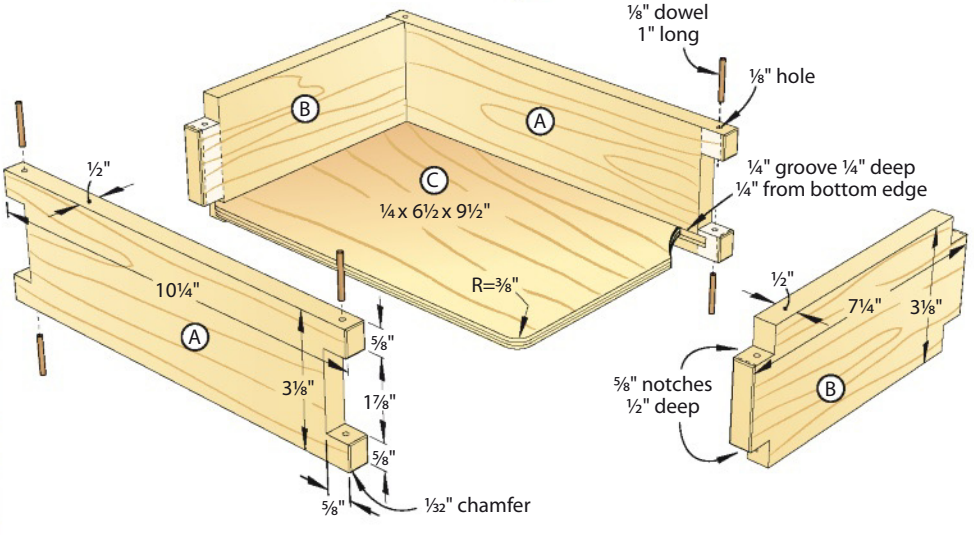
E

With the box dry-clamped snugly, rout the bottom (C) groove by moving the box in a clockwise rotation around the bit.





1 EXPLODED VIEW



walnut dowel [**Shop Tip**, *right*] and glue them in the holes. When dry, trim and sand the dowels flush.

Now craft the lid

1 From ¾" stock, cut an 8×12" blank for the lid (D) [**Drawing 1**].

Quick Tip! ***To counter any tear-out that might happen when routing the arcs on the lid in Step 4, we made it oversize. After routing, you will cut away the torn-out edges and ends.***

2 Build the lid radius jig [**Drawing 2**] from scrap sheet goods and solid wood. Adhere the lid (D) blank with double-faced tape onto the jig base where shown.

3 Install a ¾" straight or spiral bit in your plunge router. (You *can* use a fixed-base router, but the plunge router proves safer because you can retract the bit after each pass.) Adhere the router to the jig's angle block with double-faced tape, centering the bit in the hole. Set the bit depth so it cuts slightly less than a ¾"-wide groove; for us, that was about 7/32" deep.

4 Position the hole in the pivot arm nearest the router onto the dowel. Cut the arc in one pass [**Photo F**]. Step and repeat for each arc.

5 Cut the lid (D) to final size [**Drawing 1**] at the tablesaw, cutting ⅜" off each edge and ⅞" off each end. Then, use the ¾" straight bit used earlier to rout a ⅝" rabbet ¼" deep along the bottom of the lid [**Drawing 1a**]. Finish-sand the lid to 180 grit.

6 Apply a finish of your choice. We sprayed on three coats of Deft aerosol satin lacquer. Now make some waves with the recipient of your craftsmanship.

Produced by **Bob Hunter** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Lorna Johnson**

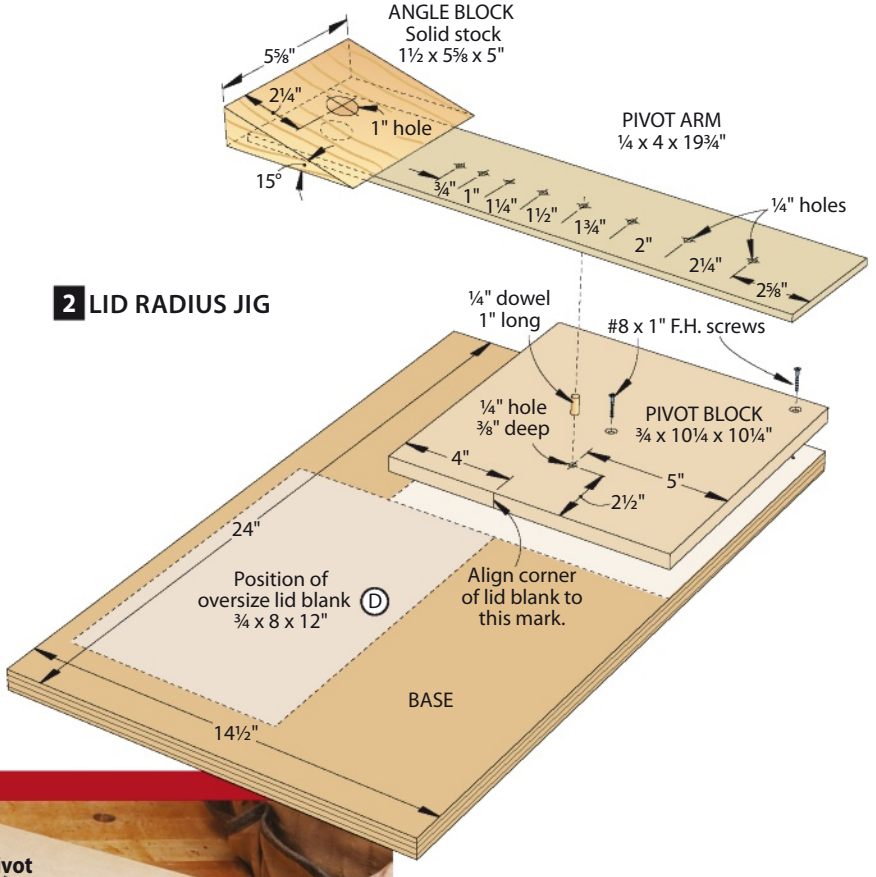
SHOP TIP

Make your own skinny dowels

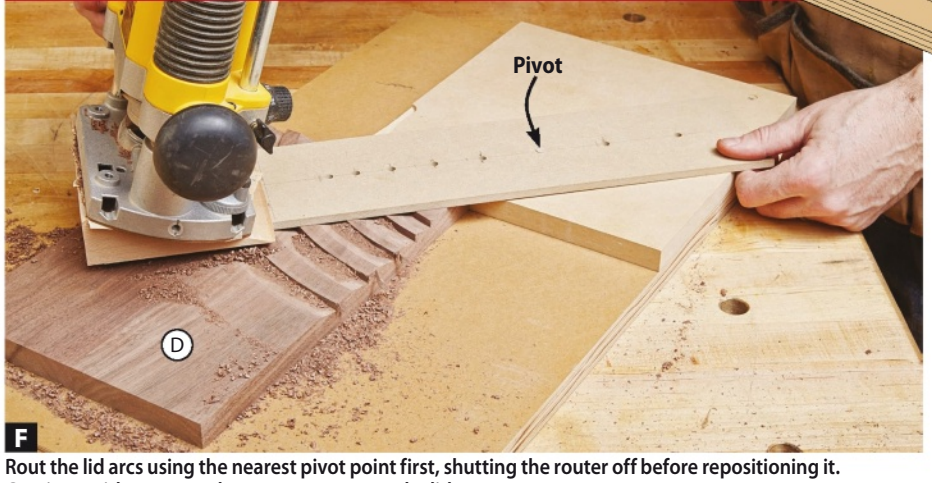
Small-diameter dowels, such as the ⅛" walnut ones used in this project, can be hard to find. So here's an easy way to make your own. First, rip a ⅛×⅛" strip from a walnut blank. Then sand it round. It doesn't have to be perfectly round, just enough to fit into the holes.

Begin rounding the dowel blank by sanding away the sharp edges with 100-grit abrasive, effectively making an octagonal strip.

Wrap sandpaper around the dowel blank and sand it round, simultaneously twisting the strip and sliding it back and forth.



MAKE WAVES WITH THE RADIUS JIG



Rout the lid arcs using the nearest pivot point first, shutting the router off before repositioning it. Continue with a step-and-rout pattern across the lid.

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	sides	½"	3⅛"	10¼"	M	2
B	ends	½"	3⅛"	7¼"	M	2
C	bottom	¼"	6½"	9½"	P	1
D*	lid	¾"	7¼"	10¼"	W	1

*Part initially cut oversize. See the instructions.

Materials key: M–maple, P–plywood, W–walnut.
Supplies: ⅛" walnut dowel 12" long.
Bits: ¾" straight or spiral router bit, ⅛" brad-point bit.

Source

Box-slotting router bit: ¼x¼" cut, ¼" shank, no. 16J83.14, $30.80, Lee Valley, 800-871-8158, leevalley.com.

Jigsaws

Don't cut corners when buying one of these curve-cutting tools.

Like many woodworkers/DIYers, I bought a jigsaw decades ago as one of my first tools (along with a drill and circular saw). Armed with a tiny budget and equally little tool savvy, I bought the cheapest jigsaw I could find—and regretted it with each cut. I upgraded to a pro-grade jigsaw a few years later and have never looked back. To help you avoid my initial mistake, in this review we test 10 better-quality corded jigsaws for the avid woodworker.

Bob Hunter
Tools Editor

Criteria for choosing the 10 jigsaws in this review:

- 110-volt power
- Variable-speed motor
- D-grip-style handle
- Priced between $70 and $175

A closer look at each tested jigsaw

Bosch JS365, $130

877-267-2499, boschtools.com

Bosch's "middle-of-the-pack" jigsaw has a respectable motor and dual speed controls. Even though the handle and trigger are comfortable, the trigger has an annoying delay before the motor responds. And although it's easy to release a blade using the body-mounted lever, the chuck does not eject the blade. The shoe tilts in both directions, but with only a 90° detent, it can be tricky to precisely set other bevel angles.

The best saws cut nice and square

Ideally, a jigsaw makes perpendicular cuts close to marked lines, saving you material as well as time spent cleaning up edges. In our testing, only the DeWalt DW331K and Milwaukee 6268-21 consistently made dead-on perpendicular cuts, thanks to a guide roller situated close to the shoe (base or footplate). Blades on the other saws deflected slightly, with the worst deflecting up to ⅛" in 1½"-thick stock, due to guide rollers that wiggled side-to-side or allowed the blade to jump out of them.

***Quick Tip!** If your saw's blade deflects consistently to one side, cut with that side toward the waste portion of your workpiece. If it deflects randomly to either side, simply cut a little farther from your cutline. Slowing your feed rate can also reduce blade deflection.*

You can't follow a marked cutline if you can't see it, so place a high priority on cutline visibility. Each saw has in front of its blade a protective plastic or wire guard that sometimes impairs the sight line, especially as dust builds up on the guards. We prefer saws with forward-positioned blades where we don't have to lean low to see under the saw's body, but that's only part of the battle. Saws with a built-in blower *should* clear dust from the cutline to help you cut more accurately. All but the DeWalt DW317K, shown at *right*, have this feature.

Still, we found the blowers on the Craftsman 28223, DeWalt DW331K and Makita JV0600K and 4350FCT too weak to clear dust effectively, forcing you to blow it off as you go. Blowers on the Bosch JS365 and JS470E, Hitachi CJ90VST, Milwaukee, and Porter-Cable PCE341 clear dust best. Some saws have dust ports as either standard or optional accessories, but we found them ineffective and clumsy when hooked to a shop vacuum.

Controlling blade speed proves crucial for best results

All the tested saws have adequate power to cut through the wood and composite materials you'll likely use—provided you equip the saw with a sharp blade appropriate for the job. (Learn more about blade selection and get other jigsawing tips at woodmagazine.com/jigsawtips.)

Each saw has a variable-speed dial, allowing you to optimize its maximum blade speed—measured in strokes per minute—for the material being cut. But we also appreciate a variable-speed trigger, such as those found on saws from Bosch, DeWalt, Milwaukee, and Porter-Cable. With these, you set the *maximum* speed with the dial (just as a governor caps the rpm of a truck engine), and then use the trigger to vary the speed up to that limit (as you would with the accelerator pedal in the truck). This extra layer of control lets you slow down the blade speed mid-cut, such as near a transition or tricky curve; with

YOU CAN'T CUT WHAT YOU CAN'T SEE

Without a built-in blower, the DeWalt DW317K has no means of clearing sawdust from the marked cutline ahead of it.

Bosch JS470E, $160

Compared to the JS365, this saw has a more powerful motor, self-ejecting blade chuck, larger shoe, and longer cord. It has a nice rubber-overmold grip and ergonomic trigger with soft-start—but immediate—response, and its blower was second strongest. The JS470E has the same shoe-tilting issues as the JS365. At just over 6 lbs, it's the heaviest saw among those tested, but it's not an issue unless you cut overhead.

Craftsman 28223, $80

800-549-4505, craftsman.com

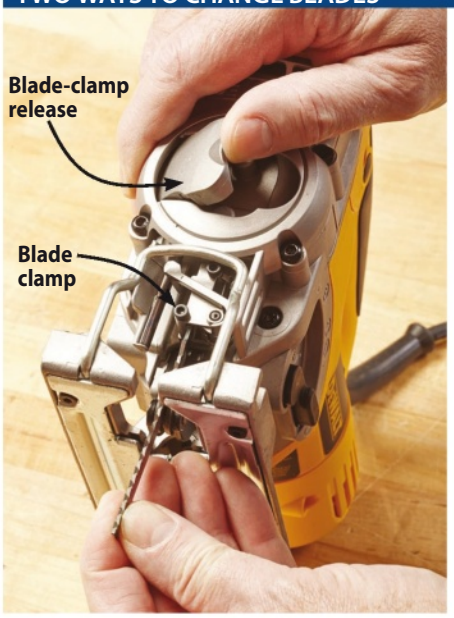
This saw has adequate power with decent ergonomics and blade changes. But three unique features—a cutline laser guide, an independent scrolling head, and a detachable D-handle that converts the saw into a barrel-grip version—offer limited value for the everyday woodworker. It vibrated more than any other saw, and demonstrated the most blade deflection.

DeWalt DW317K, $100

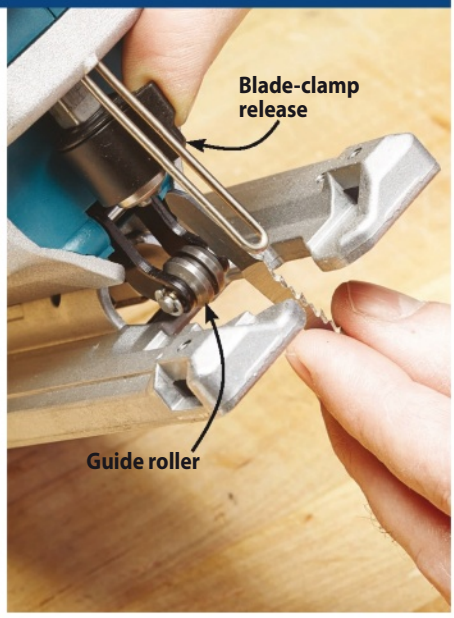
800-433-9258, dewalt.com

With good power and sight lines, this model also has the dual speed control we like, but the variable-speed dial is mounted on the trigger, making it awkward to use. This saw lacks both a good guide roller and dust blower, limiting its viability in a woodworking shop.

TWO WAYS TO CHANGE BLADES



The best saws have a body-mounted lever that opens and closes the blade-clamp jaws for easy blade changes.



The others use a blade-clamp release that encircles the blade clamp. These can be more difficult to access and operate.

the other saws the speed stays the same as set by the dial, regardless of how much you pull the trigger.

You can cut more aggressively with a jigsaw by increasing the orbital action in the blade. With this engaged, the blade swings back-to-front like a pendulum as it strokes up and down. You'll get the cleanest cuts with no orbital action, but a little orbit helps cut curves without backing up and repositioning. Eight of the 10 models have four orbital settings: one straight up and down (no orbit) and three in increasing amounts of "swing." The Porter-Cable has just three settings, and the Craftsman has five.

A three-horse race...

The Bosch JS470E, DeWalt DW331K, and Milwaukee 6268-21 easily outdistanced this field of 10 jigsaws, and you'll be happy with any of the three. But the Milwaukee placed at or near the top in all testing categories, so it claims Top Tool honors. Plus, it comes with a 5-year warranty.

For less than half the cost, the Hitachi CJ90VST ($75) lacks the speed control of the top-priced saws and has a fussy blade chuck, but it cuts well and also has a 5-year warranty. We named it our Top Value.

Produced by **Bob Hunter** with **Michael Springer**

WOOD MAGAZINE'S REVIEW-A-TOOL

Share your own jigsaw experience by posting a review at toolreviews.woodmagazine.com.

DeWalt DW331K, $150

This saw earned high marks for its absence of blade deflection, low vibration, powerful motor, comfortable handle and trigger (despite having the variable-speed dial located there), and a shoe that tilts tool-free. But the poor performance of its dust blower makes cutting along a line difficult, and though its blade clamp proves easy to open and close, it's hard to tell when a blade is fully installed without tugging on it.

Hitachi CJ90VST, $75

800-829-4752, hitachipowertools.com

Sporting the strongest blower among the test saws, this model enabled us to easily see marked layout lines. It has one of the most comfortable grips, and is the only saw with the variable-speed dial on its front for easy access and visibility. It lacks a variable-control trigger, but it is soft-starting. You don't get a plastic no-mar pad for the metal shoe, and its blade clamp proved the most difficult to operate.

Makita JV0600K, $120

800-462-5482, makitatools.com

A smooth-running saw with comfortable handles and trigger, easy blade changes, and minimal blade deflection, the JV0600K outperformed its pricier sibling. But a few factors keep it in the middle of the pack: A weak blower creates a dust cloud around the blade, impairing visibility; the lack of a variable-control or soft-start trigger limits your ability to adjust speed during use; and the absence of a no-mar pad for the shoe could result in scratched workpieces.

Corded Jigsaws: Cutting Curves Like Sports Cars

MANUFACTURER	MODEL	PERFORMANCE RATINGS (1)								SPEED RANGE, STROKES PER MINUTE	LENGTH OF BLADE STROKE, INCHES	WEIGHT, LBS-OZ	CORD LENGTH, FEET-INCHES	WARRANTY, YEARS	COUNTRY OF ASSEMBLY (2)	SELLING PRICE (3)
		PRIMARY			SECONDARY											
		ABSENCE OF BLADE DEFLECTION	VISIBILITY OF CUTLINE DURING USE	EASE OF CONTROLLING BLADE SPEED	ABSENCE OF VIBRATION	POWER	COMFORT OF HANDLE/POWER SWITCH	EASE OF CHANGING BLADES	EASE OF TILTING SHOE							
BOSCH	JS365	B+	B	A	A	B+	A	A-	B	500–3,100	1	5-6	8	1	C	$130
	JS470E	B+	B	A	A	A	A	A	B	500–3,100	1	6-2	12-9	1	S	160
CRAFTSMAN	28223	C-	C	C	C-	B	B	B	C+	800–3,000	15⁄16	5-10	9	1	C	80
DEWALT	DW317K	C	C-	B+	B	A-	C	A-	C	0–3,100	1	5-15	8	3	M	100
	DW331K	A	C	B+	A	A	A	B+	A	500–3,100	1	5-14	8	3	M	150
HITACHI	CJ90VST	B-	B	C	C+	B	A	D	B-	850–3,000	3⁄4	4-13	8-2	5	C	75
MAKITA	JV0600K	B+	C-	C	A	A-	A	A-	B	500–3,100	7⁄8	5-3	8-2	1	C	120
	4350FCT	B	C	C	A	A	A	B+	B	800–2,800	1	5-14	8-3	1	R	175
MILWAUKEE	6268-21	A	B+	B+	A	A	A-	A-	A	0–3,000	1	5-14	12-8	5	Z	160
PORTER-CABLE	PCE341	C	B	B	A-	B	C	A-	C	0–3,100	3⁄4	4-10	6	3	C	90

1. A Excellent, B Good, C Fair, D Poor

2. (C) China (M) Mexico (R) Romania (S) Switzerland (Z) Czech Republic

3. Prices current at time of article production and do not include shipping, where applicable.

Makita 4350FCT, $175

Like the JV0600K, this saw has a comfortable grip and low vibration, but it comes with a no-mar shoe pad. It displayed slightly more power in use, but with peskier blade changes than its sibling. Although the owner's manual says this saw has a soft-start trigger, we did not experience this in testing, and the lack of a variable-speed trigger results in less control. A weak dust blower negates the built-in LED light that can't light through an almost-blinding dust cloud.

Milwaukee 6268–21, $160

800-729-3878, milwaukeetool.com

This saw hit home runs nearly across the board: highly accurate cutting with no deflection, easy blade changes with a self-ejecting clamp, good cutline visibility with a strong blower and LED light, powerful motor, low vibration, a shoe you tilts tool-free, and an ergonomic handle. The variable-speed dial is mounted on the bottom of the variable trigger, though, making it somewhat difficult to see the markings and grip the trigger. And a plastic shield that wraps around the front of the saw clogged with dust, creating a cloud illuminated by the LED; we prefer cutting with this removed.

Porter-Cable PCE341, $90

888-848-5175, portercable.com

With adequate power, low vibration, good cutline visibility thanks to a strong blower, and easy blade changes, the PCE341 is a respectable value-priced tool. But the blade deflected nearly 1⁄16" in 3⁄4"-thick stock and tracked more to one side, forcing us to angle the saw to cut a straight line. Its slick handle lacks a rubber grip, and its shoe requires a hex wrench (not included) to loosen its two bolts.

A-cut-above Bookends

The handle makes a working replacement for an actual vintage handsaw.

This fun little project touches on a lot of pastimes: woodworking, reading, and humor. But it has a serious side, too. With a few simple alterations, the handle (A) serves as a full-size handle replacement. To use it as a handle, simply skip **Step 2**. *Instead, disassemble your old saw, line the blade up on the patterned blank, and trace the back of the blade, bolt holes and all. Then saw a kerf to fit your blade as shown below, drill holes to fit the bolts, and complete the handle as detailed in the article before reassembly. If your saw's bolts are missing or damaged, check sources such as Blackburn Tools (blackburntools.com) or Bad Axe Tool Works (badaxetoolworks.com) for replacements.*

Kevin Boyle
Senior Design Editor

With less than four board feet of lumber, this project has big impact at a small price. We'll add convenience to the mix with a kit of pre-thicknessed wood [**Source**, *page 64*].

First, a little sleight of handle

1 From ⅞" stock, cut a 5¼×9" blank for the handle (A). Make a copy of the **Handle Pattern** from the *WOOD Patterns®*

Press the blank against the fence with a push pad to make the first cut. Then, move the fence ⅛" to widen the groove to ¼" while centering it.

insert on *page 42* and apply it to the blank with spray adhesive. Use a miter gauge at your tablesaw to crosscut the front angled line.

2 Install a full-kerf (⅛") blade in your tablesaw and set its height to 1¼". Adjust the tablesaw's fence to 5/16" from the blade. Cut a groove in the handle (A) blank. Then, adjust the fence and widen the groove to ¼" [**Photo A**].

3 Scrollsaw the handle (A) to shape. Where a spindle sander can reach, use it to clean up the cut edges. Rout ⅜" round-overs on the back edge and center cutout on both faces of the handle. Rout ⅛" round-overs on both faces of the front edge of the handle where shown on the pattern. Then, use a bastard file to chamfer the remainder of the front edge of the handle.

4 Remove the pattern. Round the back of the top horn [**Photo B**]. Round a gentle dome on both edges of the top horn [**Photo C**], as well as along the bottom of the handle. Next, complete the round-over in the point of the handle center [**Photo D**]. File round-overs on the top front of the handle. Then, sand all the edges and contours until they are smooth and pleasing to the eye.

ROUND THE HORN

B

Use a bastard file to round the back of the top horn. Though noncritical for the bookends, you would test a real saw grip for comfort as you shape.

CREATE A DOME

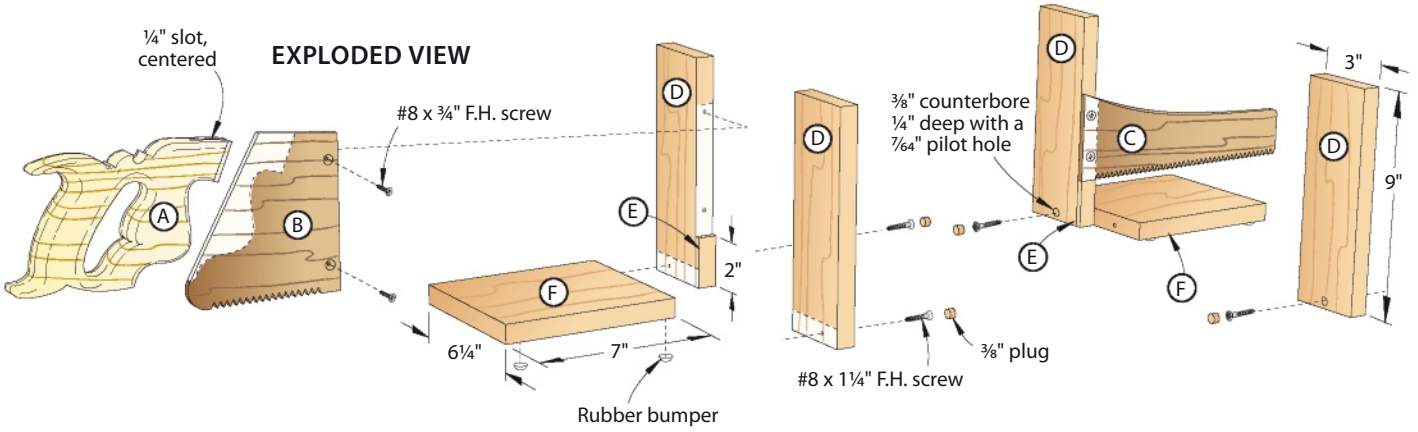
C

File a gentle dome on the top and bottom edges of the top and bottom horns. Aim for pleasing-to-the-eye and comfortable-to-the-hand.

GET TO THE POINT

D

Use a small triangular file and sandpaper to gently contour the point in the center of the handle where a round-over bit won't reach.



Conjure up blades and bases

1 Plane a 6½×18" walnut blank until it fits snugly in the handle slot. (Ours was ¼".) Make a copy of the **Handle Blade Pattern** and the **Blade Pattern**. Apply them to the blank with spray adhesive, scrollsaw the handle blade (B) and blade (C) to shape, remove the patterns, and sand the parts to 220 grit.

2 From ¾" stock, cut the backs (D), back spacers (E), and bases (F) to size [**Materials List**, **Drawing**].

Quick Tip! ***To hide the glue line, enhancing the illusion of a saw cutting through the bookends, cut the backs and back spacers from a single blank, first ripping a back, then a spacer, and, finally another back. To safely cut the small spacer, rip it on the offcut side of the blade rather than against the fence, before cutting it to length. Mark the parts to keep them together and properly oriented.***

Glue the back spacers to the edge of one of their respective backs.

3 After the glue dries, retrieve the handle blade (B) and glue and screw it to the bookend assembly (D/E) [**Photo E, Drawing**]. Glue the mating back (D) to the assembly, clamping the faces and bottom edges flush. Repeat with the opposite assembly, using the blade (C).

4 Drill ⅜" counterbores with 7⁄64" pilot holes through the blade assemblies (B/D/E and C/D/E) [**Drawing**]. Then, screw and glue the assemblies to their bases (F). Fill the counterbores with ⅜" face-grain plugs. After the glue dries, flush-trim the plugs and sand any remaining surfaces to 220 grit.

5 Apply glue to the handle (A) slot and glue it to the handle blade (B) so the tops are flush. After the glue dries, sand away any unevenness between the handle and blade. Apply a clear finish. (We wiped on three coats of Danish oil.) Finally, add four self-adhesive rubber cabinet-door bumpers to the bottom of each base (F).

Produced by **Lucas Peters** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A*	handle	⅞"	4⅞"	8⅛"	M	1
B*	handle blade	¼"	6⅛"	5⅞"	W	1
C*	blade	¼"	3¾"	10⅞"	W	1
D	backs	¾"	3"	9"	O	4
E	back spacers	¾"	¼"	2"	O	2
F	bases	¾"	6¼"	7"	O	2

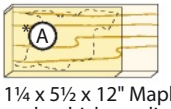
*Parts initially cut oversize. See the instructions.

Materials key: M–ambrosia maple, W–walnut, O–red oak.
Supplies: Spray-adhesive, #8×¾" z screws (4), #8×1¼" flathead screws (4), self-adhesive rubber cabinet-door bumpers (8).
Bits: 7⁄64" and ⅜" drill bits; countersink; ⅛" and ⅜" round-over bits; ⅜" plug cutter.

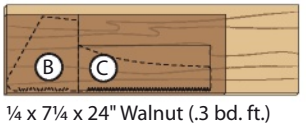
Source

Wood kit: The kit contains enough wood of the proper thickness needed to complete one set of bookends. Order kit no. RS-01038, $17.95 + shipping, 888-636-4478, woodmagazine.com/bookends.

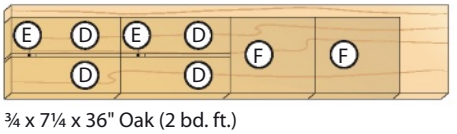
Cutting Diagram



1¼ x 5½ x 12" Maple (1 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.



¼ x 7¼ x 24" Walnut (.3 bd. ft.)



¾ x 7¼ x 36" Oak (2 bd. ft.)

More Resources

▶ Learn to rehab a vintage hand plane at **woodmagazine.com/planerehab**.
▶ When power tools don't cut it, turn to these handsaws: **woodmagazine.com/helpfulhandsaws**.
▶ Too many books for bookends? Shop for bookcase plans at **woodmagazine.com/bookcases**.

With the parts secured, drill and countersink 7⁄64" pilot holes through the handle blade (B) into the back (D). Attach with #8×¾" flathead screws.

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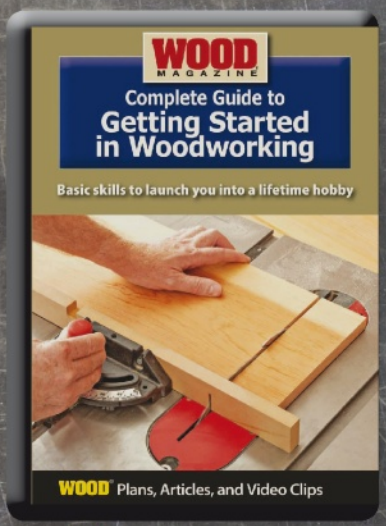

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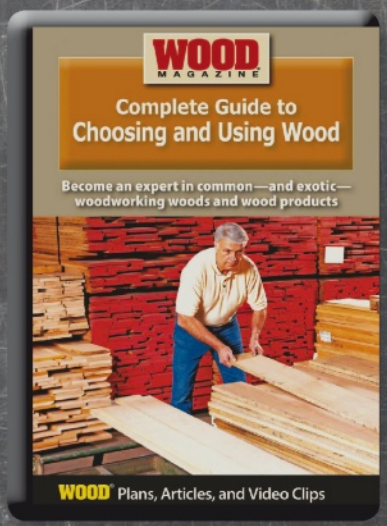

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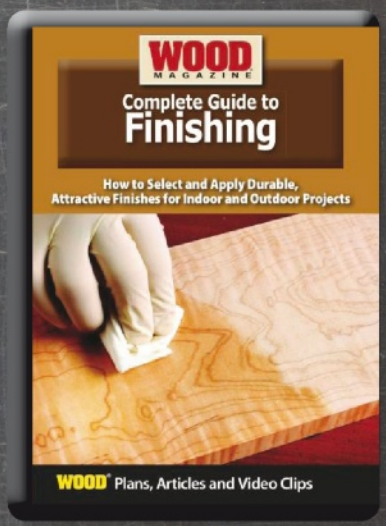

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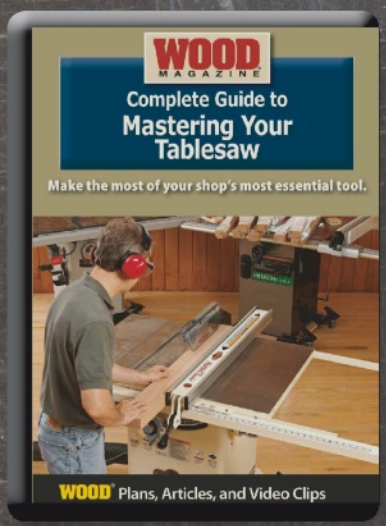

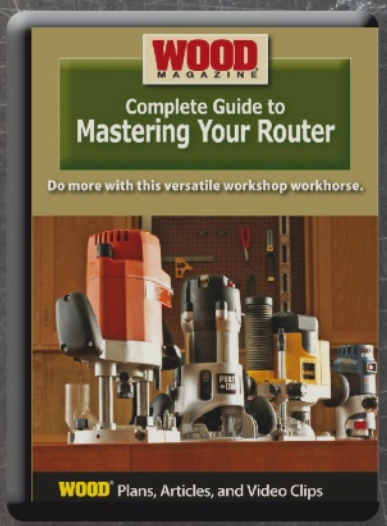

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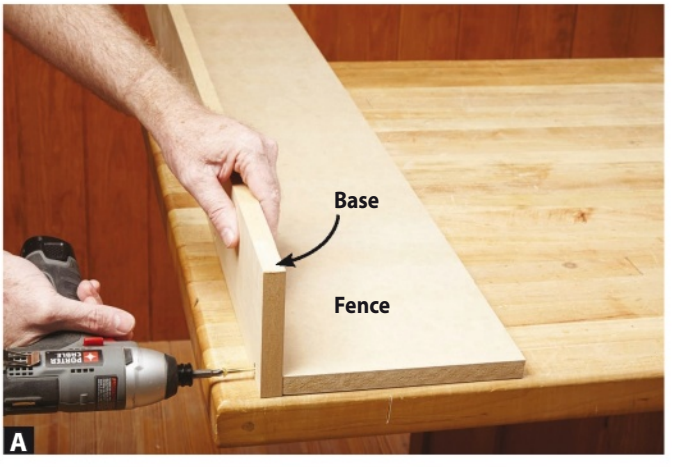
Resaw a natural-edge slab while preserving the edges

Q After seeing the wedged-seat bench, *below*, in issue 227 (September 2014), I knew it would be the perfect project for a 9"-wide natural-edge cherry slab that's been sitting in my basement for several years. I'll need to resaw the 3"-thick slab to create the two seat planks, but how can I do that without the bandsaw's table damaging the natural edges?

—Jenny Sanders, Kirkland, Wash.

A You just need to build a simple right-angle sled from MDF to carry the slab across the bandsaw, Jenny. To do this, cut a fence about equal to your slab in width and length, and then cut a base the same length and about 4" wide. Screw them together with 1½"-long brass screws [**Photo A**]. Secure the slab to the fence with a few dabs of hot-melt glue [**Photo B**]. After the glue grabs hold, tilt your bandsaw table to the angle needed. Place the sled against the bandsaw fence, and resaw the slab [**Photo C**]. Add infeed and outfeed support if needed.

With the cut complete, pop the half-slab off the MDF fence, and then clean up the bandsawn faces with a wide jointer, belt sander, or hand planes. (To learn more about working with natural-edge slabs, go to woodmagazine.com/slab.)



continued on page 68

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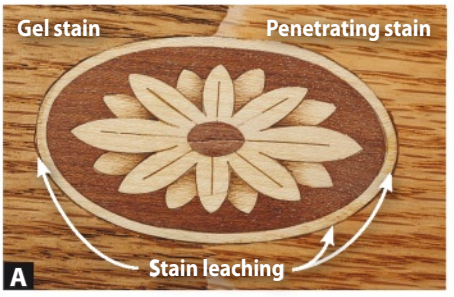
Ask WOOD

Prevent discoloring on your hard-worked inlay

Q I'm making a keepsake box with a lid featuring an inlay of a contrasting, lighter wood. I want to stain the lid's primary wood to even out its color variations, but how can I do this without stain getting onto the inlaid wood?

—Bill Kidder, Overland Park, Kan.



A That's tough to do, Bill, whether you're inlaying veneers or solid wood. Dyes and stains, especially penetrating ones, seek out pores in the wood and travel through them, even horizontally along the grain [**Photo A**]. It's such a risk after doing delicate inlay work that we just don't recommend staining around the inlay. (But, as with the bookcase on *page 26*, you can stain *over* an inlay—whether the inlay is darker or lighter than the primary wood—after installation, if that suits your taste.)

Instead of staining, we suggest you select workpieces that don't need additional coloring. Using wood with interesting grain or figure brings more impact and appeal to your project than stained wood. And when you coat an inlaid workpiece or project with a penetrating clear-oil finish, the grain will pop even more [**Photos B** and **C**].

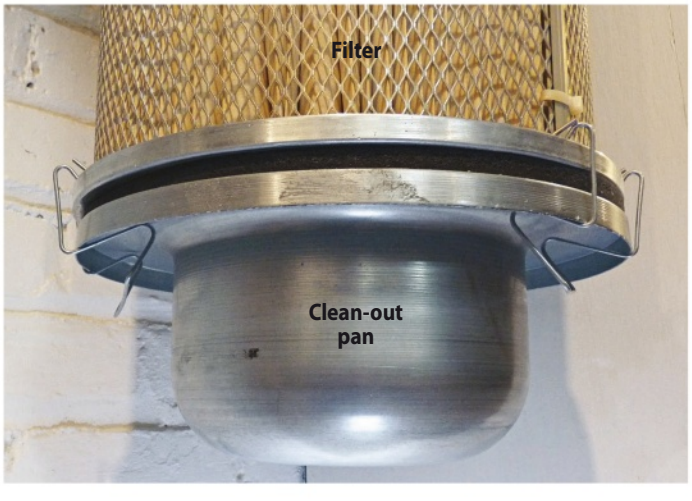
When your cyclone blows a gasket, don't blow yours

Q The seal between my cyclone dust collector's pleated filter and the clean-out pan sometimes develops leaks, spitting fine dust into the workshop. I replaced the original gasket with new self-stick weatherstripping, but that blew out after a few months. Next I replaced the original wire clips with spring clamps that compressed the gasket tighter, but it still failed eventually. I've run out of ideas. How can I fix this?

—Bennie Scanlan, Middleburg Heights, Ohio

A A cyclone exerts more air pressure than self-stick weatherstripping encounters when sealing around a door or window, Bennie, so it needs more stickiness to stay in place in this use. Create a stronger bond with spray adhesive.

First, peel or scrape the old weatherstripping from the rim of the clean-out pan, and remove any residual adhesive with mineral spirits or lacquer thinner. While the pan dries, measure its outer rim diameter and multiply by 3.14 to find its circumference. Add an inch to be on the safe side. Cut a piece of weatherstripping to this length, and discard its paper backing. Apply multipupose spray adhesive (such as 3M Super 77) onto both the pan and the sticky side of the weatherstripping, and let the adhesive tack up for at least 30 seconds. Apply the weatherstripping around the pan's perimeter, overlapping the ends. Cut through both layers with a razor knife to create a tight seam. Clean any overspray off the pan with a rag soaked in your solvent, let it dry, and then reinstall the pan.



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Ask WOOD

Damaged shelf-pin holes? Try these simple fixes

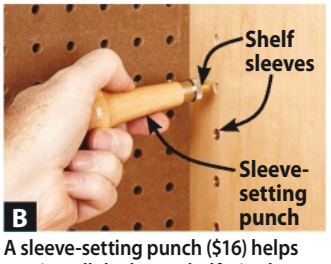
The shelf-pin holes in the sides of a bookcase I've owned for years have become elongated, allowing the support pins to slide out. What can I do to save this piece of furniture?

—Sam Burdine, Freehold, N.J.

You have two options here, Sam. First, you can enlarge the holes [**Photo A**], and then install brass sleeves that will once again hold the shelf pins securely [**Photo B**]. To prevent grain tear-out around the rim of the holes, use a sharp, standard-twist drill bit and drill the holes in 1/32"-diameter increments to keep the holes centered.

A faster but less elegant option is covering the oblong holes with a metal shelf standard [**Photo C**] and matching shelf clips. These standards typically get fit into a slot so they mount flush, but you can simply surface-mount them over the old shelf-pin holes, and then shorten the length of your shelves to fit. Buy shelf-pin sleeves and pins, shelf standards (also called pilasters) and clips, and sleeve-setting punches from Lee Valley (800-871-8158 or leevalley.com).

Use a stop collar secured to your drill bit to prevent drilling deeper than the original holes and through the side of your project.



A sleeve-setting punch ($16) helps you install the brass shelf-pin sleeves after redrilling the holes. This model has five tips for different-size sleeves.

For best appearance, choose standards as long as the inside height of your bookcase or cabinet. Position screw holes to miss the shelf-pin holes.

Sponge or spray to spread staining of large projects

Q I've always used a brush to apply stain, but on large projects it takes forever, and sometimes I have trouble blending the overlapping areas to avoid them showing when the stain dries. Is there a better way?

—Roger Cooley, High Point, N.C.

A Professional finishers use a couple of methods that you can adopt as well, Roger.

▸**Wiping:** This method covers your project quicker than using a brush because a terry-cloth sponge-pad applicator holds more stain, and you can store the pad in the stain can for the next use. However, you might still need a brush to get stain into crevices and corners. Wear gloves to keep your hands clean. After applying the stain, wipe off the excess with a lint-free cloth or blue shop towel.

▸**Spraying:** It's quick, and even a low-cost, entry-level spray gun will effectively shoot an even coat of thin stains reasonably well. You might not have excess to wipe off. However, to spray, you'll need a well-ventilated space, you'll waste some stain to overspray, and cleanup time can take longer than a hand-applied method.

Terry-cloth sponge pad

continued on page 72

Ask WOOD

Any glue worth its salt can stand alone

While I was gluing up four boards face-to-face recently, my neighbor noticed how the boards slipped around as I tightened the clamps. He suggested sprinkling a little salt onto the glue before sandwiching the boards together for extra grip while I lined up the edges. Is that a good idea?

—Herm Keller, Spokane, Wash.

Leave the salt in the kitchen, Herm. According to Jeff Loflin, glue specialist at Franklin International (maker of Titebond wood glues), salt (and sugar, too, by the way) can react with wood glue and alter its composition, resulting in a weakened joint.

Rather than resorting to parlor tricks, apply good gluing and clamping techniques. Too much glue in a joint, especially laminations, acts as a lubricant, letting the boards slip and slide. Instead, spread a thin, even coating on the mating surfaces; use a spreader or roller to even out the glue.

When clamping multiple workpieces together, uneven clamping force can cause the boards to slip around. To avoid this, gradually add pressure throughout the joint for each clamp. Realign any workpieces as you go by hand or with gentle mallet taps. As you slowly increase clamping force, the glue tacks up and holds the boards together. Continue tightening the clamps alternately until you see squeeze-out at the joint lines.

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We test hundreds of tools and accessories, but only those that earn at least three stars for performance make the final cut and appear in this section. The products shown here, and those that don't make the cut, are also reviewed at toolreviews.woodmagazine.com. Prices shown are current at the time of article production and do not include shipping, where applicable.

Kit makes for easier-adjusting wooden planes

I love to make and use wood-body hand planes. Making my own lets me customize it to suit my hands or its intended use. Blade adjustments, though, require delicate tapping on the plane body or wedge that holds the blade in place, and some woodworkers prefer the precise adjustability of a metal-body plane. Lee Valley's Veritas plane-making kit enables you to make a wooden plane with a Norris-style adjuster (shown *below*), a feature usually found only on metal-body planes. With it, you can tweak the blade depth by turning the adjuster wheel, or move the blade side-to-side by pivoting the adjuster. The kit also includes a screw and threaded bushing for the lever cap, so you can easily tighten the cap against the blade.

But the 4½"-long blade, when bedded at the recommended 45° angle, requires a wooden body at least 2½" tall to correctly mount the adjuster. This creates a plane that's a little oversize for the 1⅝" blade width; that's more of a small block-plane size. (Lee Valley's Wally Wilson said 2" kits will be available in the future.)

—Tested by John Olson, Design Editor

Wooden plane hardware kit

Performance	★★★★½
Price	(A2 blade, no. 05P40.41) $44.50
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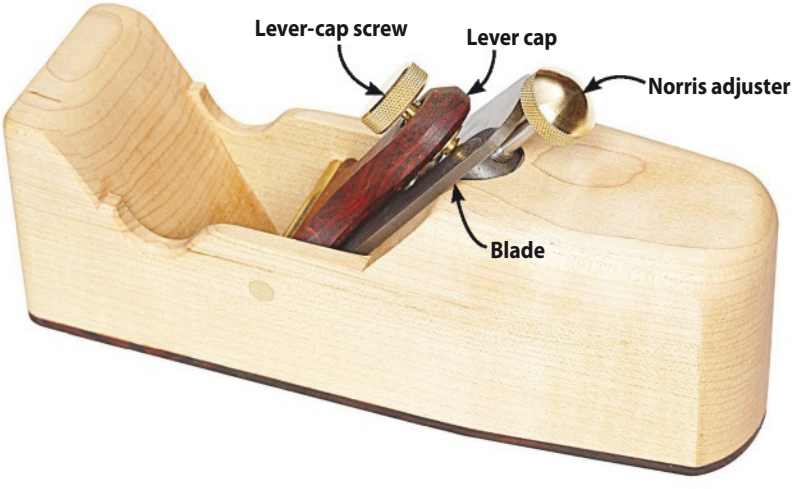
	(PM-V11 blade, no. 05P40.43) $54.50

Lee Valley/Veritas
800-871-8158; leevalley.com



New footed design marches these clamps to the front

Not much has changed in pipe-clamp technology in the last, oh, 50 years or so, but the new Pony Pro pipe-clamp fixtures from Pony Tools bring this old-school clamp solidly into the 21st century. The canted feet add stability on a workbench top while also elevating the pipe 1¾" higher than Pony's previous pipe clamps. An added rear foot slides independently of the tail jaw, so you can move that jaw without it touching the benchtop. The jaws are ½" wider and taller than the previous generation's, and the handle screw is 1" longer. Overall, this is a much appreciated—and long overdue—upgrade that makes these clamps worth adding to your shop.

—Tested by Nate Granzow, General-Interest Editor

Pipe-clamp fixtures (no. 55)

Performance	★★★★★
Price	$17

Pony Tools
312-666-0640; ponytools.com

continued on page 76

Shop-Proven Products

Laguna's first 110-volt bandsaw delivers muscle and finesse

I've long been a fan of Laguna's bandsaws, but the required 220 voltage and premium prices have kept them out of reach of most home woodworkers. The 14/Twelve, the company's first 110-volt bandsaw, offers the features Laguna has been known for—powerful motors, ceramic blade guides, easy and precise adjustments—at a price comparable to other 14" resaw machines.

With a motor strong enough to power through oak and ash at the full resaw capacity of 12", this saw impressed me by never wavering more than 1/64" during those cuts. The ceramic blade guides adjust easily without tools and held all blades on course, even when cutting tight curves. The rack-and-pinion blade-guide post held solidly without flex. Its rip fence adjusts for blade drift, and can be used in high (5½") or low (½") position. The 16×21" table provides ample workpiece support, and is anchored on a massive trunnion that locks solidly and moves smoothly on a rack-and-pinion gear.

I tested this machine outfitted with the optional lamp ($99) and mobile base ($149). The halogen light plugs into a socket on the back of the saw and illuminates the cutting area well. And the three-caster mobile base works sufficiently to move the saw around the shop, but made it a bit tippy.

—Tested by Bob Saunders

14" bandsaw (no. 14/Twelve)

Performance	★★★★★
Price	$1,097

Laguna Tools
800-234-1976; lagunatools.com

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What's Ahead

A glimpse inside the November issue (on sale October 7)

Cherry hutch
Lovely curved legs and your choice of glass- or wood-panel doors and sides make this hutch stylish and versatile. In a dining room, match it with the complementary table and chairs coming in future issues.

Trim routers
We test 11 of these one-hand mighty-mites and give you the lowdown on which one to buy.

Greene & Greene clock
A stunning wall-mounted timepiece built from eye-catching mahogany, accented with faux ebony plugs.

Chairside chest
Build this attractive, handy organizer with just a few basic tools and commonly found materials.

Cope-and-stick doors made easy
In just a few simple steps, we guide you through making beautiful, strong doors on your router table.

Reach for the sky
With a boom that extends more than 4' and rotates a full 360°, and fully functioning outriggers to keep it steady, this big-rig truck crane is our biggest Construction-grade toy ever!

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- Dual Front Cranks make adjusting blade height and bevel easy, accurate and repeatable
- The Bevel Dial allows fine tuning of the blade bevel within 1/4°
- Precision Adjustable Miter Gauge with 11 detents at most popular angles

5000 Series

- **Heavy Duty Tubular Stand** for accurate work support and stability with mobility feature
- Precision BIESEMEYER style T-square **Rip Fence** with one piece rail system
- Quiet and efficient Multi-V Belt **Drive**
- **Adjustable Miter Gauge** with 9 detents at most popular angles for exact cuts
- **Bevel & Height Adjustments driven by** durable Steel Shafts and Gears for precise settings

36-5000 NEW
36-5100 NEW
36-5052 NEW
36-5152 NEW

Induction Motor: **1.75 HP**
Blade Speed 3,650 RPM
Depth of Cut: 2 1/4 in. @ 45° & 3 1/2 in. @ 90°
One Piece Fence Rails For Precision
Convenient Dust Collection Port

T-SQUARE
One Piece Rails

Available with Cast Iron or Steel Wings

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The Measure of Precision™

HOW CAN THE BEST GET BETTER?

Introducing the Next Generation Premier Fusion

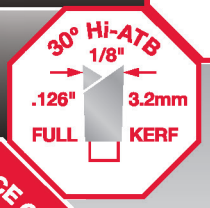
with Radical New Fusion Trio Tooth Design

Now the most technologically advanced general purpose blade on the market includes an one-of-a-kind tooth geometry with 30 degree Hi-ATB, a double side grind design, and an Axial Shear Face Grind to produce the ultimate polished finish with minimal resistance! Whether you're ripping or crosscutting, the next generation Premier Fusion blade is the best for flawless cuts in laminates, melamine, veneered plywoods, hardwoods, softwoods, and thick stock lumber.

NEW FUSION TRIO TOOTH GEOMETRY

DOUBLE SIDE GRIND
design for delivering polished cross cuts

30° Hi-ATB
for slicing through plywood and melamine



AXIAL SHEAR FACE GRIND
that glides through wood and sheet goods with minimal resistance

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