

Simple & Accurate

CROSSCUT SLED

p.46

WOODCRAFT[®]

Projects, Techniques, and Products

magazine

16

Specialty Clamps

Elegant

**WALL
SHELF**

Book Lover's

**LIBRARY
STEPS**

p.40

Power-carving

BOWLS



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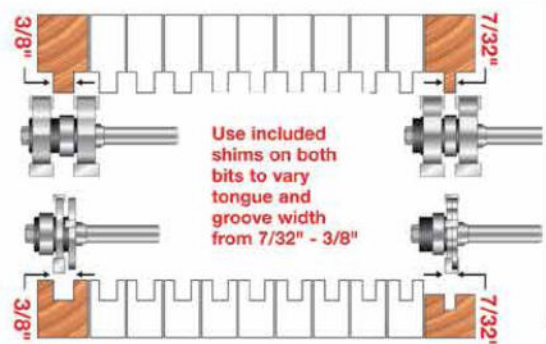
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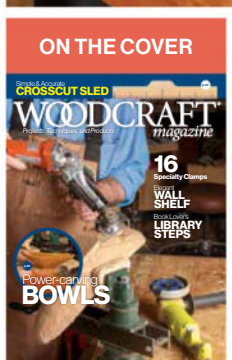
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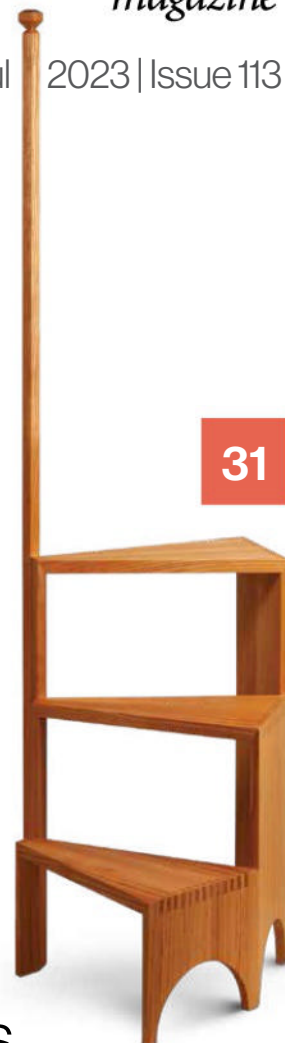
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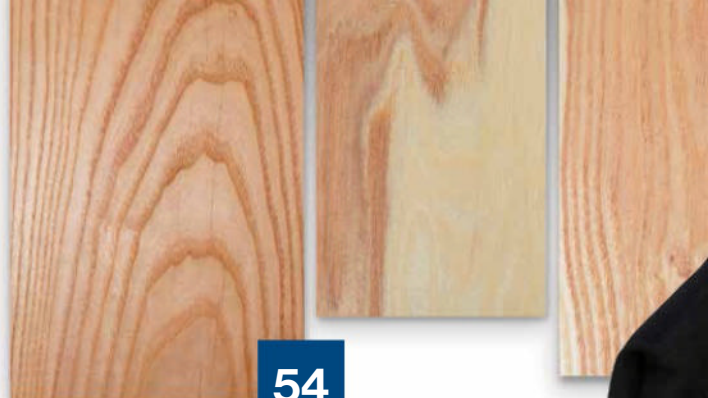
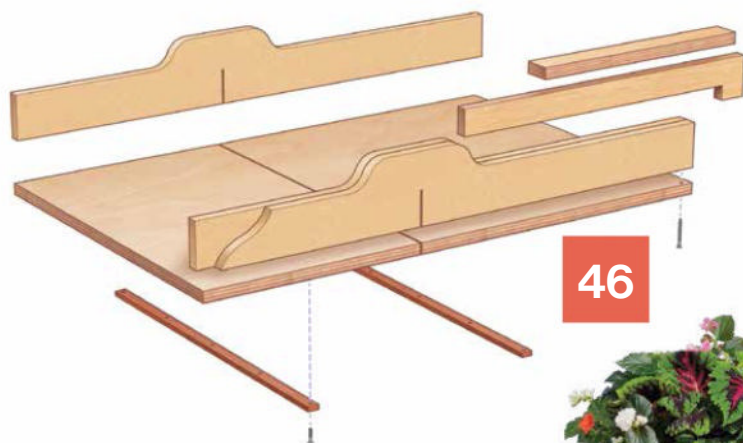
Shaping wood with an angle-grinder.

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Upstage your miter gauge with this shop staple custom fit to your table saw.

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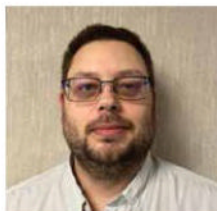
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Contributors



OWAIN HARRIS designs and builds custom furnishings in Gonic, NH. His award-winning work has appeared in *Fine Woodworking* and *New Hampshire Home*. Owain shares his passion for furniture making and design through teaching at The Center for Furniture Craftsmanship and other schools across the country. **Read Owain's Expert Answer on page 64.**



KYLE MEYER began his woodworking journey in 9th grade and continued it through college at the University of Rio Grande. Kyle was hired at Woodcraft in 2010 and has been promoted through the years to Product Manager, bringing new product lines to Woodcraft.

See Kyle's clamp recommendations on page 28.



ASA CHRISTIANA is the former Editor of *Fine Woodworking* magazine. Christiana's latest article for Woodcraft is excerpted from his "Build Stuff with Wood" book series (Taunton Press), a project-by-project introduction to the craft, designed for woodworkers of all levels.

Read Asa's Crosscut Sled article on pages 46.



PAUL ANTHONY, a retired senior editor at *Woodcraft Magazine*, spends much time these days setting up his new shop. Author of *Taunton's Complete Illustrated Guide to Tablesaws*, other books, and many magazine articles, he's not likely to give up the woodworking game any time soon.

Paul was a contributing editor in this issue.

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Chief Editor: Chad McClung

Senior Editor: Ken Burton

Associate Editors: Sarah Marriage,
Derek Richmond

Art Director: Michael Church

Graphic Design Intern: Kelley Powell

Publisher: Beth Coffey

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Safety First! Working wood can be dangerous.

Always make shop safety your first priority by
reading and following the recommendations
of your machine owner's manuals, using
appropriate guards and safety devices,
and maintaining all your tools properly. Use
adequate sight and hearing protection. Please
note that for purposes of illustrative clarity,
guards and other safety devices may be
removed from tools shown in photographs and
illustrations in this publication.

A craft of challenge and reward

Woodworking is hard. I don't mean it's a slog, though sanding can come close. But it's not the most languid hobby, not if you take it seriously. For starters, woodworking is physically demanding. It takes strength and dexterity just to move planks of wood around your shop. Plus, mistakes can be costly, and therefore the work requires persistent attention to detail. And the more you learn, the more you realize there is more to learn. From sharpening to joinery and sanding to finishing, whole worlds of knowledge await your understanding.

But what really makes woodworking such an arduous affair is the fortitude required to do it well. It necessitates the mental wherewithal to anticipate and solve the seemingly countless problems you'll meet during even the simplest projects.

So why do we do it? Why do we take on these challenges even though we may not need to? I'm sure we all could answer with a heartfelt story involving a mentor in one manner or another. But personal accounts of how we got into the craft aside, I think we stick with it for the return on investment: We learn patience and problem-solving skills and gain an aptitude for how things go together. The craft is great for our constitutions; it makes us stronger and wiser. All helpful in and out of the shop. And the more you put in, the more you get back. There's harmony in it. Challenge and reward.

This issue balances the two nicely. On page 31, step up to the exacting techniques required for the unique library steps project. Earn a place to display your tiny treasures by making the wall shelf on page 22. Take power carving (p. 40) for a spin and glimpse its array of techniques and tools as you create a custom bowl. See the specialty clamps article on p. 28 to help you solve how to hold together or to hold down your projects of unusual shapes and sizes. Finally, take on the small challenge of the humble crosscut sled (p. 46), and enjoy the numerous rewards it provides while aiding you in future work.

But before accepting the challenge of your next project, take a moment to pat yourself on the back. Acknowledge your accomplishments. Our avocation awards us so much, but we work hard for it. Whether or not you agree with woodworking's level of difficulty, it's clear we all gain strong hands and sharp minds for our efforts. Let's put those tools to good use. ■



Chad McClung, Chief Editor

Chad_McClung@woodcraftmagazine.com



Share your ideas.

We love hearing from readers! And there are all kinds of reasons to get in touch with the crew at Woodcraft Magazine. Check out the details below.

General information:

4420 Emerson Ave., Suite A
P.O. Box 7020
Parkersburg, WV 26102
800-542-9125

Submit an article idea:

Do you have a story idea? We'd love to hear about it. To find out how to submit a project or technique article, email us at editor@woodcraftmagazine.com and put "Submission" in the subject line.

Share a slick tip to win cash or a prize.

Here's your chance to help someone become a better woodworker and get rewarded for the effort. Published submissions become the property of Woodcraft Magazine.

Email us at tips@woodcraftmagazine.com and put "Tips & Tricks" in the subject line or visit woodcraftmagazine.com and click on Contact.

Important: Please include your phone number, as an editor may need to call you if your trick is considered for publication.

Have a tough woodworking question?

We'll do our best to find the expert and provide the answer. Email us at editor@woodcraftmagazine.com and put "Expert Answers" in the subject line.

News & Views:

This catch-all column is where we do our best to correct mistakes, publish feedback from readers, and share other noteworthy news items. It's easy to participate in this discussion. Just email us at editor@woodcraftmagazine.com and put "N&V" in the subject line.

Share photos of your projects:

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News & Views

Hot take

Sophie Glenn's Expert Answer on custom patinas (Feb/Mar 2023) was very informative. But it left me with one question: for a hot application, do you need to reheat the hardware before additional coats?

—Bill Steinbach, Front Royal, VA

Associate Editor Sarah Marriage replies:

The metal needs to be hot for the application process, regardless of whether you're applying a first or subsequent coat. After the first coat, your hardware may have retained enough heat to accommodate a second coat. But don't burn yourself checking the temp. When in doubt, reheat.



Tambour rollback

The dimension of the upper locking slat was inadvertently omitted from the diagram of the Modern Sideboard (Apr/May 2023). The piece should measure $\frac{3}{16} \times 1\frac{5}{16} \times 5\frac{7}{8}$ ". Additionally, the leg dimension should be $1\frac{1}{2}$ "-dia., not the $1\frac{3}{4}$ "; it's noted correctly in the text but incorrectly in the diagram. A cut list for the project is available in the online EXTRAS section of woodcraftmagazine.com.



Correct dimensions
LEG - $1\frac{1}{2} \times 6\frac{1}{8}$ "

Pen pal

I subscribed hoping to see pen turning content and some resin projects. These products take up lots of space in Woodcraft stores, but no pages in the magazine.

—Craig Daniels, via email

Woodcraft Magazine staff replies:

We love hearing what interests our readers, and what kind of projects they want to see in our pages. We'll keep those suggestions in mind as we plan future issues. After all, Woodcraft Magazine is your magazine.

Robert Sorby
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Both holders can be adjusted using the collar on the arm to allow for steep and shallow sharpening levels. Each kit contains a back plate, a raised wear plate, a universal arm and a knife holder. Knife holders are also available separately.

The kit comes with full instructions and an instructional video can be seen on Robert Sorby's YouTube channel.

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Old school made new school

Master carpenter and renowned handtool enthusiast Roy Underhill will close his Pittsboro, NC-based Woodwright's School at the end of the 2023 season to focus on construction of a new teaching facility near his home in Saxaphaw, NC. Underhill says it will take at least a year to construct his new school, but he will continue offering online courses in the meantime. Underhill, the former host of The Woodwright's Shop which aired on PBS for nearly 40 years, has also authored a number of books on traditional woodworking. He's presently working on another book and in discussions with PBS affiliates about a possible new TV series.



Roy Underhill

Safety first

Many of the photos and even ads you publish show tools being used without important safety features like blade guards, riving knives, and even proper dust collection. I'm sure you agree that safety is the top priority in woodworking, so why aren't these tool features being used correctly?

—Ryan Grieg, via email

Woodcraft Magazine staff replies:

Woodworking can be dangerous. For clarity of our photographs, we occasionally remove guards and other safety devices from tools. Always use appropriate guards and safety devices as recommended by your machine's owner's manual. Maintain all your tools properly, and use adequate sight and hearing protection.

Collecting photos

To celebrate the company's 30th anniversary, Oneida Air Systems is giving away more than \$300 in prizes every month for the rest of the year. Each month, the company is calling for photos featuring different categories of Oneida Air Systems products. For May, the contest category is the company's Super Dust Deputy. For full contest rules and to enter, visit oneida-air.com.



NEW

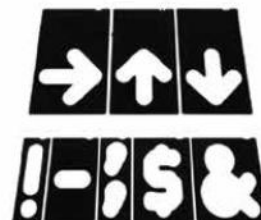
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Reader Showcase

GREG LANGENHORST ITASCA, IL

Nice pair of plants. Inspired by the Coopered Café Table (April/May 2022), Langenhorst designed and built these white oak planters to house particular plastic pots. He dadoed each pot's 20 staves before tapering and beveling them. After glue-up, one pot received a dark walnut stain while the other got a shou sugi ban torching. Then he wrapped each dado slot with solid copper wire, left unfinished to oxidize with time. The pots measure 12 $\frac{3}{4}$ " high, with a top circumference of about 17" tapering to a bottom circumference just under 10", where a crossbar allows for drainage and supports the inner pot.



CHARLES BOWMAN LEESBURG, FL

A long time ago in a workshop far, far away. At the request of a Star Wars fan, Bowman pieced together this intarsia Tusken Raider. He chose wenge for the mask, two shades of mahogany for the headdress, and thermally modified poplar for the robes. Bowman made all the other parts from painted poplar, then assembled them on a yellowheart background. The piece measures 21 $\frac{1}{2}$ × 16 $\frac{1}{2}$ ". We give this Tatooine native two suns up!



JASON CROOKS TEMPLE, TX

Shark-cuterie board. Crooks crafted this one-of-a-kind cutting board from hard maple. After gluing up a 1 × 12 × 16" panel, he turned to his scroll saw to cut an intricate shark and wave design in one corner. In the opposite corner, Crooks sawed a shark bite, then finished the entire board with butcher block oil. It looks fin-tastic!

JOHN ENGER BEMIDJI, MN

Building blocks. Inspired by European butcher blocks, some of which have been used by generations of meatcutters, Enger designed his 6"-thick, endgrain chopping block to last. He used locally-sawn hard maple for the top, and ash for the base. The entire 24 × 25 × 36" tall piece is assembled without metal hardware, instead relying on wedged, through-tenon joints for strength and stability. ■



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MOBILE DUST COLLECTION
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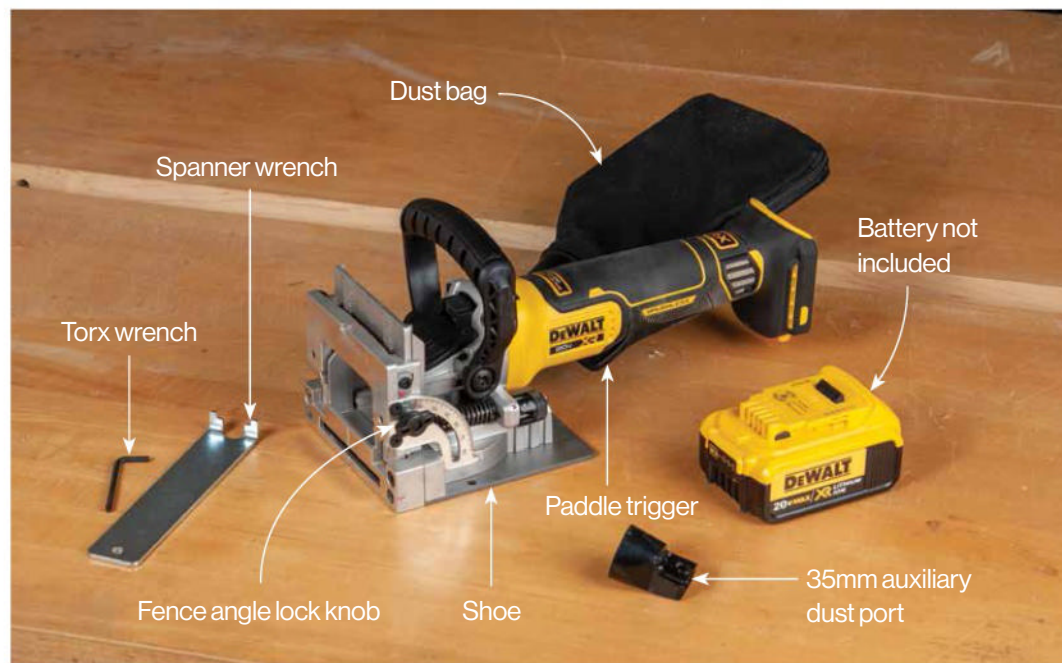


ERGONOMIC PALM GRIP DESIGN
Allows grip close to workpiece for maximum control.

Tool Reviews

Battery-backed biscuiting

DeWalt 20V Max XR Biscuit Joiner



FEATURES

INNOVATION

PRICE: \$279.00 (tool only), dewalt.com

OVERVIEW:

- Brushless motor
- Cuts #0, 10, 20 biscuits
- Accepts DeWalt 20V MAX batteries
- DeWalt Airlock compatible dust port
- $\frac{1}{8} \times 4$ " blade

For many years I had been wary of any battery-operated power tools beyond your standard hand drills and drivers. One particular circular saw that would grind to a halt mid-board comes to mind. So when I first tried out DeWalt's line of 20V Max XR tools a few years ago, I was dubious. But the angle grinder I tested out worked like a dream, rarely bogged down, and the charge typically lasted longer than I needed it to. I was a convert. When I heard there was a new DeWalt 20V Max XR biscuit joiner on the market, I knew I wanted to give it a try.

If you're familiar with the corded version of this tool, the features are similar. In fact, it works just as well as the corded version, cutting accurately and aligning easily. Its depth dial lets you adjust the plunge action to cut the standard #0, 10, and 20 biscuit mortises, or switch the dial to "M" for a maximum plunge of $\frac{25}{32}$ ". The fence adjustments are also tool-free and straightforward. Loosen the height adjustment lock knob before raising or lowering the fence with the adjustment dial, then relock. There is a second lock knob for adjusting the angle of the fence. I found the angle adjustment to be a little bit loose and clunky at first, but leaving the adjustment knob a little bit tight, but not locked, allowed me to get a more controlled, precise action.

The included dust bag worked pretty well to catch the dust from the joiner in use, but the tool really shines when it's hooked up to a dust extractor. It comes with a standard 35mm dust port, or



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festoolusa.com, from \$999.00



you can swap in the DeWalt Airlock connector (also included) that works with their dust extractor systems. You might be asking, “What’s the point of a cordless tool if you’re just going to attach a giant hose to it?” And the answer to this is, “No tangles!” I was surprised at how freeing it felt to only need to wrangle the vacuum hose. That said, the connection between the dust collection adapters and the tool is a little flimsy, but I only had to reconnect the adapter once or twice during my testing.

Changing the blade is also straightforward, if a little cumbersome. Just remove four torx bolts on the bottom of the shoe and rotate it back to access the blade. The first time I tried this, the shoe was pretty well stuck on one of its roll pins. A little elbow grease knocked it loose, and it opened and closed pretty easily after that. With the shoe open, an included spanner wrench in combination with a spindle lock button loosens the blade nut to replace the blade.

The basic tool does not come with a battery, but it works with all DeWalt 20V Max batteries, including the flex volt series. In my testing of the tool, I never ran out of battery power, so I can’t say how many hours a charge will last, but I can say that I built the Library Steps (p. 31) without making a dent in the battery meter. If you’re looking for an accurate, reliable biscuit joiner with the freedom of cordless technology, this is a sturdy, powerful tool that will do the trick. ■

—Tester, Sarah Marriage

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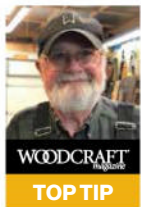
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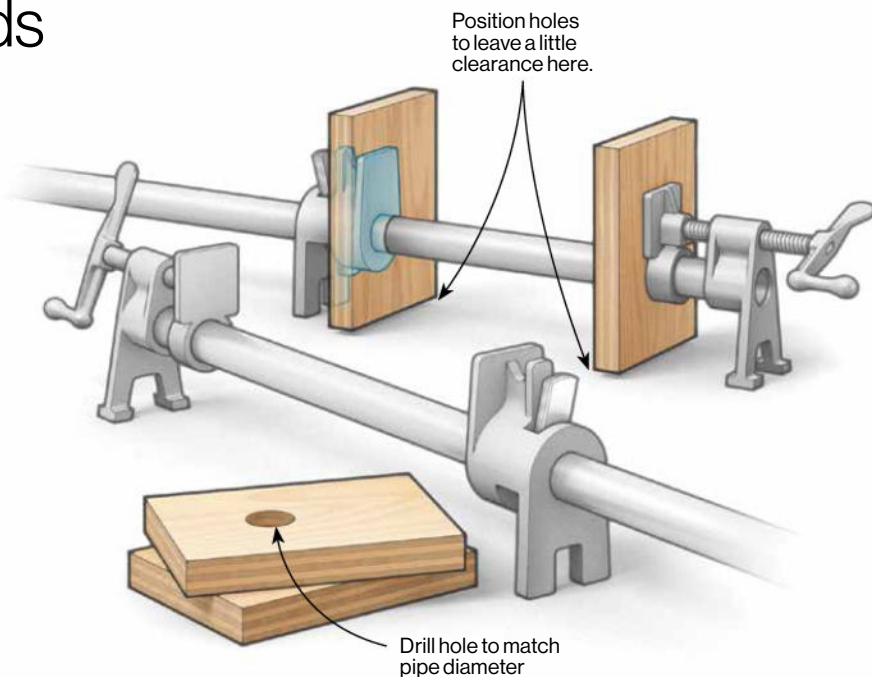
“Integral” clamp pads



TOP TIP

After struggling with trying to keep loose pads in place when using pipe clamps, I hit upon the idea of attaching the pads to the clamps. To accomplish this, I simply drill a hole for the pipe through a scrap of plywood. I typically use $\frac{1}{2}$ " or $\frac{3}{4}$ " ply, cutting the pieces an inch or two wider than the clamp's jaws to better distribute the clamping pressure. I position the holes so the bottom edge of the pad is just barely above the bench surface when the clamp is standing on its feet. And I can customize the height of the pad depending on what I'm clamping.

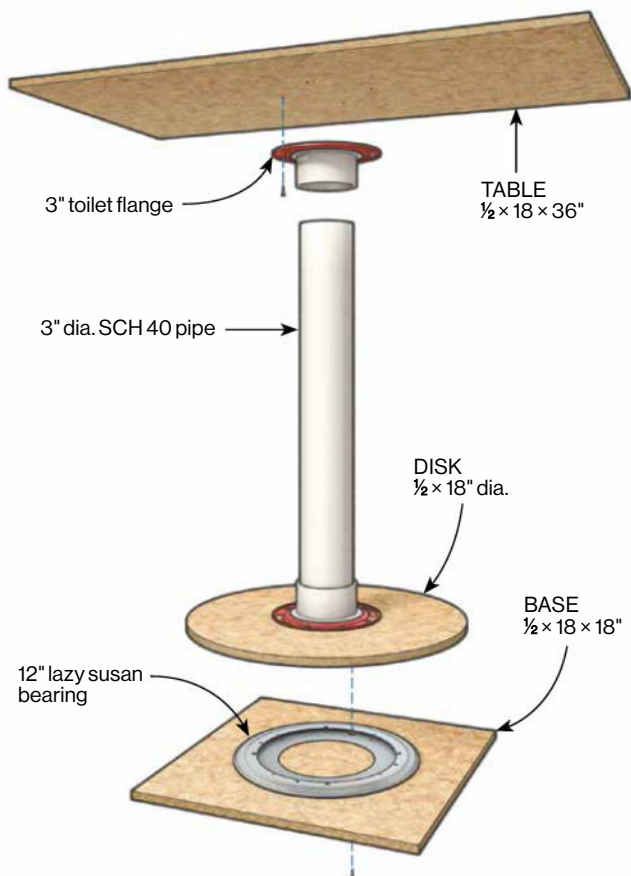
—Perry Werner,
Fergus Falls, Minnesota



Shop-made spray stand

When I first got my sprayer, I used to improvise, propping up pieces to be finished on all sorts of boxes, horses, and such. Recently I decided to bite the bullet and build a proper turntable. I'm not sure why I waited so long; it has made spraying much less onerous. My rig is based on a 12" lazy susan bearing sandwiched between two scraps of OSB. I made the bottom one square for stability, while rounding the top one to keep the corners from catching the hose as I spin the table. The overhang on this disk serves two purposes: it protects the bearing from overspray, and it allows me to rotate the table with my foot leaving my hands free to manipulate the gun and wrangle the hose. The table surface is another piece of OSB. It is connected to the base via two matching 3" PVC toilet flanges and a length of 3" PVC drainpipe. The pipe is just friction fit into the flanges so the height of the turntable can be easily adjusted by keeping a few different length pipes on hand.

—Chris Wand,
Lafayette, Colorado



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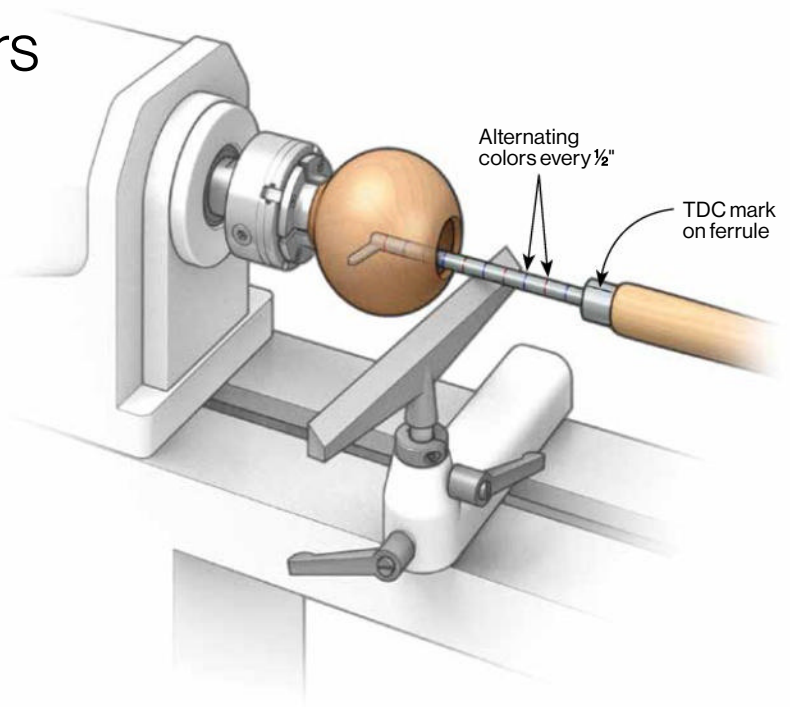
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Tips & Tricks

X-ray vision for turners

One of the challenges of turning hollow pieces is that you can't see where the tip of the tool is as it is concealed inside the workpiece. To help me keep track of this, I mark my hollowing tools in two places with a Sharpie. First, I put a line at the top dead center (TDC) of the ferrule that helps me keep the tip from rotating out of the proper cutting position. Second, I put depth marks on the tool's shank that let me know how deep I am in the piece. These are simply lines of alternating colors spaced every half inch. Before I start to hollow, I hold the shank beside the piece to give me an idea of how deep I want to cut. Then I monitor the depth by looking at the lines as I work. ■

—Jim Kelly,
Trappe, Pennsylvania



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Simple WALL SHELF

*Shaker storage with
modern style*

By Chad McClung



We humans have a knack for collecting knickknacks and bric-a-brac as we travel through life. Some of these curios need to be protected behind glass or closed in a box for only occasional viewing, while others beg for your eyes full-time. Many of these items may be smaller and more delicate than others and therefore require an equally delicate display to show them off. That's where this small wall shelf comes in.

During a recent foyer face-lift, my wife and I wanted such a shelf. To make it, I drew inspiration from similar Shaker shelves but added contemporary elements to better fit our aesthetic. As for the materials, I chose ash for its light tone and strength.

The piece is rather small, only 15" wide and two feet high, and the deepest shelf is 6" deep. An open top and bottom give it an airy feel, and tapered sides reduce bulk. The sides are further shaped with scallops and bevels that add visual interest without overpowering the items it holds. Made from $\frac{5}{8}$ "- and $\frac{1}{2}$ "-thick stock, the piece is lightweight, but the strong ash wood and sturdy sliding dovetail joinery keep your keepsakes safe.

The finished shelf will hold your tiny treasures and building it will hold a few fun techniques. You'll gang-cut the sides and learn a unique method for cutting sliding dovetails. To mount the piece, you'll route keyhole slots using a simple jig you can use again on any project in need of hanging. Let's get started.

Dainty but durable

Subtle and graceful like the mementos it will hold, the shelf has an open design and is made of light-toned ash. Tall, slender sides start with a bevel and swoop into large radii scooped from the top. They then lightly draw the eye down, tapering from narrow to wide before another scoop and bevel settles the bottom against the wall. Crossgrain dovetail slots sawn and routed into the inside faces of the sides hold shelves of graduating widths via strong dovetailed tenons.



* Handplane fronts of shelves flush with side profile after assembly.

Order of Work

- ✓ Dado and shape sides
- ✓ Tenon shelves
- ✓ Assemble and finish
- ✓ Rout keyholes and hang

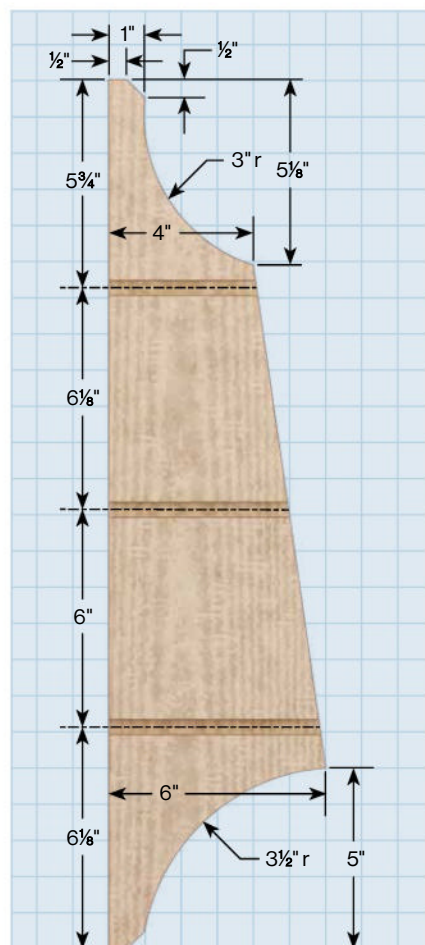
Saw and rout dados in the sides

Mill your stock to the exact thickness and length for all parts but leave everything a little wide and mill an extra shelf for joinery setup. Layout the dado locations on one side piece. Set up your table saw with a dado stack to make a $\frac{1}{4}$ " wide, $\frac{3}{16}$ " deep cut. Make and attach a sacrificial fence to your miter gauge. Set a stop using the layout lines

on one side piece, and saw the same dado in both sides. Repeat the process and continue until all six slots are sawn.

Chuck a 14° dovetail bit in your router table and set the height to $\frac{5}{16}$ ". Use the sawn dados to align the piece with the bit, and rout the crossgrain dovetails as shown. Leave the bit in place for routing the shelves' tenons.

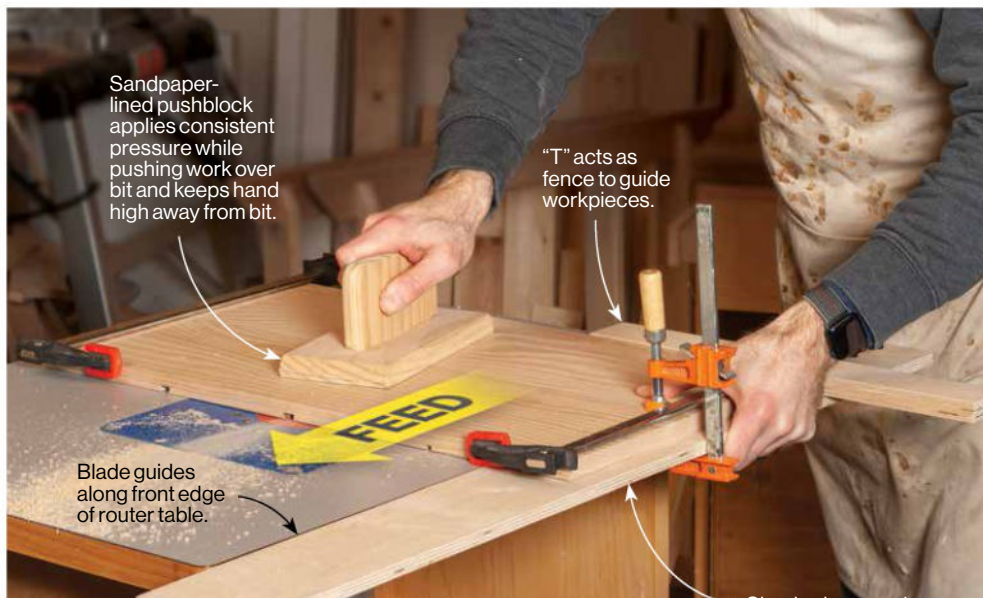
SIDE PATTERN



Layout lines. After marking the dado location (see Side Pattern, left) on the face of one side, transfer the lines to both edges.



Saw the dados. With the rear edge of the side piece against the miter gauge, saw the dado in one pass and then cut the same dado in the other side piece, but with the front edge against the miter gauge fence.



Sandpaper-lined pushblock applies consistent pressure while pushing work over bit and keeps hand high away from bit.

"T" acts as fence to guide workpieces.

Blade guides along front edge of router table.

Simple shop-made T-square

Dovetail dado. Clamp the two side pieces together back edge to back edge and to a shop-made T-square that will guide the sides along the front edge of the table.

onlineEXTRAS

Visit our website for a cut list and a full-size pattern of the side profile. While you're at it, check out a tip for routing keyhole slots and a free article on featherboards.



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woodcraft.com/online-extras

Taper and shape the sides together

Double-face tape the inside faces of the sides to each other, aligning their rear edges. Download the side pattern or use the drawing (left) to draw the shape on one face. Or make a template for future shelves and transfer the shape to the outside face of the assembly.

Set the assembly on a slightly larger piece of $\frac{3}{4}$ " plywood,

and align the taper with the table saw blade. Affix a fence against the assembly's rear edge and attach toggle clamps.

Use this simple tapering jig to saw the taper as shown. Save the offcuts for later. Bandsaw and sand the assembly to shape. When done shaping, pull the sides apart and clean up any tape residue using denatured alcohol.



Taper the sides. Secure the taped-together side pieces to a simple sled, and push the jig against the rip fence and through the blade to saw the taper.



Bandsaw to shape. Using a blade stout enough to cut through the assembly but small enough to cut out the scoops in the sides, (I used $\frac{1}{2}$ ", 6 TPI) cut just outside your traced lines.



Sand to the line. With the sides still together, use a sanding drum (see Buyer's Guide, p. 60) at the drill press to finish shaping.

Rout dovetailed tenons on the shelves

Without changing the bit's height, cut a dovetail-shaped slot through a tall auxiliary fence. Then attach the auxiliary fence to the router table's fence and position it so the bit is buried approximately halfway into the slot. Adjust the fence position, making test cuts on the end of the extra shelf to fine tune the fit. The tall fence will help steady the shelves as you run them on end past the bit. Each dovetail tenon requires two cuts, rotating the piece in between. Use a featherboard to apply consistent pressure as you push the pieces through the cuts with a backerboard to add stability and prevent tearout. Rout each end of all three shelves as shown.



Polished for maximum sheen.

Keep sides nearby for testing fit.

Shop-made featherboard (see online EXTRAS) keeps piece against bit.

Backerboard prevents tearout.

Tall auxiliary fence supports vertical workpiece.



Tap in the shelves

Sand all the parts. Stand one side up on its back edge, gripping the ends with handscrews to balance it. Tap in the shelves as shown. Then tap the second side into place, protecting its front edge with a cutoff from tapering. Make sure the back edges are flush and the assembly is square before clamping from side to side to fully seat the joints. Clean up any squeezeout. Once the glue dries, bevel the fronts of the shelves with a hand plane to make them flush with the sides.



Tap in the shelves. After spreading glue in the dadoes and on the shelves' tenons, tap in the shelves one at a time using a mallet. A caul protects the piece from marring.



Flush the shelves. Handplane the shelves' front edge flush with the sides. Work from the outside in to avoid tearing out this sides' face grain.



Routing keyhole slots

The most effective way to hang a cabinet such as this is with keyhole hanger slots. To make the slots, you'll need a plunge router, a special keyhole bit (see Buyer's Guide, p. 60), and a shop-made jig like the one shown here and in onlineEXTRAS. It's easy to make and can be used on a wide number of projects for future keyhole slots. Mark the hole locations on the rear edges of the sides and align the jig with the marks. Clamp the jig to the shelf secured to your bench and rout the slots in turn. ■

Specialty CLAMPS

16 ways to put the squeeze on unusual projects

By Kyle Meyer

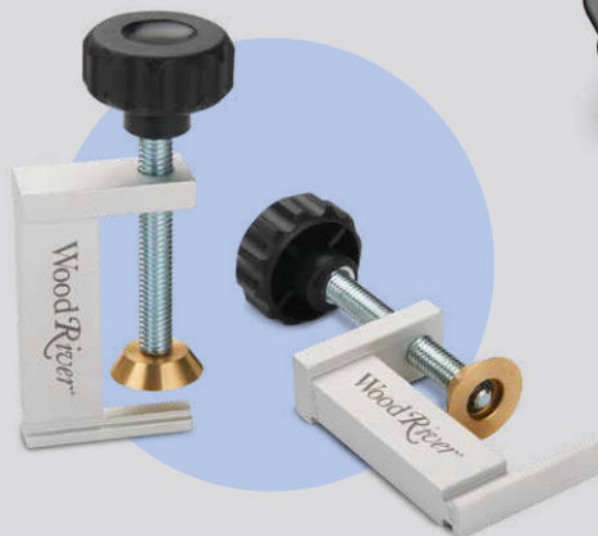
Whoever first said you can never have too many clamps may have just been one bar clamp short when gluing up a case for a cabinet job. It seems you could always use another. But when I think about that phrase, specific-use clamps come to mind. Sure, we have a lot of F-style clamps, pipe clamps, parallel jaw clamps, quick grips, and maybe even some spring clamps and handscrews. But traditional clamps don't always fit the bill when you need something more job-specific to bring your unique projects together. With that in mind, I've corralled a handful of must-have specialty clamps to add to your collection.



Pony Canvas Band Clamp

This clamp is designed for large cabinets and features a wide canvas band with a cast-iron self-locking mechanism and handle. Pull it from both sides before cranking the handle to tighten.

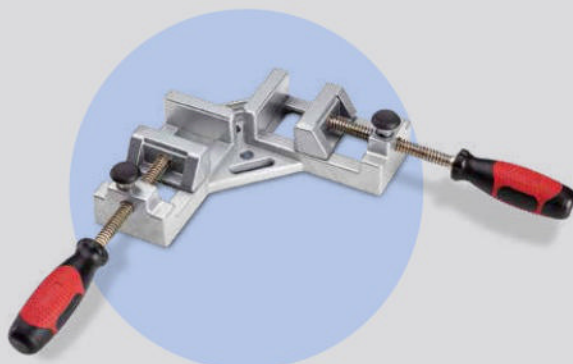
\$39.98 | ponyjorgensen.com, #6210



WoodRiver 1/4" T-Track Hold Down Clamps

Clamps aren't only for glue-ups: this handy hold-down is perfect for jigs. Its aluminum body fits standard T-tracks, and its steel screw securely holds work up to 2" thick.

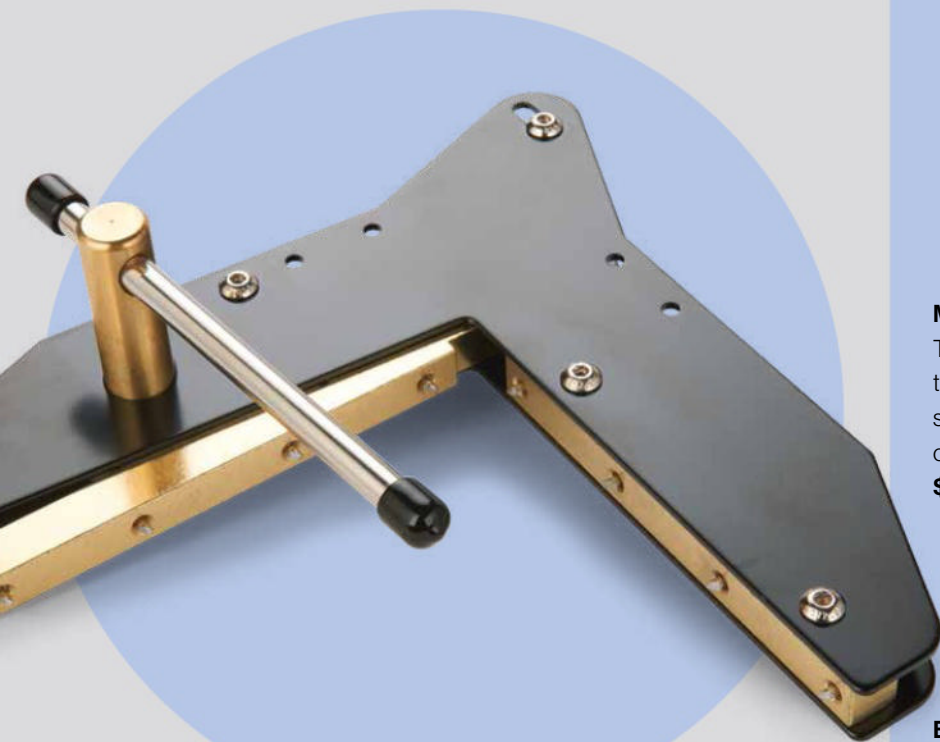
\$36.99 | #163683



Bora 90° Quick Release Corner Clamp

The die-cast aluminum jaws are great for gluing corner joints or holding workpieces for drilling. Bolt the unit to a surface for increased stability. The handles pivot 90° for added torque when tightening.

\$44.99 | #157914



WoodRiver Miter Max Corner Clamp

This clever clamp simplifies inevitable home improvement projects such as installing door and window casings. A half turn of the lever tightens brass jaws with steel teeth to draw miter joints tight.

\$81.99 | #157448



WoodRiver 3" Edgeband Spring Clamp

Combining the mobility of spring clamps, and the flexibility of rubber bands, these are perfect for edgebanding plywood shelves. But they're also handy for odd jobs like wrangling extension cords.

\$7.99 | #182796



Bessey Face Frame Cabinetry Clamp

Designed to hold faceframes of side-by-side cabinets together and flush during installations. It fits 1½" - to 2"-wide stiles up to 1¼" thick. Plus there's a pilot-hole drilling guide on one end.

\$29.99 | #162956

Out-of-sight clamps



Microjig MATCHFIT Dovetail Fixture and Jig Clamps

These work-holding wonders are virtual virtuosos in the shop. The dovetail-shaped leg fits into a dovetail slot cut into any shop-made table, jig, fence, clamp, or hold-down you can dream up. Two in a pack.

\$45.00 | #163976



EHOMA 7½" T-Track Clamp w/Screw Handle

Any standard ¼" T-track makes this specialized clamp simple and speedy to use. Clamp your track saw tracks in place or secure work at fixtures such as your drill press table.

\$19.99 | #183508



EHOMA 7½" T-Track Clamp w/Ratcheting Handle

Just as versatile as the clamp above but with a nifty handle. Its ratcheting operation works well as a quick hold-down for many different tasks, making it a cinch to pinch parts or pieces.

\$33.99 | #183509



WoodRiver Quick Bar T-Track Clamp—6"

Another small T-track clamp but with the same action design as quick-grip bar clamps. Like others in this group, the non-marring clamp pad secures your project without harming its surface.

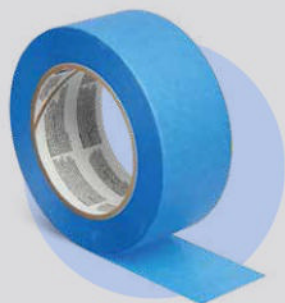
\$19.99 | #183864



WoodRiver 6" Quick Vise

Attach this portable vise to your bench using T-track clamps (p. 29) for a simple set-up. Non-marring jaws with "V" notches hold various shapes tightly and release using the quick-action lever.

\$39.99 | #182067



ScotchBlue Original Painter's Tape

Designed for something else entirely, this bright shop helper is also great for connecting box miters or attaching edging. In fact, its myriad uses are limited only by your imagination.

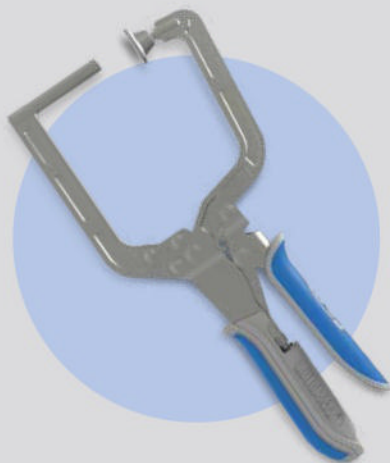
\$9.99 | acehardware.com, #1010354



WoodRiver Rubber Band Clamp

A champion for challenging glue-ups, these thick, wide bands contort to just about any shape to hold your odd-shaped projects together. The package includes 7", 9", 12", and 14" lengths.

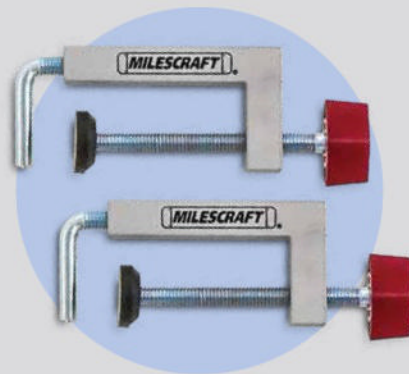
\$11.99 | #127950



Automaxx Right Angle Clamp

Pocket hole joinery makes cabinet construction easy, and this clamp adds speed and accuracy. It automatically fits to case parts and holds them perfectly square, freeing your hands to drive the screws.

\$44.99 | #162023



Milescraft FenceClamps

Best friend to any auxiliary fence. The arm fits into a $\frac{3}{8}$ " hole, eliminating feed interference at the table saw or router table. They come in pairs but use one for stops or step-off blocks.

\$13.99 | #169340



WoodRiver 4-Way Pressure Clamping System

Keeping edge-glued panels such as cutting boards and tabletops flat and flush is fast and easy with this clamping system. Screw the clamps to any length of 2 x 2 to apply four-way pressure on stock up to 6" thick.

\$44.99 | #125392

Library STEPS

Mitered box joints give rise to an updated classic

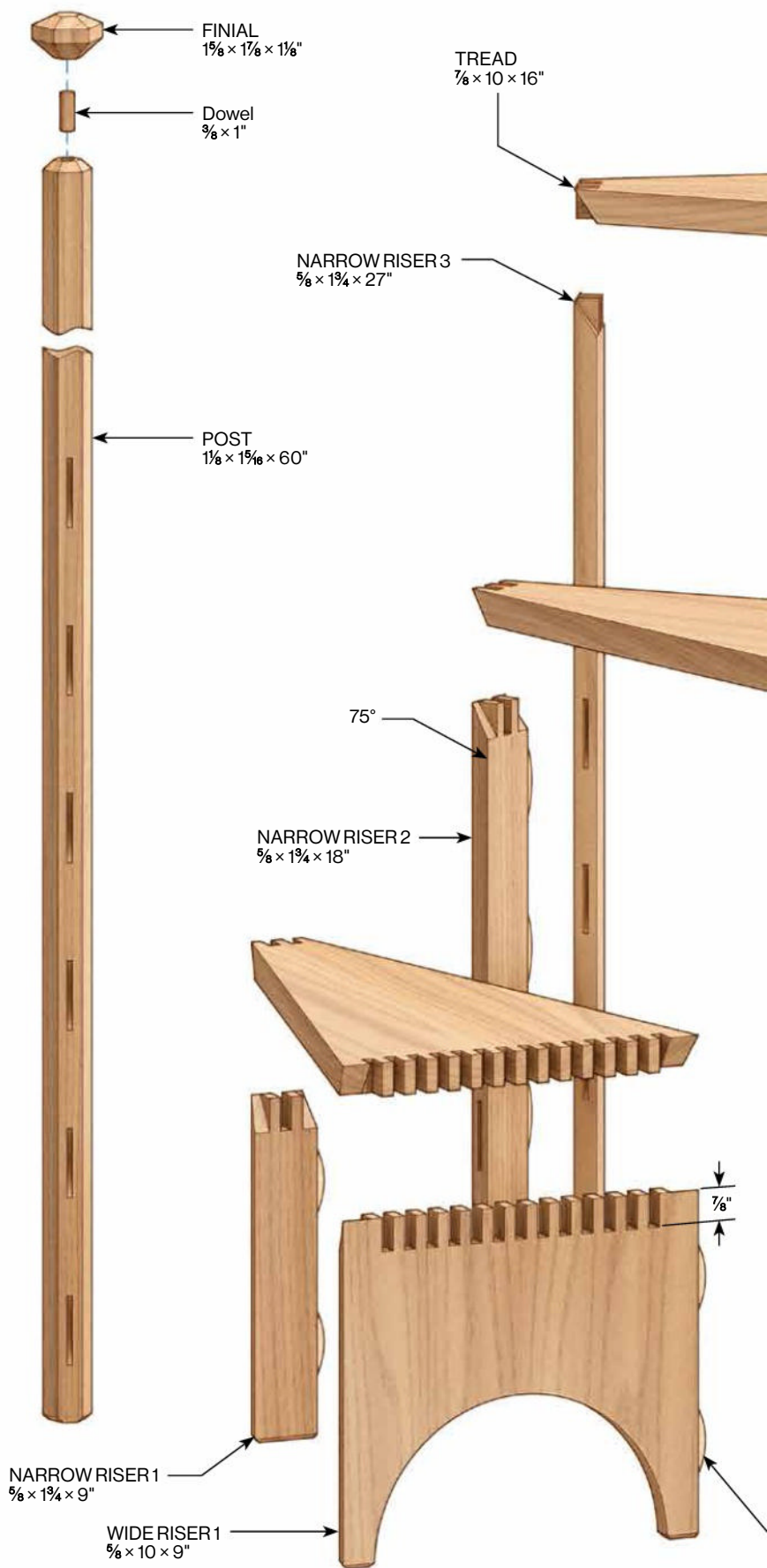
By Sarah Marriage

Ever since I was a young girl, spiral stairs have caught my fancy, and from the first time I saw a small flight of traditional library steps, I knew I wanted to build a set one day. Fast forward a few decades, and I offer you my take on this classic three-step spiral stair. Featuring coopered risers box-joined to trapezoidal treads with mitered corners, these three steps pack in a wide range of both machine and hand tool techniques. Careful, precise work will bring all your joints home at final glue up, resulting in a dazzling spiral that's practical, too: they're easy to move around as needed for a lift, and they stow beautifully in any corner.



Box joints with a mitered corner

Two sets of coopered risers support three trapezoidal treads that step up while rotating counter-clockwise 30° at a time. The treads are secured to the risers via box joints with overwide mitered outer fingers. (Take your time to center your box joints carefully and you'll avoid some headaches.) The coopered risers are also biscuited for added strength and aid in alignment during glue-up. To echo the coopered faces, a hexagonal post serves as a central handrail leading up to a faceted finial, while half round cutouts at the base of the risers lighten things up and add a few contrasting curves. The post is edge-joined and biscuited onto the tallest narrow riser, and the finial is secured with a dowel. I used Kentucky Coffeetree (read all about this species in Woodsense p. 54), which resulted in a very strong and tough set of steps that are still fairly lightweight.

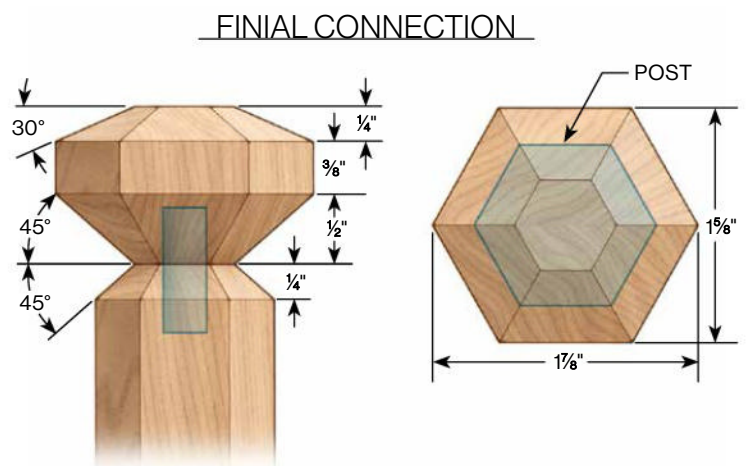
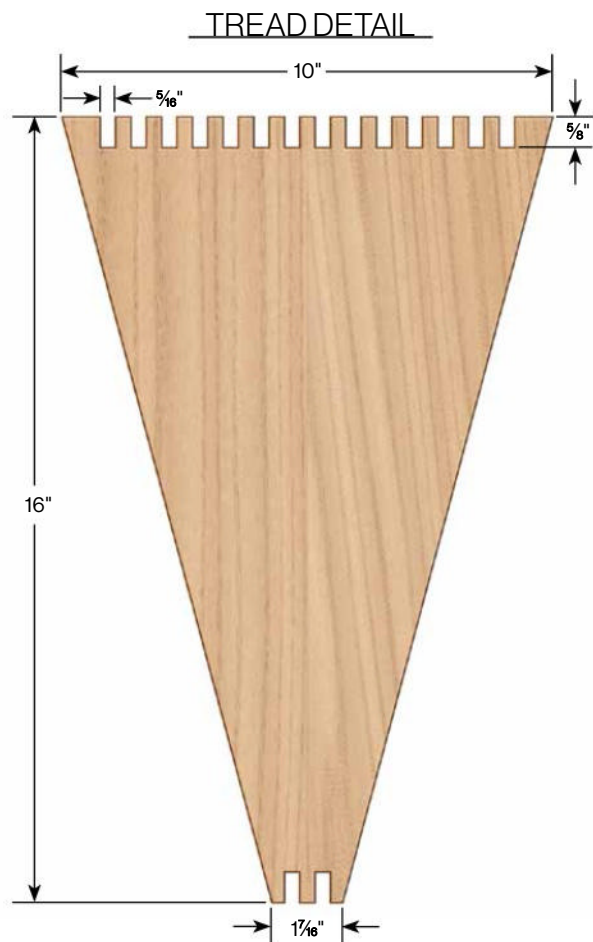


onlineEXTRAS

Visit our website for a cut list and Essential Box Joint Jig plans. Plus you'll find some tips on biscuit joining basics.



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Order of Work

- ✓ Make the risers and treads
- ✓ Bevel the post
- ✓ Glue up the risers and post
- ✓ Install the treads
- ✓ Attach the finial
- ✓ Sand and finish

Make the risers and treads

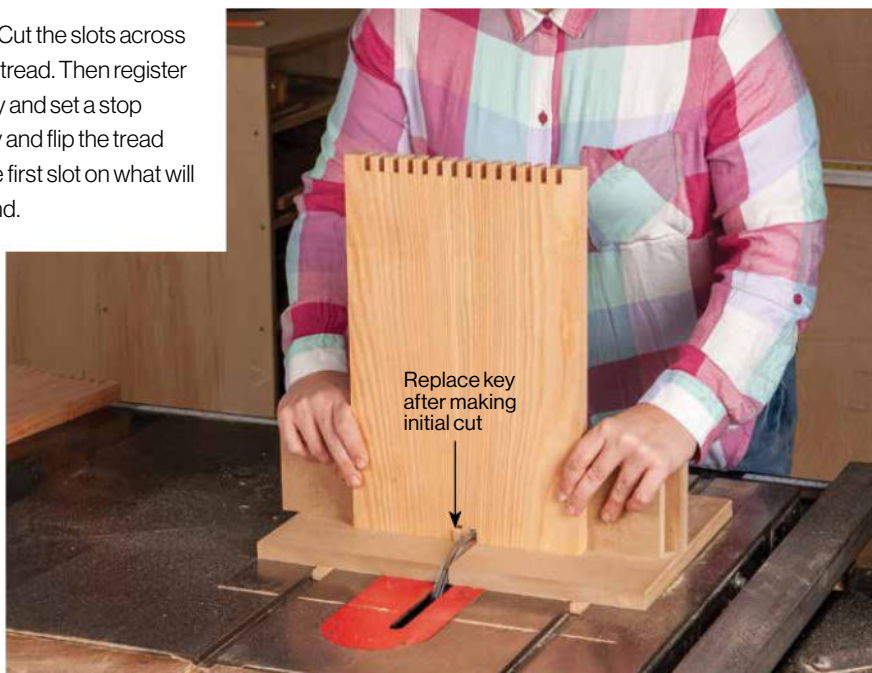
Mill stock for the risers and treads, making one of each about 5" overlong for setup stock. Leave the treads rectangular and about $\frac{1}{8}$ " overwide. Rip a 15° bevel along the long edges of the risers before cutting everything to length and saving the 5" cutoffs. Start the joinery on the risers. Set up a $\frac{5}{16}$ " box joint sled at the table saw (see OnlineExtras for plans) and adjust the blade height to match the tread thickness. Position a stop block for the first box joint cut on the wide risers, such that the fingers are centered across the riser's width. My stop was $1\frac{3}{32}$ " from the blade, but use the 5" offcut from *your* risers to dial in this location. Saw the first slot on each riser before removing the stop block and inserting the box joint key to complete the rest of the cuts. Repeat the process to center the cuts on the narrow risers. Adjust the blade height to match the thickness of the risers and cut the mating slots across the wide ends of the treads, again using the offcut piece for setup and positioning a stop to locate the first cuts. Flip the treads end for end as shown for the cuts across the narrow end. Lay out the taper on the treads and bandsaw close to the line before edge jointing, leaving the treads tapered but still slightly overwide.



Leave a wide edge. Position a stop block to locate the first cut on each wide riser. Install the box joint key and finish the cuts, stopping short of the other edge by the same margin.



Mirror the mortises. Cut the slots across the wide edge of each tread. Then register the sixth slot on the key and set a stop block. Remove the key and flip the tread end-for-end to saw the first slot on what will become the narrow end.



Miter the box joints

Beveled cuts at the corners combine the harmonious look of a miter with the brute strength of a box joint. Start by laying out lines on the inside face and top edge of the risers, offset $\frac{5}{16}$ " from the outermost mortises. With the inside face of one riser toward you, saw along the line until your blade reaches the upper outer edge and the lower inner edge of the box joint as shown. On the side of the riser, mark a line from the outer upper corner to the lower inner corner of the joint and saw along this line until you intersect with your first cut. Repeat for each top corner of each riser. On the outside edge of each tread, mark lines from each outer upper corner of the tread to each corresponding lower inner corner of the box joint. Saw along your lines, creating the tread miters. Pare the miters as needed to fit the joints. Once the joints are fully seated, handplane the overwide sides of the treads until they are flush with the risers.

1 Saw the half-faced tenon. Mitering the risers requires two cuts: The first is vertical, offset one finger's width from the last slot, creating a final finger with a half-face that will intersect the mitered corner.

2 Cut the miters. The miter cuts for both the risers and treads run from the outside to the inside corner. On the risers, saw until the angled cut intersects the first vertical cut you made. On the treads, cut through to the first slot.

3 Pare to fit. Trim the three handsawn faces of each corner as needed to fit the joint.



Make the post and finial stock

Mill stock for the post plus an extra 15" long piece for setup to size. Also mill stock for the finial to the proper thickness and width, but at least 12" long for safe handling. Draw a centerline down one of the narrower faces of each piece and tilt the tablesaw blade to 30°. With the wider face of the finial stock flat on the saw's table and the marked face toward the blade, adjust the fence until the blade cuts a bevel that just kisses the centerline. Bevel all four corners of the finial stock, always keeping the wider faces flat on the table. Repeat with the post and the extra setup piece. Mark the center of one end of the post and finial stock and drill the dowel mortises. Finally, chamfer the drilled end of the post as shown in the Finial Detail on p. 33.

Lay out the biscuit locations on the inside faces of the wide risers, the outside faces of the narrow risers, and on one face of the post spacing them approximately as shown on p. 33. Set the biscuit joiner's fence angle to 75° and cut the mortises for size 0 biscuits in the risers. Adjust the fence to 60° and cut a sample mortise in your post setup stock. Insert a biscuit into the sample mortise and fit it to one of the risers. The face of the setup stock and the beveled edge of the riser should be about the same width. Adjust the biscuit joiner's fence height until the resulting biscuit joint aligns these parts, then cut the mortises in the post.



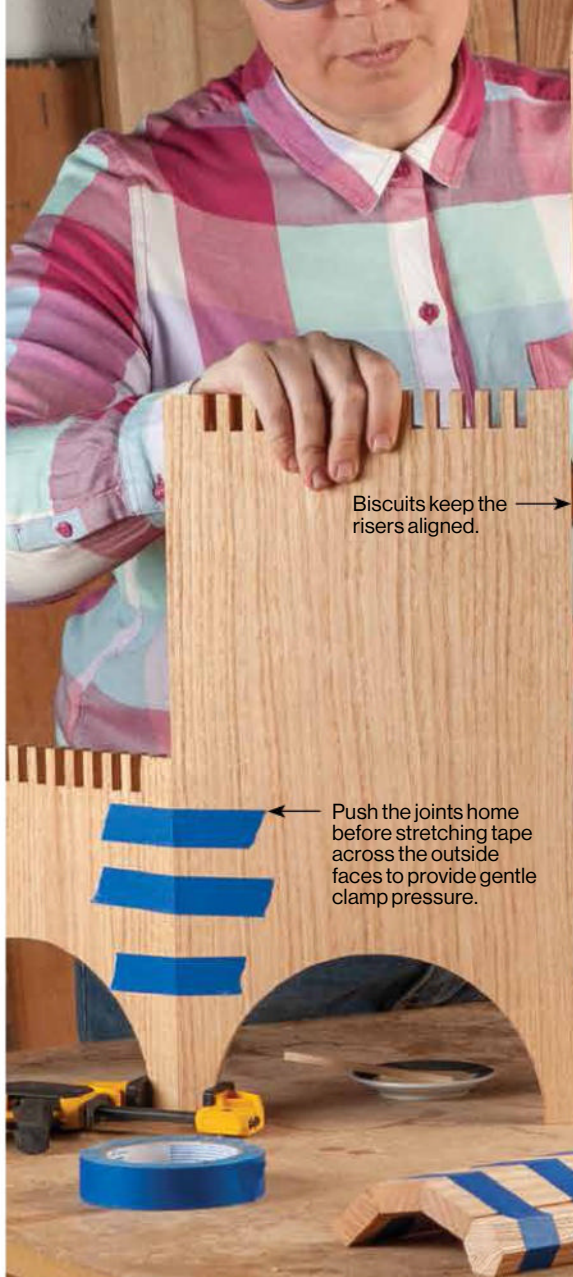
Hexagonalize the post and finial. Tilt the blade angle to 30° and set the fence so that the blade just kisses the centerline of the outer face.

Narrow support. Stabilize the biscuit joiner on narrow stock by backing up the piece with other stock of the same thickness. For more about using this cordless machine, see p. 12.



Tape and glue

Lay out, bandsaw, and sand the curved cutouts at the bottom of the risers. Dry fit the assemblies, bringing them home with hand pressure and stretching painters tape across the coopered joints to clamp them. When you're satisfied with the way things fit, apply glue to the mating surfaces and biscuits joints and clamp with fresh tape. Add one tread at a time, applying glue as you go. Loosely clamp each tread in turn, then secure additional clamps to fully seat the box joints once all three treads are in place.



Biscuits keep the risers aligned.

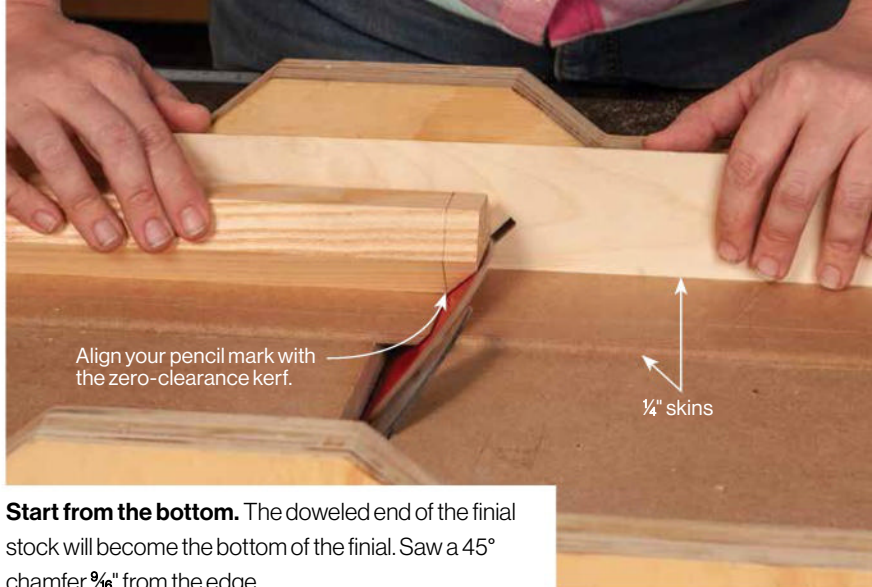
Push the joints home before stretching tape across the outside faces to provide gentle clamp pressure.

Quick clamps are great for applying pressure to irregular surfaces, and they come in handy to clamp the upper 9" of NARROW RISER 3 to the post.

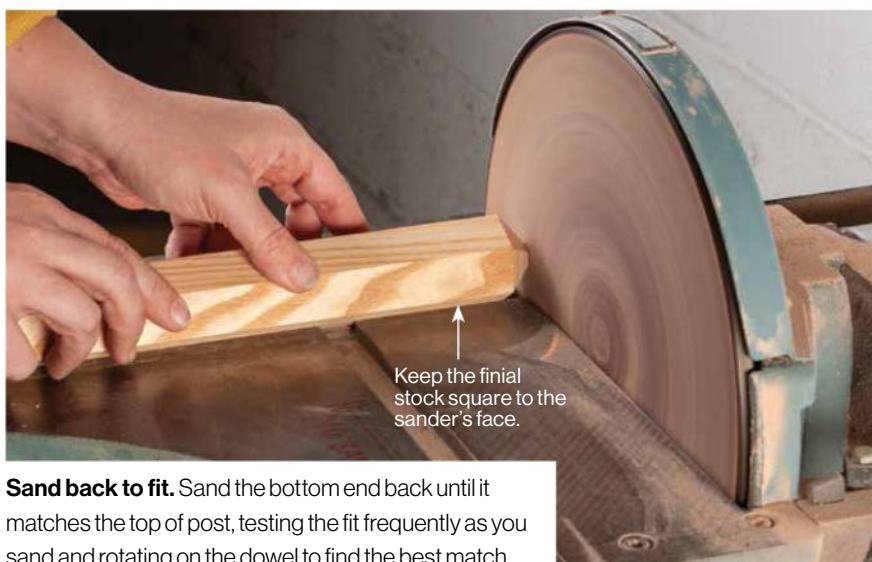
Pull the tape tight across the convex side of the coopered narrow risers. If the inside of the joints open, stretch more tape spanning the concave side to counterbalance.

Faceting the finial

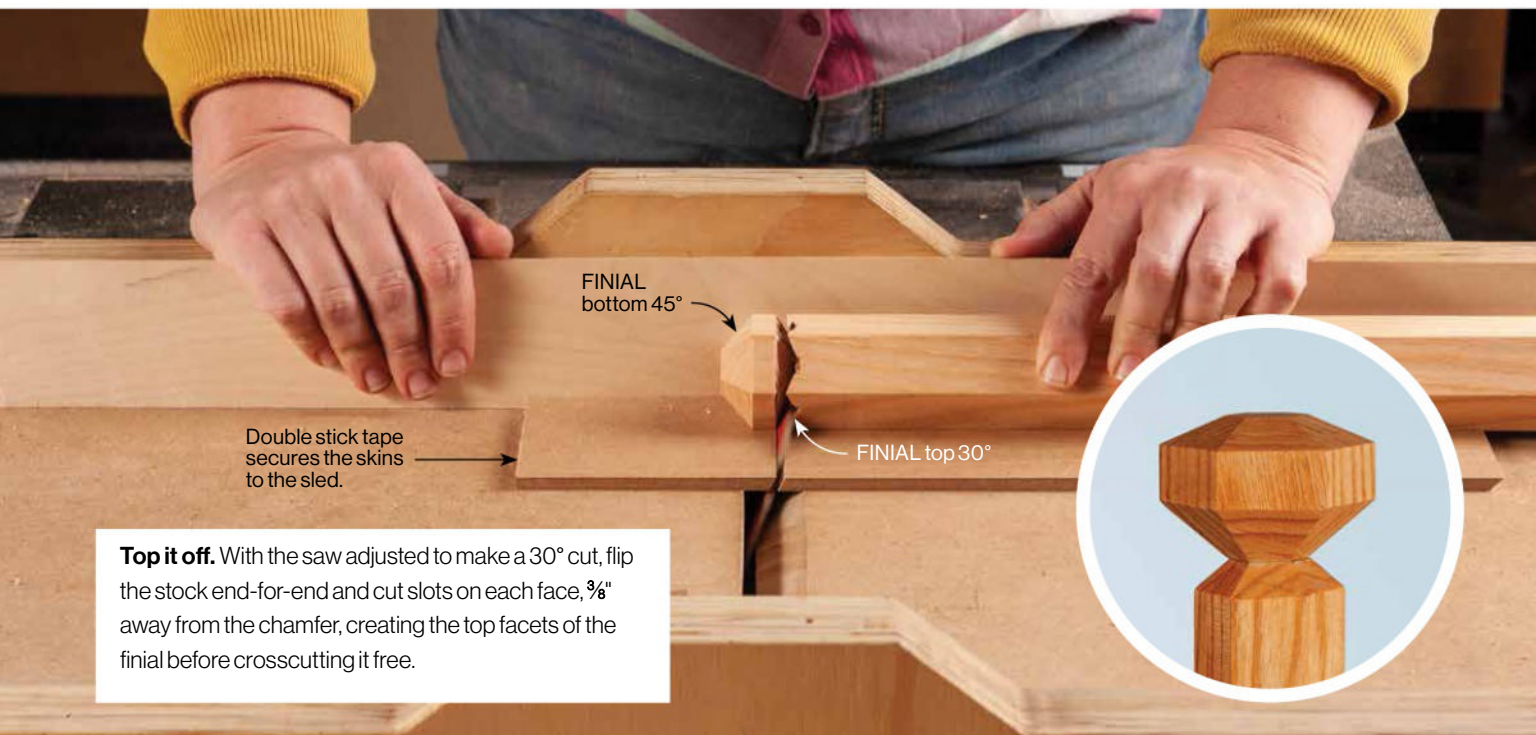
Tilt your table saw blade to 45° and skin both the fence and table surface of a crosscut sled with ¼" auxiliary material to create a zero-clearance cradle for the finial stock. Draw a line ⅛" in from the doweled end of the finial stock on every face. Align one of these marks with the kerf opening and cut a chamfer. Repeat for all six faces. Sand the doweled end back until it matches the top of the post. Adjust individual facets with a handplane if needed. Change the tablesaw blade angle to 30° and adjust the height of the blade to ⅛". Shift the skins on the sled to cut new zero clearance kerfs. Draw a pencil line ⅜" offset from the chamfer on each face. Align one of the pencil marks with the kerf and cut an angled slot. Repeat for all six faces. Set the blade angle to 90° and crosscut ¼" past your last pencil mark, freeing the finial. Glue up the finial-dowel-post assembly. Chamfer the bottom edges of the risers and posts with a file before sanding and finishing your library steps. I used Osmo Polyx-Oil for its durability and track record of holding up underfoot. ■



Start from the bottom. The doweled end of the finial stock will become the bottom of the finial. Saw a 45° chamfer ⅞" from the edge.



Sand back to fit. Sand the bottom end back until it matches the top of post, testing the fit frequently as you sand and rotating on the dowel to find the best match.



Top it off. With the saw adjusted to make a 30° cut, flip the stock end-for-end and cut slots on each face, ⅜" away from the chamfer, creating the top facets of the finial before crosscutting it free.

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the following questions:

1. What prehistoric beast's acidic digestive system is mentioned in this issue?
2. What piece of hardware is used to adjust the crosscut sled's fence for square?
3. What two types of slots make special shop accessories out of sight?



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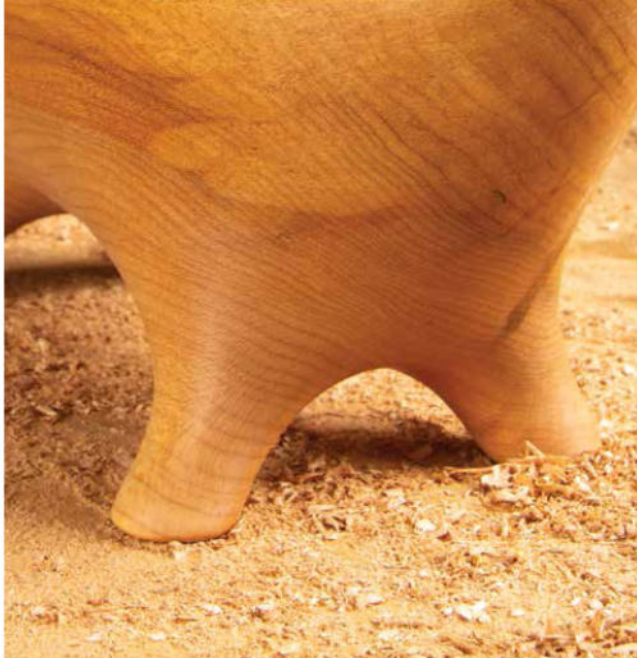
FEATURE

Power-carving **BOWLS**

Tools and techniques for sculpting

By Ken Burton





There is something very direct and satisfying about carving: making an object by removing material from a solid chunk until the shape that is left matches the vision you started out with. And while I enjoy the tap, tap, tap of working with a mallet and chisels, it can be a lot of fun to put the oomph of electricity behind your tools and spray chips with abandon as you quickly cut away the waste. A number of tools on the market let you do just that. Most of them use an angle grinder for power with attachments to cut as well as sand. In this story, I'll show you how to put these tools to use in making trays and bowls. A pattern for one of these bowls is available on p. 45, the other two are available online. But don't feel limited by what's shown here, you can employ these techniques to make nearly any shape or style of bowl or tray imaginable.



Order of Work

- ✓ Lay out and cut the overall form
- ✓ Shape the outside
- ✓ Hollow the inside
- ✓ Refine the details
- ✓ Sand and finish



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Carve the outside

Choose your material and lay out the overall shape of your piece. While hand carvers are somewhat constrained to using softer woods, power carvers are free to work with nearly any species. If you're duplicating one of the designs presented here, download the patterns from the magazine website. Trace the shapes onto your blank and cut away the bulk of the waste at the bandsaw. Then shape the outside contours with a cutting disk before refining the shape with a grinding disk. While you could do all the shaping with this disk, cutting disks are much faster.

Protect yourself

Keep base blocky for easy clamping.

1

Stroke cutter downhill

2

Grind to refine.

Use a light touch and keep the tool moving as you smooth away the lumps left from the cutting disk.



Tools for shaping



Cutting Disks. Cutting disks such as Manpa's Multicutter (see Buyer's Guide on p. 60) or King Arthur's Lancelot make short work of cutting away the waste.



Grinding Disks. Abrasive disks such as the Holy Gallahad from King Arthur or the Extreme Shaping Dishes from Kutzall are great for quickly fairing bumpy surfaces left from the cutting disks.



Ball Gouge. Arbortech's ball gouge offers a little more control than a cutting disk while still chewing through material quickly.

Hollow the inside

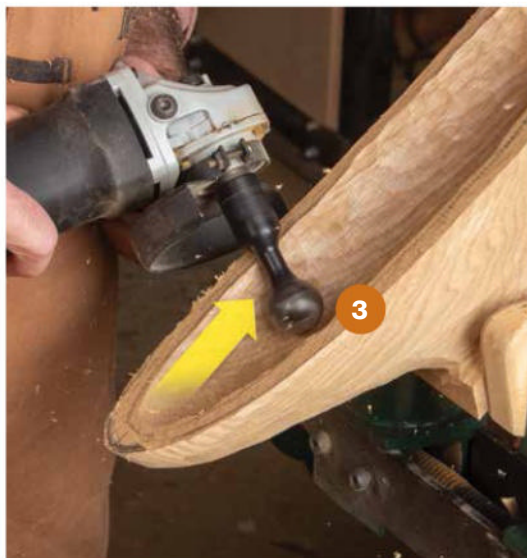
With the overall shape pretty well defined, turn your attention to hollowing the inside to echo the outside contours. Start by marking the rim, and then remove as much of the waste as possible using a carving disk. For larger shapes, I find it helpful to define the depth by drilling holes across the field as seen below. I also like to use a ball gouge as an intermediate step between the cutting and grinding disks. It's easier to control the contours as it cuts slower than the cutting disk. Continue refining the shape using a grinding disk.



Remove the waste. After marking the rim a little thicker than you ultimately want, hollow the interior by stroking the cutter back and forth longitudinally as well as from rim to center and back.



Watch Ken demonstrate some carving techniques in this short video.



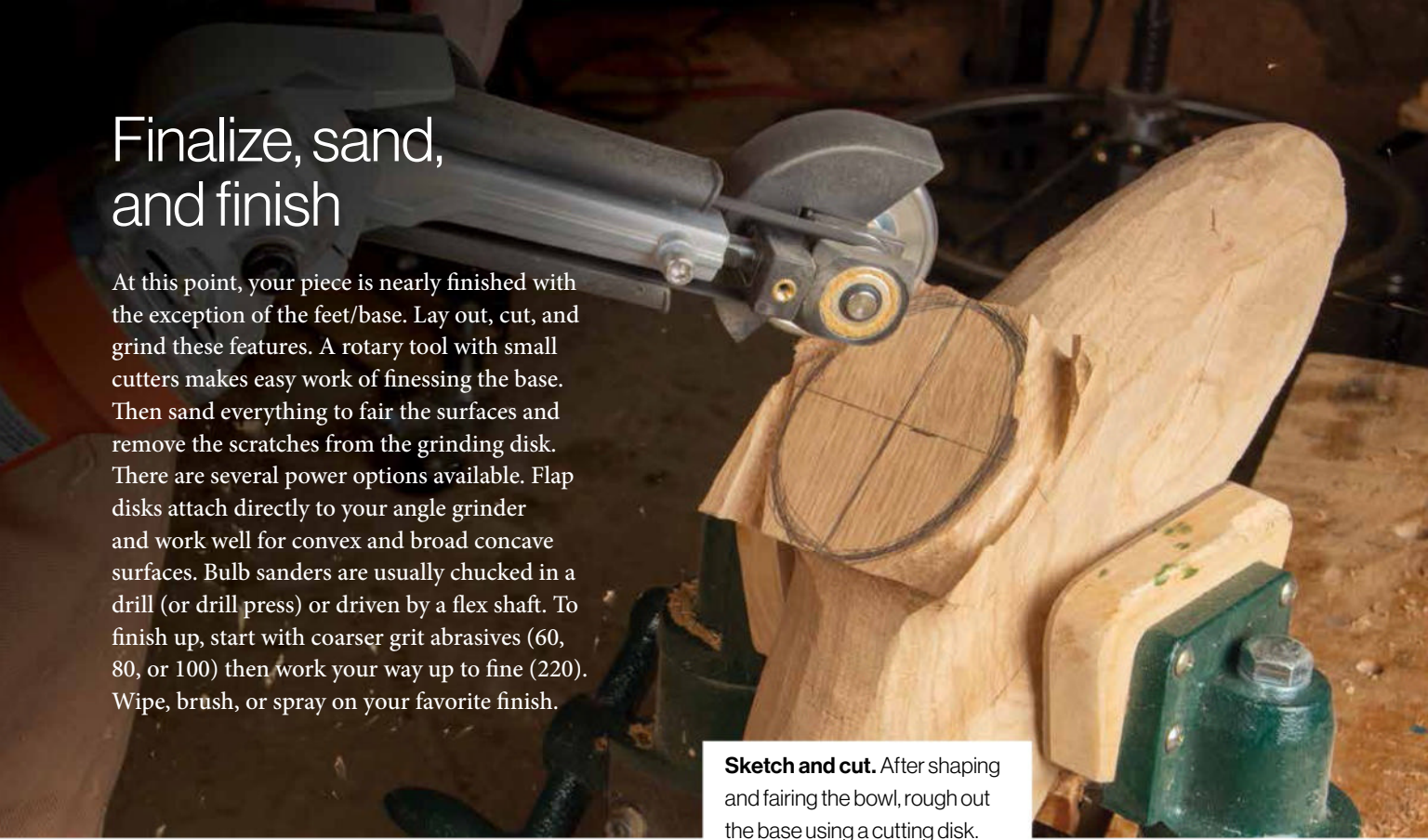
Cut closer to the line. You may find a ball gouge allows you to make controlled cuts closer to your layout lines. Keep your arms tucked close and move the tool with your core.



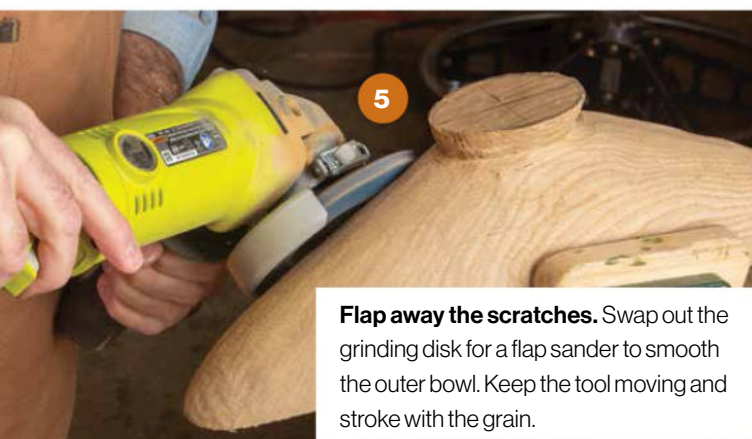
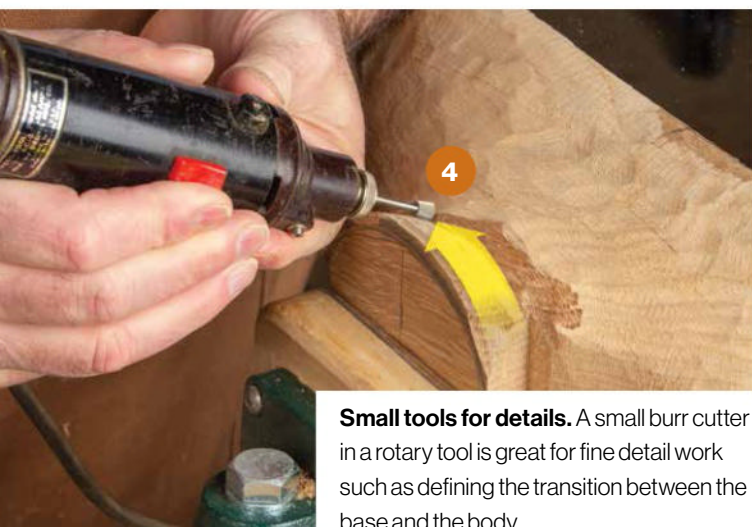
Smooth away the bumps. Finish roughing the inside with a grinding disk. With broader bowls, you can drill out the interior, leaving the drill dimples as a depth guide.

Finalize, sand, and finish

At this point, your piece is nearly finished with the exception of the feet/base. Lay out, cut, and grind these features. A rotary tool with small cutters makes easy work of finessing the base. Then sand everything to fair the surfaces and remove the scratches from the grinding disk. There are several power options available. Flap disks attach directly to your angle grinder and work well for convex and broad concave surfaces. Bulb sanders are usually chucked in a drill (or drill press) or driven by a flex shaft. To finish up, start with coarser grit abrasives (60, 80, or 100) then work your way up to fine (220). Wipe, brush, or spray on your favorite finish.



Sketch and cut. After shaping and fairing the bowl, rough out the base using a cutting disk.



Tools for finishing



4

Rotary tools. A wide variety of cutting burs and bits are available for cutting and refining the fine details.



5

Flap sander. Flap sanders pick up where grinding disks leave off, fairing surfaces and abrading away scratches in preparation for finish.

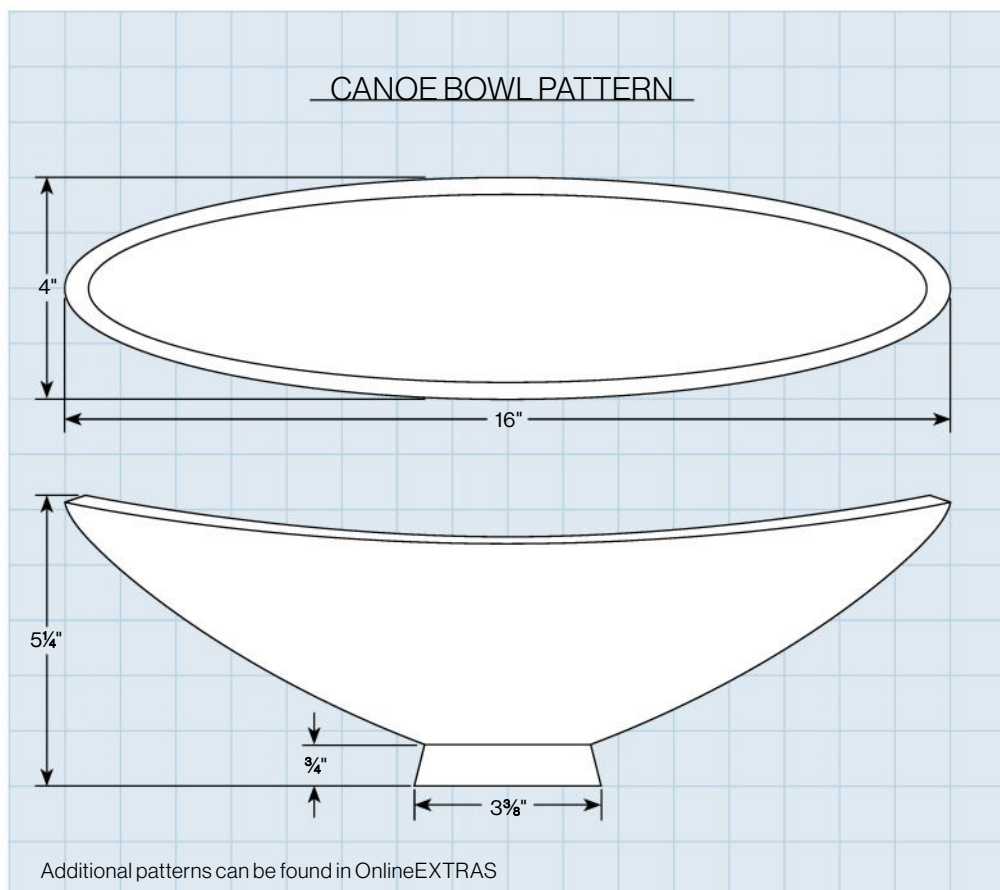


6

Sanding bulbs. King Arthur's sanding bulbs are filled with air, making them resilient and capable of fairing surfaces nicely.



The Armstrong system. I do my final shaping and sanding by hand. A half-round file is helpful for fairing some surfaces, while a resilient cork sanding block aids with others. ■





Crosscut SLED

A basic build of a crucial table saw accessory

By Asa Christiana

A miter gauge is a great tool for crosscutting on the table saw, especially if outfitted with an auxiliary fence. But wide pieces force the miter gauge off the front of the saw table, creating an unsafe situation. And long pieces tend to drag on the table, making cuts inaccurate.

For these reasons and more, most serious woodworkers make a custom crosscut sled for their saw. A sled does everything the miter gauge does, but better. With its broad base, long

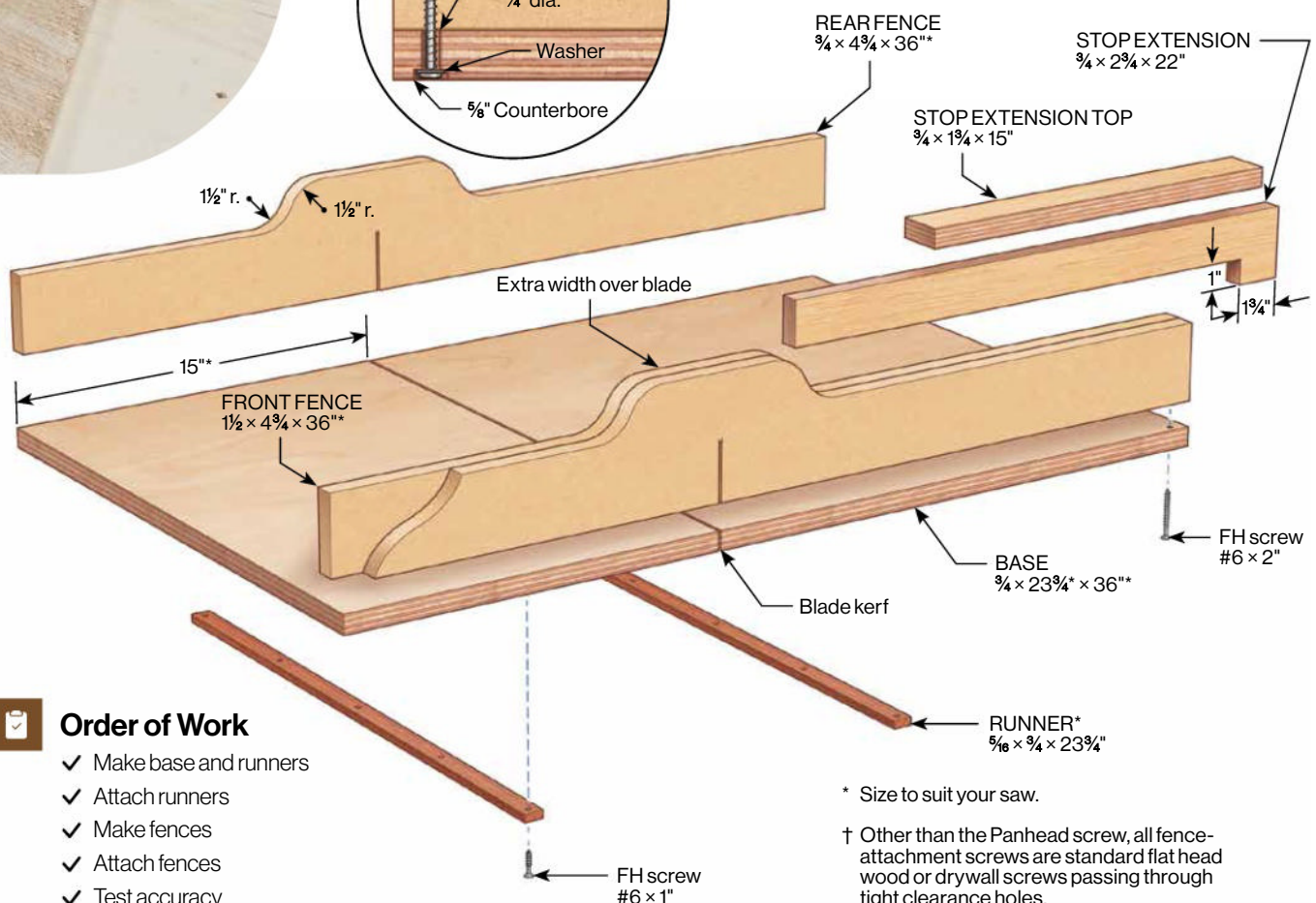
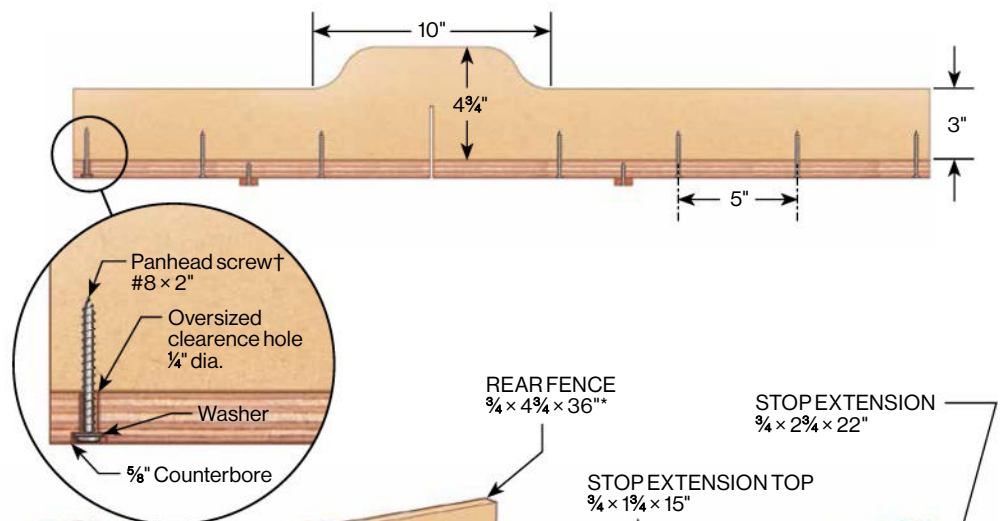
fence, and double runners, a sled carries workpieces of all sizes smoothly and accurately past the blade with no wobbles, as opposed to dragging them. This makes the sled the more accurate option for workpieces of all sizes, but especially larger ones. The fence also carries the offcut safely past the blade, and provides a place to clamp stop blocks. And the zero-clearance blade slot in the base and fence eliminates tearout on both the bottom and trailing edge of the workpiece.

Making a crosscut sled is not complicated. However, it does entail a couple of exacting procedures, including setting the runners and adjusting the fence, both of which are critical to successful operation of the sled. Not to worry: I've got great ways to tame each of these challenges. Follow along here and I'll show you one of the easiest approaches for outfitting your particular saw with this crucial accessory. I think you'll be amazed at how much control it provides and the smooth, accurate cuts it delivers.

Five components assembled for accuracy

This simple sled consists of a plywood base, two hardwood runners, and two fences made of MDF. For accurate operation, the sled's base must be flat and the runners perfectly fit to your saw's miter gauge slots. The front fence is made of two layers of MDF glued together to ensure that it's dead-flat and stable when set perfectly square to your saw blade. The fences are shaped to reduce weight and provide easier handling of workpieces. Base dimensions and runner placement are provisional; suit them to your particular saw.

FENCE DETAIL



Order of Work

- ✓ Make base and runners
- ✓ Attach runners
- ✓ Make fences
- ✓ Attach fences
- ✓ Test accuracy

* Size to suit your saw.

† Other than the Panhead screw, all fence-attachment screws are standard flat head wood or drywall screws passing through tight clearance holes.

Make the base and runners

I used construction-grade plywood I had on hand for the base, but hardwood plywood is flatter, smoother, and not as heavy as MDF. I made this sled for use on a Bosch jobsite saw, sizing the base at 24 × 36", which is about as large as the saw will safely handle. A full-size table saw can take a larger sled. Make the runners from straight-grained hardwood. To size the runners for a perfect

fit in your table slots, start by planing a board so its edge drops smoothly into the slots. If you lack a planer, you can saw a runner blank as shown. Then rip away the runners to be just a bit shallower than the slot depth. If necessary, you can scrape or sand the runners for a better fit in the slots. (See onlineEXTRAS.)

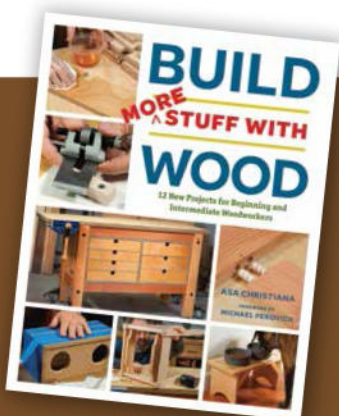


Attach the runners

To attach the runners, you'll place them in their slots, tack the base to them, then add screws to the underside. But begin by drilling and countersinking five clearance holes in each runner to accept #6 × 1" flathead screws. Locate the runners and base as shown, then mark the runner locations across the top of the base. Next, drive four 1" brads through the base into each runner to hold it in place for subsequent screwing. Screw the ends of the runners as shown, then upend the assembly to install the rest of the screws. Afterward, wax the runners.



Read a tip for fine-tuning sled runners.
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More from Asa

This second book in the "Build Stuff with Wood" series adds essential machine and hand tools, taking woodworkers to the intermediate level. "Build More Stuff with Wood" includes essential joinery techniques and fresh design ideas. Learn new skills while making 12 new projects for the home and shop. Find it at your local Woodcraft store or at www.woodcraft.com (#187937, \$29.99).



Runner location. Align one end of each runner with the front edge of the saw table. Shim the runners from underneath with coins if necessary to bring them flush to the saw table surface.



Place the base. Align one long edge of the base with the edge of the saw table, with the left side of the base about 15" from the blade. Mark the runner locations and then clamp the setup in place.

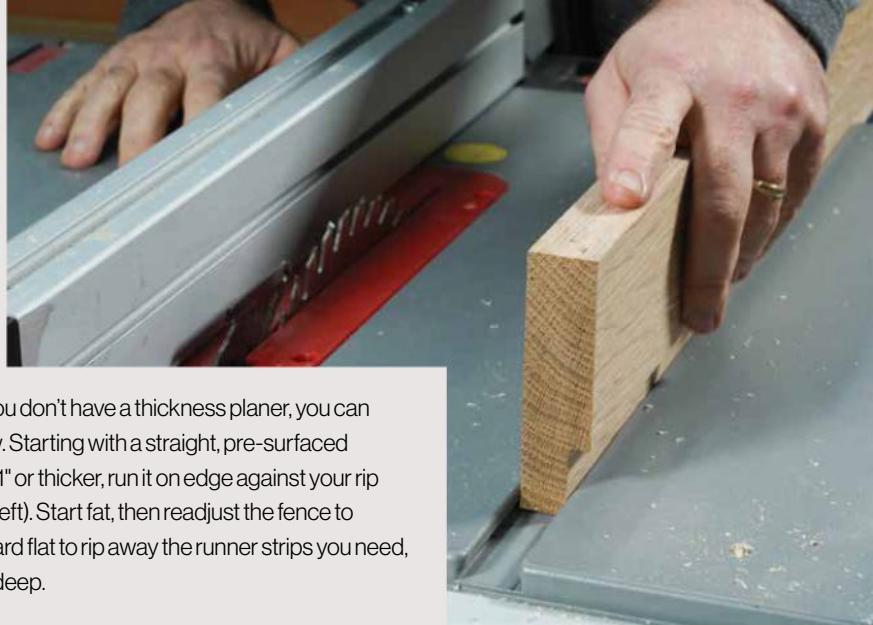
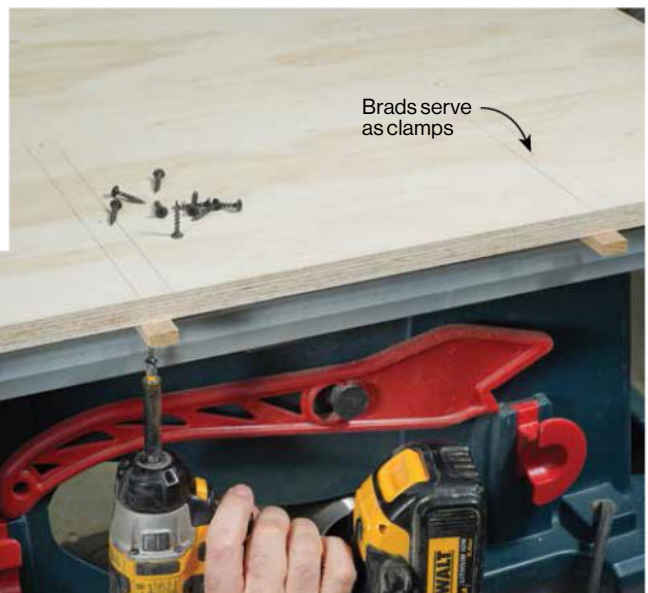


Table saw option for perfect runners. If you don't have a thickness planer, you can create accurate runner stock on your table saw. Starting with a straight, pre-surfaced hardwood board (available at lumber retailers) 1" or thicker, run it on edge against your rip fence as shown, to trim a section to thickness (left). Start fat, then readjust the fence to creep up on a perfect fit (right). Then lay the board flat to rip away the runner strips you need, making them slightly thinner than the slots are deep.



Screw the ends... With brads temporarily holding the runners to the base, cantilever the setup off the rear of the saw and drive a screw through the runner into the base. Repeat at the front.



...then the center. You can now turn the assembly over and install the rest of the screws to fix the runners in place along their length, with the brads keeping them straight as you do so.

Tack the runners. Drive brads into the runners. This will prevent the runners from shifting as you screw them to the base in the next step, preventing slight curves that will make them bind in their slots. Use 1" brads and don't drive them too deeply.

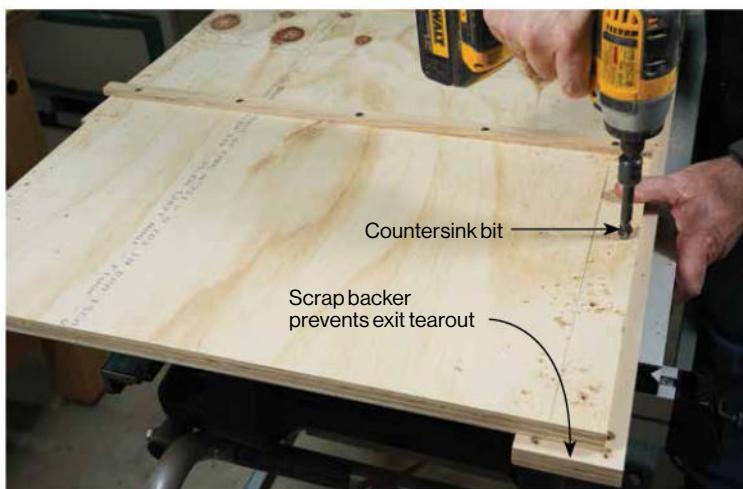
Make and attach the fences

It's critical that the front fence be straight and stable over its life, in order for it to guide workpieces accurately. The best method I've found is to laminate two pieces of $\frac{3}{4}$ " MDF together (the rear fence can be a single layer of MDF). If the MDF is slightly curved, reverse the curves against each other when gluing the two pieces together. Then rip both fences' edges straight and square before sawing out the humped area as shown in the drawing on page 47. I cut the straight sections on the table saw, stop-cutting as shown, then finished up with a jigsaw to shape the humps. Finally, sand out the saw marks.

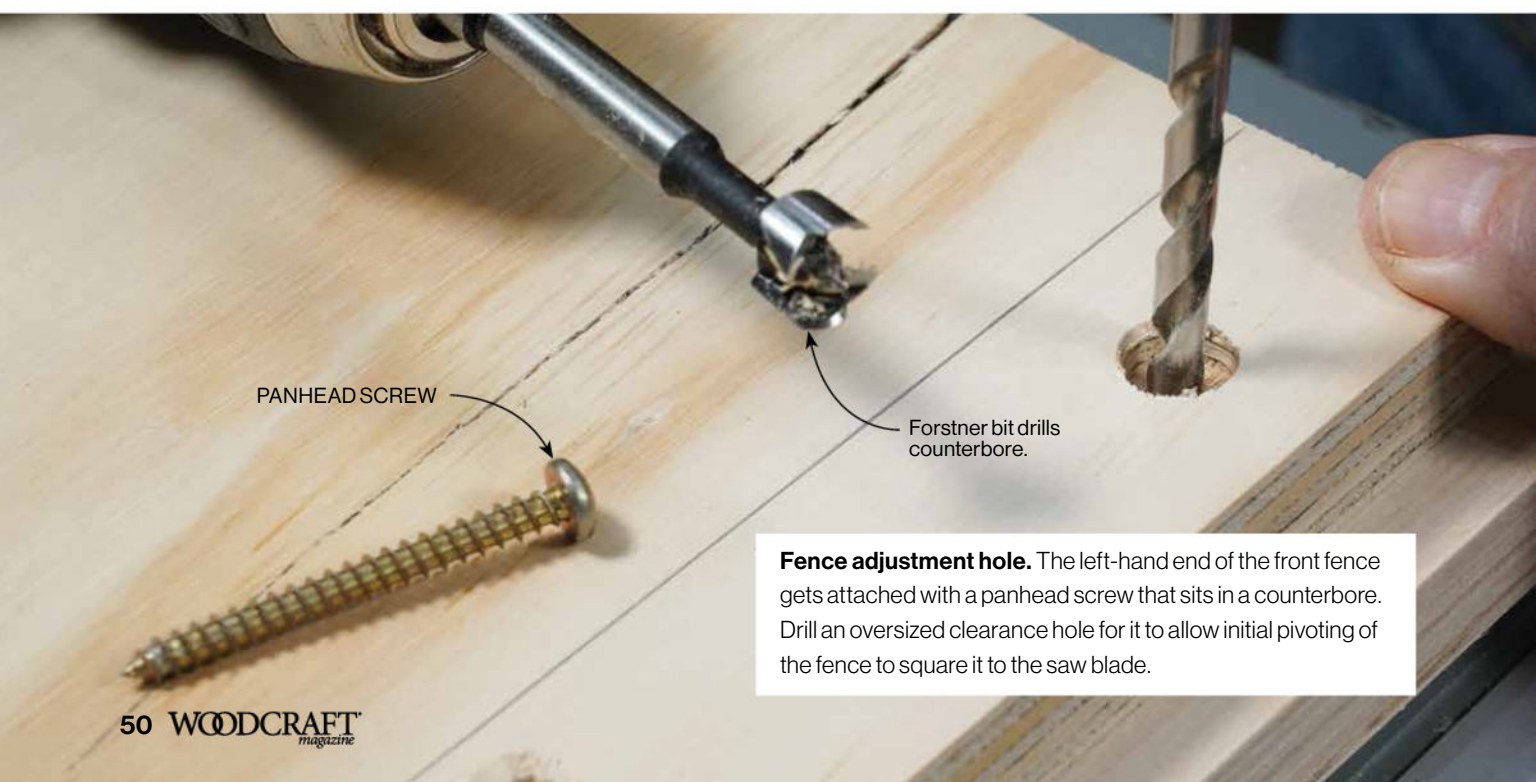
In preparation for attaching the fences, drill countersunk clearance holes for #6 screws. One exception: at the left-hand front of the base, drill an oversized clearance hole with a shallow counterbore as shown. As you'll see, this will allow for adjusting the front fence dead-square to the blade. Next, fully screw the base to the rear fence after drilling pilot holes to prevent splitting the MDF. Then attach the right-hand end of the front fence with a single flathead screw, and the left-hand end with a large panhead screw.



Fence stop-cuts. To cut the low fence shoulders on the table saw, make stop-cuts that terminate at layout lines. For safety, use a splitter or a riving knife as shown above and turn off the saw at the end of the cut, letting the blade stop completely before retracting the workpiece.



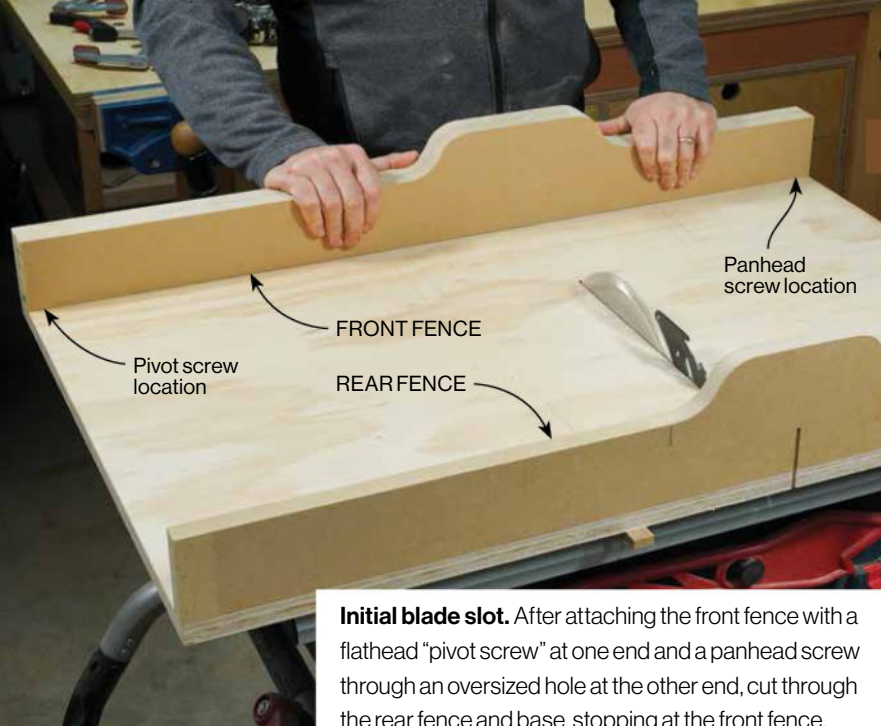
Fence attachment prep. After marking the fence locations on the bottom of the base, drill countersunk clearance holes for #6 screws to ensure they will pull the fence down tightly and sit below the plywood surface.



Fence adjustment hole. The left-hand end of the front fence gets attached with a panhead screw that sits in a counterbore. Drill an oversized clearance hole for it to allow initial pivoting of the fence to square it to the saw blade.

Adjust the front fence

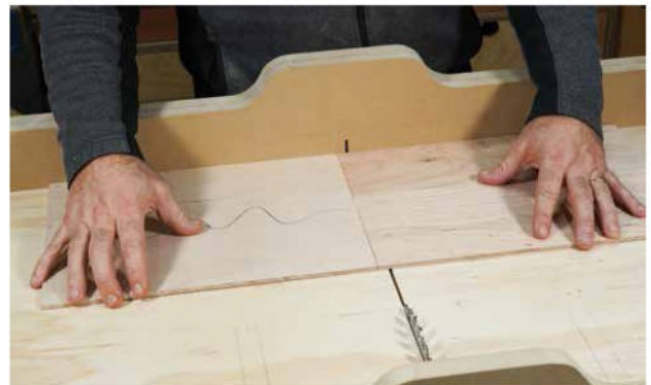
For the sled to work accurately, the front fence needs to sit precisely square to the saw blade. My approach is to initially attach the fence with a single screw at each end. To provide adjustability, the single screw at the fence's right-hand end serves as a pivot, while the panhead screw sitting in its oversized hole on the opposite end allows a bit of angle adjustment. Once test-cuts prove a square setting, install the rest of the screws in the front fence to lock it into place.



Initial blade slot. After attaching the front fence with a flathead "pivot screw" at one end and a panhead screw through an oversized hole at the other end, cut through the rear fence and base, stopping at the front fence.



Initial fence adjustment. Place a very accurate square against the fence and blade to check for perpendicularity, making sure the square rests against the blade plate, not the teeth. If necessary, loosen the panhead screw, and pivot the fence to bring it square to the blade. Then lock down the screw.

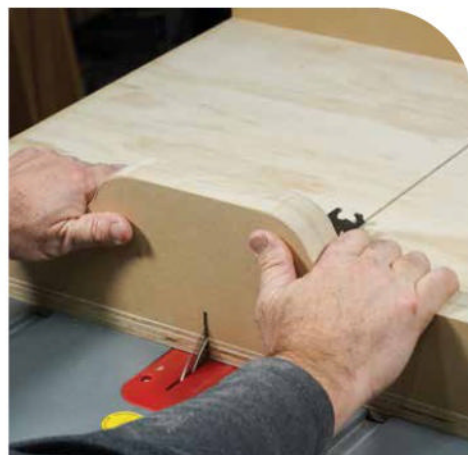


Crosscut test. Mark one face of a wide board that has been ripped with straight, parallel edges. Then, with the fence still attached with just one screw at each end, make a test cut (left). Flip one of the halves over edge-for-edge, pull both pieces against the fence, and abut their cut edges (right). If there's no gap, you're square. Any gap represents half of the angle error, so go easy when readjusting the fence to try again.

When the cuts are square, add the rest of the screws to the front fence, locking it permanently in place.

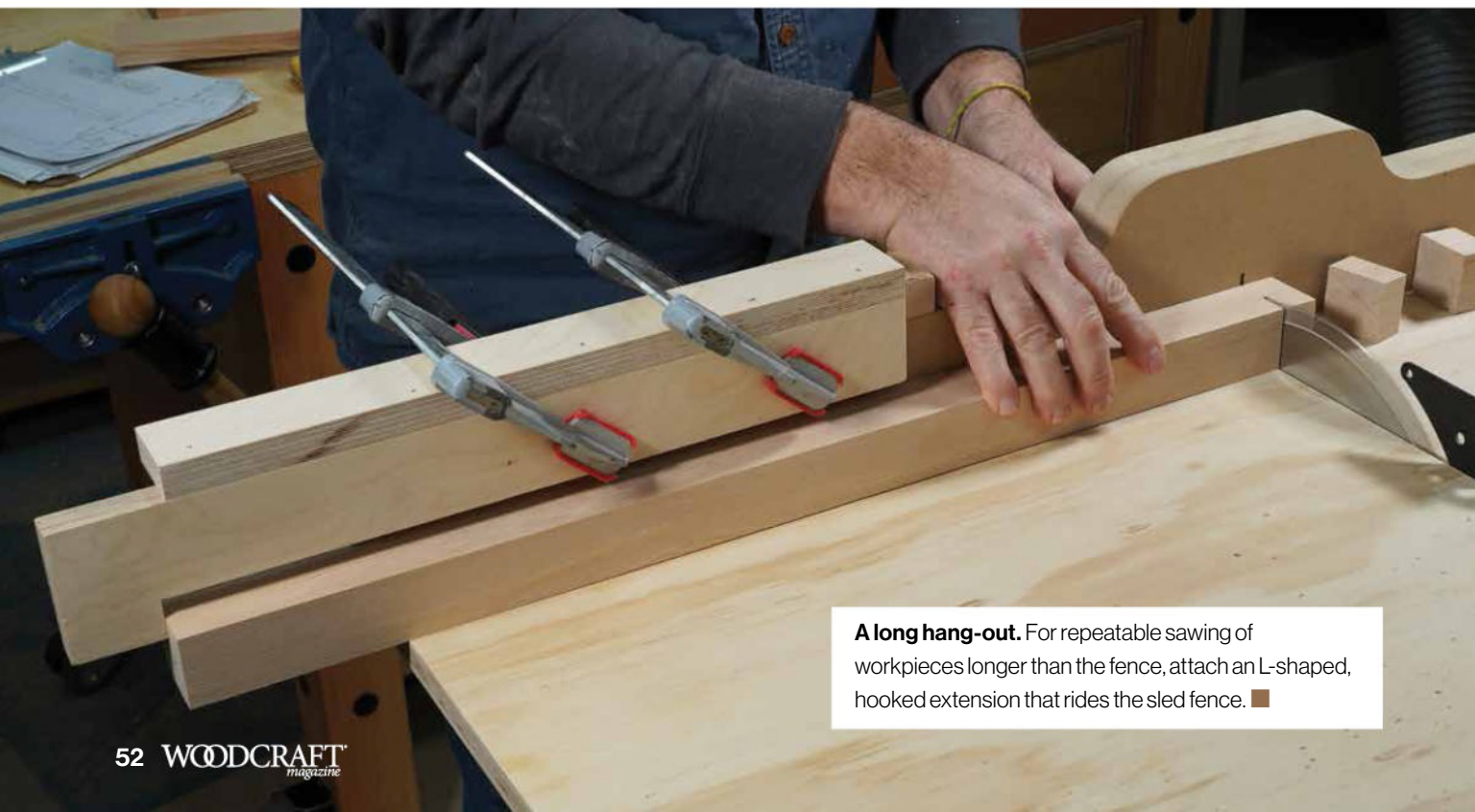
Using the sled

There's a reason this sled is longer on its right side. It's because most saw tables are longer to the right of the blade to accommodate wide rip fence settings. So, just as with ripping, you'll make most of your crosscuts with the workpiece primarily to the right of the blade, supported by the longer section of the sled's fence. In addition to general crosscutting, the fence also provides a great place to clamp stop blocks for repeat cuts. If your workpiece reaches past the end of the sled, you can employ an extending hook-style stop as shown below and on p. 47.



Safe sledding

Because a sled carries both parts of a separated workpiece past the blade, it tends to be safer than using a miter gauge. That said, a crosscut sled still demands caution, with particular attention paid to the area where the blade exits the front fence. Some woodworkers attach a box or large block of wood at that spot, or paint a big red stripe there, to be sure their fingers never stray into the danger zone. Feel free to add this extra measure of safety.

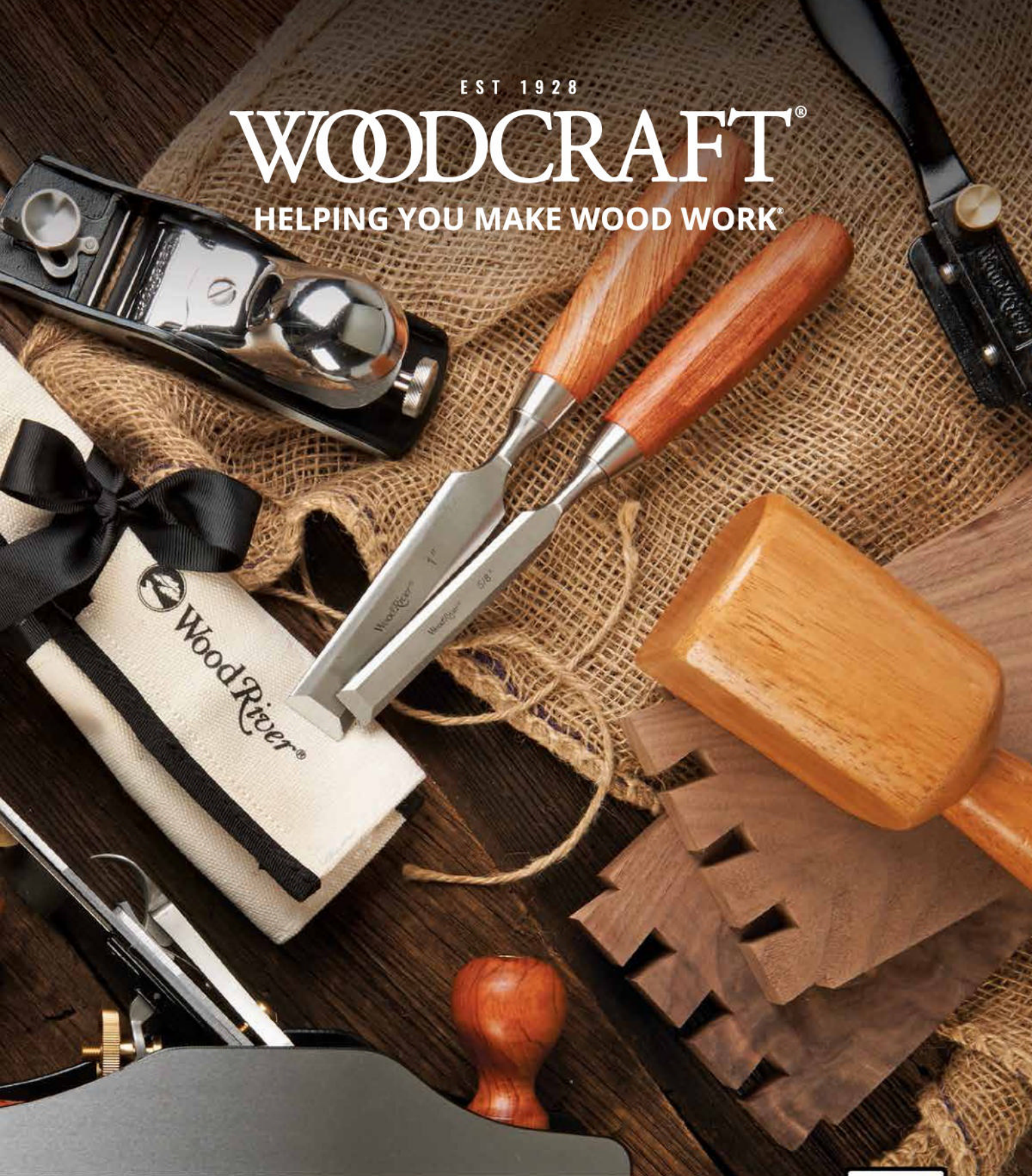


A long hang-out. For repeatable sawing of workpieces longer than the fence, attach an L-shaped, hooked extension that rides the sled fence. ■

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Kentucky Coffeetree

Tough wood with an uncertain future

By Robert J. Setlich

There are only a handful of trees of the *Gymnocladus* genus worldwide, with all but one in Asia. Kentucky Coffeetree (*Gymnocladus dioica*) is the only native North American in the group.

The first part of the tree's scientific name means "naked branch," an allusion to the fact that it leafs out very late every year and then is also usually the first tree to lose its foliage. As a result, the tree may be bare for up to six months every year. The scarcity of branches, though, makes it a popular ornamental tree for people who want as much light as possible during the fall and winter months.

Making the tree look even more bare is the fact that its compound leaves are huge—12 to 36 inches long and 18 to 24 inches wide—means that there are very few branches. The leaf is in a bipinnate formation that subdivides sets of leaflets into even more leaflets, with the overall form resembling a fern frond.

The tree has a Janka hardness rating of 1390,

just a bit tougher than white oak. It is a special type of ring-porous wood where the pores congregate in the latewood in small groups called pore clusters—a feature unique to Kentucky Coffeetree. The color of the heartwood as well as its surface texture reminds me of red oak, though other people think the grain pattern is similar to ash. There's very little of the yellowish-white sapwood, and it has a sharp boundary. If you have any difficulty distinguishing the wood, shine a UV lamp on it to remove your doubts. (See the box "Glowing ghoully green.") The wood has a fairly strong reputation for insect resistance and reportedly withstands ground contact as a fencepost.

Adaptable but stubborn

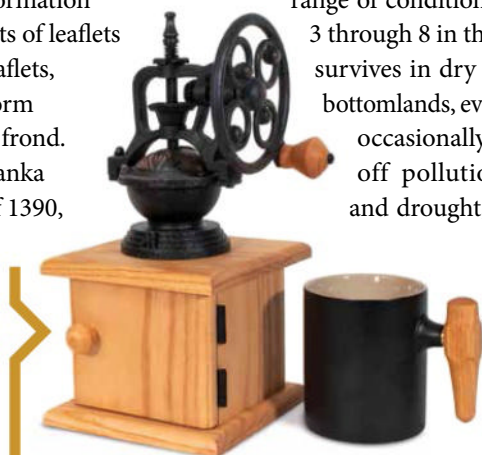
Kentucky Coffeetree tolerates a wide range of conditions, hardy in zones 3 through 8 in the United States. It survives in dry uplands to damp bottomlands, even those that flood occasionally. The tree shrugs off pollution, deicing salt, and drought, making it tough

enough to survive urban environments. Deep roots and a scarcity of branches, makes it resistant to wind damage. The tree can reach higher than 70 feet, with a trunk diameter averaging about 2 feet.

Despite this resistance and adaptability, Kentucky Coffeetree simply isn't very good at propagating itself. (The International Union for the Conservation of Nature (IUCN) lists the Kentucky Coffeetree as a vulnerable species on their Red List.) Only female trees bear the pods, and for those seeds to be viable, she requires a male tree nearby. Fallen pods need to decompose to expose and then soften the hard shell of the seed. That can take two years and yields only a 5% germination rate. If you want to give nature a hand, you can boil the seeds or file through the hard shell before planting.

An easier solution is to find seedlings ready to plant. As of this writing, the Nursery of the Iowa Department of Natural Resources offers plants for only \$1.10 each, though the minimum order is 25 seedlings.

Good wood, bad beans. Kentucky Coffeetree wood works well, but I prefer genuine coffee beans for brewing.



Glowing ghoulish green

Kentucky Coffeetree heartwood is reportedly one of the most fluorescent woods when viewed under blacklight. Different trees and the precise wavelengths emitted by your blacklight will affect the color you see, but it's definitely creepy.



The coffee quest begins

At a retail lumber source in the Kansas City area, the manager told me his suppliers haven't been able to provide Kentucky Coffeetree for six years. When I searched online outlets, I discovered that instead of simply ordering up the number of board feet desired, I had to choose individually priced boards photographed from both sides. The lumber's scarcity and the additional work to market individual boards—even before shipping costs—makes me believe that this may currently be the most expensive domestic wood.

The boards I received were very flat, and surfaced cleanly at the thickness planer. I was able to easily avoid a few shallow checks when cutting the parts for the coffee grinder case (See Buyer's Guide, p. 60.). There were no problems at the table saw or miter saw.

Drilling and chiseling went smoothly, but any pause during edge routing left a light

burn. For a low-luster surface, I applied a wipe-on oil/varnish finish.

Given the wood's similarity to red oak, I was anticipating poor results before I even chucked a blank into my lathe to make a coffee mug handle (See p. 60.). A gouge left the rough surface I expected, but a light touch with a scraper produced surprisingly good results. Shearing cuts with a skew left a surface that didn't need sanding. Although the design was strictly freestyle, the finished shape pleasantly reminds me of a traditional barrel spigot on end. After three coats of oil finish, the tiny ray structures on the quartersawn surface give me something interesting to view as the coffee works its morning magic. That turning success motivated me to turn knobs for the grinder, even replacing the factory knob on the mechanism. ■

Like the living dead. When fully clothed with its leaves, you can hardly tell that the tree has few branches. When the leaves fall, some people think the tree looks dead.

A poor substitute. The tree's roasted seeds make a type of coffee that is reportedly both pungent and bitter, making even chickory taste good. That's saying something.

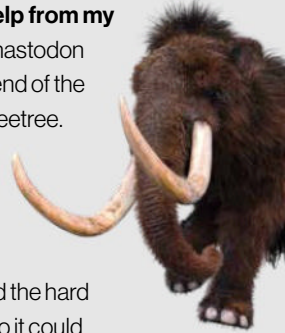


Eponymous tree. The coffeetree was briefly the official state tree of Kentucky, the only species to include its state's name.

Large leaf. The leaves of the Kentucky Coffeetree are the largest of any native North American species.

With a little help from my friends.

The mastodon was a great friend of the Kentucky Coffeetree. That beast's digestive system was so acidic that it dissolved the hard seed coating so it could germinate. Achieving similar results today requires hours of soaking in concentrated sulfuric acid.



Hardly worth the effort. Extracting seeds from the sticky goo inside the pods is messy, toxic, and labor-intensive. 100 pounds of pods yields only about 30 pounds of seeds.

Inculpability. There are very specific time and temperature guidelines for roasting the beans to make them non-lethal, but I'm not going to repeat them here. If something goes wrong, I don't want your survivors to come after the magazine.



A Harried History

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Great Gear

A comfortable and good-looking work boot

Danner Bull Run Chelsea boots

Danner has a reputation for making quality, long-lasting footwear, and these Bull Run Chelsea pull-on work boots are no exception. The 6" ankle boot is lightweight and durable and comes with a removable OrthoLite footbed. The full-grain leather upper is attached to its slip-resistant sole via stitch-down construction. That means when I wear it out, Danner's recrafting service can repair it. And while some parts are produced outside the states, they are assembled in the US!

I stay comfortable standing on my concrete shop floor for hours; they're easy to kick off at the end of a long day. It's a luxury to quickly kick them off before heading in to avoid tracking sawdust through the house. When it's time to get back to work, they slip right on with the help of a big, easy-to-grab loop—no bending over and fussing



with laces. And after brushing off the dust, they look nice enough to wear to the office. These boots are designed for indoor work, so with their plain toe, I wouldn't use them on a job site. They run a little large, so consider buying a half-size down. Your comfort is well worth the investment. —Chad McClung

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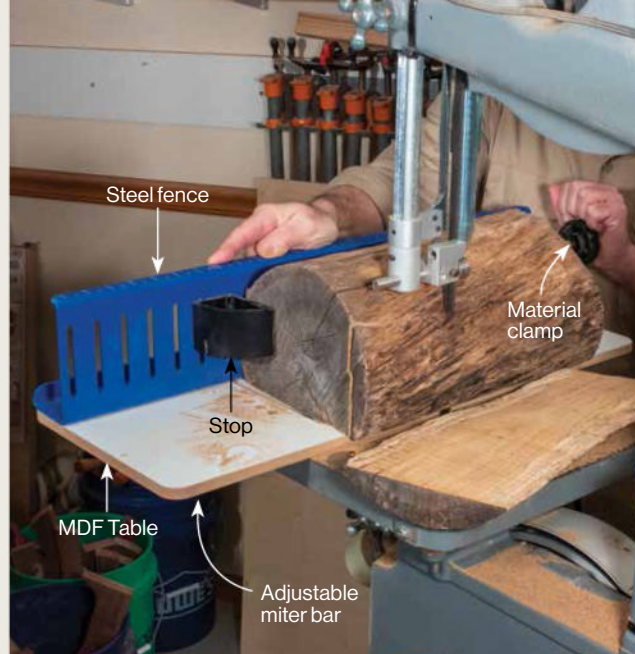
A mini-mill for harvesting free logs

AccuRight Log Mill from Carter

We get plenty of storms in the Midwest that knock down trees, and some folks cut the wood and stack it next to the road—free for the taking. I like no-cost firewood as much as anyone, but I have an even warmer feeling for free lumber.

Carter's Log Mill has helped me transform redbud, hickory, mulberry, and more into boxes and other projects. The jig assembles quickly, and every component is impressively heavy-duty. The end clamp immobilizes the log (23-inch maximum) against a stop, then you adjust and lock the carriage onto the base for the first cut. After that cut, rotate the log 90 degrees and reclamp. These cuts give you two flat, perpendicular faces—one for the bandsaw table and another for your regular rip fence.

I sometimes coat the ends of the logs with latex



paint and let the wood partially dry until I have the time and inclination to mill them. Use the widest rip blade your saw will take. If you want to cut green wood, buy a blade that resists clogging.

—Robert J. Settich

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1. DeWalt 20V Max XR Brushless Cordless Biscuit Joiner (Tool Only).....*dewalt.com*, #DCW682B, **\$279.00**

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2. Whiteside Carbide Picture Hanger Router Bit, 3/8" D, 7/16" CL, 1/4" SH.....#08I42, **\$16.99**
3. Clesco Sanding Drum Set.....#07P41, **\$28.99**

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2. Bora 90-deg. Quick Release Corner Clamp.....#157914, **\$44.99**
3. WoodRiver Miter Max Corner Clamp.....#157448, **\$81.99**
4. WoodRiver 3" Edgeband Spring Clamp.....#182796, **\$7.99**
5. Bessey Face Frame Cabinetry Clamp.....#162956, **\$29.99**
6. MicroJig MATCHFIT Dovetail Fixture and Jig Clamp.....#163976, **\$45.00**
7. EHOMA 7 1/2" T-Track Clamp w/Screw Handle.....#183508, **\$19.99**
8. EHOMA 7 1/2" T-Track Clamp w/Ratcheting Handle.....#183509, **\$33.99**
9. WoodRiver Quick Bar T-Track Clamp, 6".....#183864, **\$19.99**
10. WoodRiver 6" Quick Vise.....#182067, **\$39.99**
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15. Pony Canvas Band Clamp.....*ponyjorgensen.com*, #6210, **\$39.98**
16. ScotchBlue Original Painter's Tape.....*acehardware.com*, **\$9.99**

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2. Holey Galahad See Through Disc, 7/8" Arbor, Flat, Coarse.....#149992, **\$99.99**
3. Kutzall Extreme Shaping Dish, 4 1/2" dia., Coarse.....#422292, **\$64.99**
4. Arbortech Ball Gouge.....#164581, **\$119.99**
5. King Arthur Tools Guinevere Basic Sanding System.....#864156, **\$344.99**
6. Dremel 3000 Rotary Tool.....#853497, **\$87.99**
7. Manpa 3" Multicutter.....*katools.com*, #MP21-3-M, **\$307.80**
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2. Carter AccuRight Log Mill.....#152666, **\$179.99**

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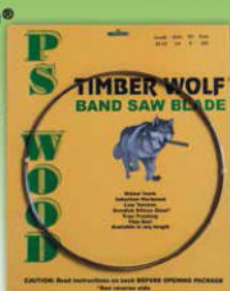
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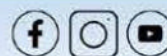
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Expert Answers

Set up your press for success

I recently added a vacuum bag press to my shop for veneered work, but my panels are coming out slightly warped. How do I make flat panels that stay flat?

—Kris Papke,
Stockton, CA

Q

&

A



Owain Harris is an award-winning custom furniture designer and builder from Gonic, NH.

The culprit is likely that the press isn't exactly flat because it's not on a dead-flat surface. Any cup or twist in that will reflect in your final product. To ensure a dead-flat press, build a dead-flat torsion box.

A torsion box is made up of a grid of cross-members sandwiched between two exterior skins. Once glued up, the skins and core create a unit significantly more rigid than the individual components and more likely to stay flat.

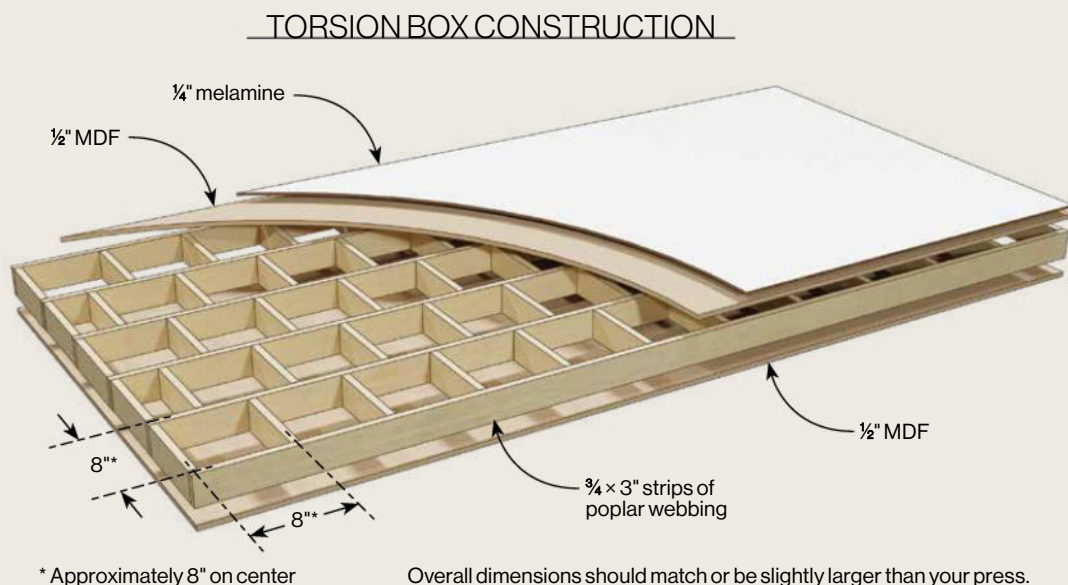
To build a torsion box, you need a level platform. Construct a temporary assembly table by laying sturdy beams across a pair of saw horses and leveling them with shims. Use a 6' builder's level or laser level to ensure

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the beams are perfectly coplanar. Take your time getting this part right. Once your assembly platform is flat and level, place one of the outer skins on the beams, and assemble the inner grid using brads and glue. It's not super critical that the spacing be exact. When the grid is complete, glue, brad, and screw a 1/2" skin on top, then flip the whole thing over and repeat for the other side. Give the glue time to dry before moving your torsion box from the level assembly platform. Once the glue has cured, it will stay flat.

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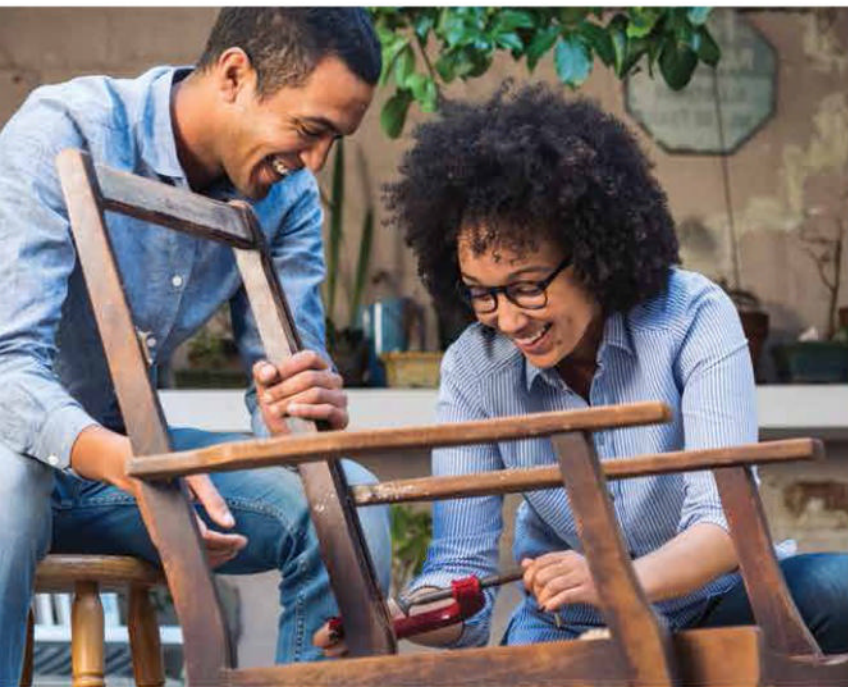


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