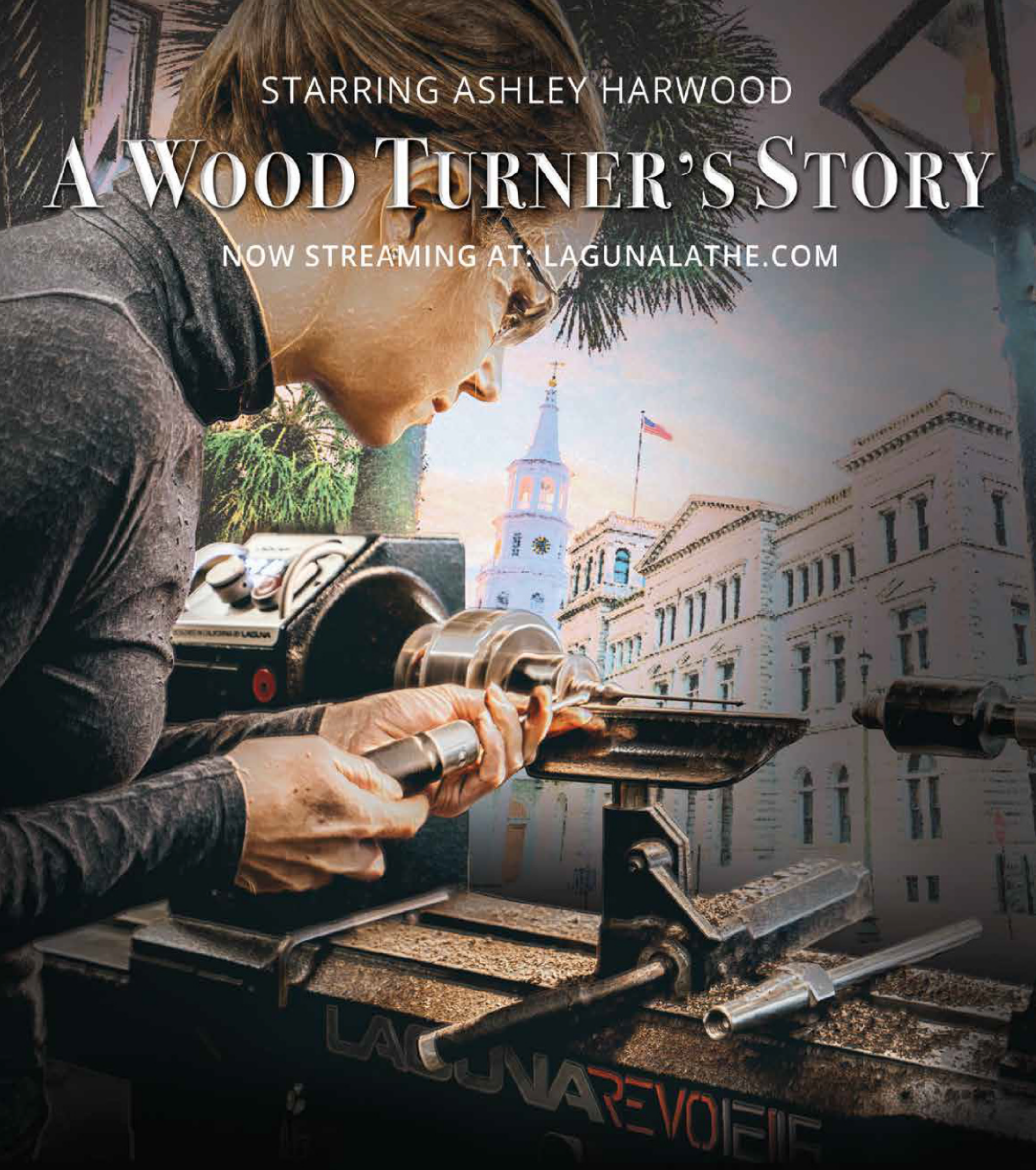
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WOODCRAFT® magazine

Projects, Techniques, and Products

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23 TIPS and JIGS

PLUS…

- Metals in the woodshop
- Turning with carbide
- Profile: William H. Macy

TURNED TABLE LAMP

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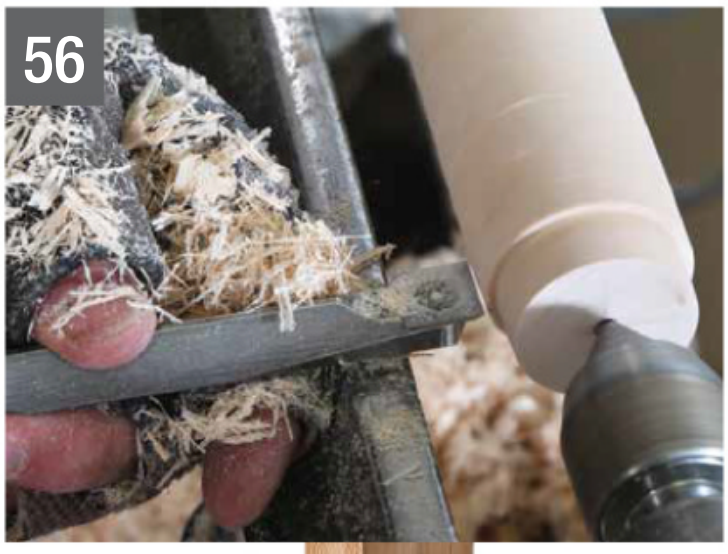

Cover photo: Randy O'Rourke

Contributors

Before arriving at Woodcraft in 2015, **Tim Snyder** interspersed trim carpentry work with freelance writing assignments and staff positions at five different magazines. "What this career path lacks in job security, it more than makes up for in the friendships I've made along the way," says Tim. "The hard-working folks I've met on job sites and in workshops across the states are the best people I know—stone masons, plumbers, framing carpenters, furniture makers, and so many more." Based in Sandy Hook, CT, Tim got help from his wife, Barbara (an avid gardener) in designing the cover project. When he's not in the workshop, Tim enjoys spending time with his twin granddaughters and working on his topspin backhand.

Michael Kehs has come a long way as a woodworker since his youth spent building birdhouses with his father in their home woodshop. The award-winning artist has been carving since 1980 and turning wood since 1986. These days, he lives in upper Bucks County, Pennsylvania, where he also writes for *Woodcraft Magazine*, *American Woodturner*, and the British magazine *Woodturning*. See his story on making a turned table lamp on page 36.

Steve Dando (right) started woodworking in 1963, as a teenager in his stepfather's cabinet shop. Upon returning from Vietnam, Steve took a job with a local Puget Sound Shipyard in the carpenter's shop. Today, he shares his passion for woodworking as an instructor at the Seattle Woodcraft store. **Jeff Marsden** worked in marine engineering during the day, and came to woodworking as a creative outlet. He manages the classroom and organizes woodworking events for the Seattle store. Steve and Jeff worked together on the tool tote on page 26. ■

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A growing team

Spring has sprung, and along with the blooming flowers, a few fresh faces have sprouted here at the magazine. First, I'd like to welcome expert woodworker Ken Burton. Ken has worked with wood for more than 30 years and has written about it nearly as long. You've seen his project and technique articles in past issues, but as a Contributing Editor, Ken will be sharing even more expertise and design inspiration.

New graphic designer Kelli Edman, and circulation support manager Christie Wagner come to us from Woodcraft HQ. Kelli's myriad design duties include collaborating with art director Bobby Schehl to produce compelling project-packed pages. Christie held positions in the purchasing and accounting departments at the corporate office but is now the cheery voice you hear when you call about your subscription. Finally, Robin DeMoss, who has a clerical background in education, assists Christie in all circulation and office matters.

We value our team, and we're all dedicated to bringing you the best content and customer service. In fact, our team members all over Woodcraft Supply, from social media and web experts to product managers and woodworkers of all kinds, work hard to get each issue in your hands. Even Woodcraft stores join in. The Seattle store's class instructors, Steve Dando and Jeff Marsden, partnered to build the handy shop project on page 26. And on the east coast, at the store in Norwalk, CT, we gathered a group of veteran turners to test carbide tools against high-speed steel tools. Turn to page 56 to get their opinions.

To round out the issue, we collaborated with even more experts from all over the US. Our own senior editor Joe Hurst, who lives in Alabama, shares the necessary jigs and techniques to rehab your workbench (p. 44). North Carolina woodworker Andy Rae teaches tricks for safely manipulating material other than wood (p. 29). From Connecticut, senior editor Tim Snyder shows how to add architectural interest to your garden. And Mike Kehs, Pennsylvania turner, carver, and all-around creative guy (p. 72), turned a shapely lamp. See the light on page 36.

Get in touch to get on the team. Read the box at right and reach out with article ideas or just your opinion on the issue. We'd love to team up and continue building a great magazine. ■

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.

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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.

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

Share photos of your projects:
We'd like to see what you're building. To show off your work send your photos to *editor@woodcraftmagazine.com*, or find us on social media.

WOODCRAFT magazine

April/May 2019 Vol. 15, Issue 88

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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.

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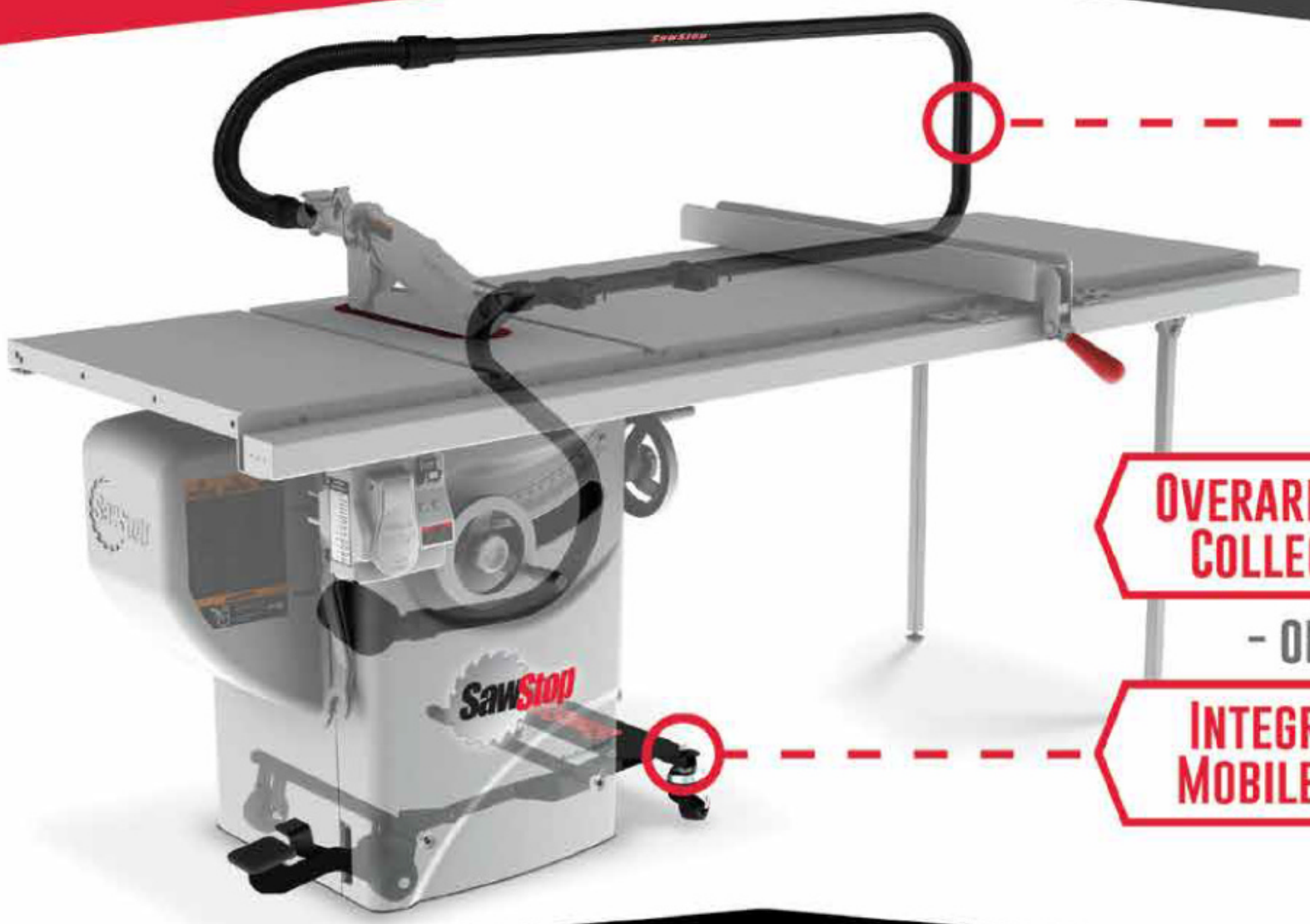

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William H. Macy *loves acting like an enthusiastic woodworker*

When William H. Macy was making the movie "Fargo," during the winter of 1995, he stopped into a woodworking store on a day off and took in a woodturning demonstration. As he might say, he was smitten. In short order, he bought a small lathe and kept it in a corner of the movie set. Whenever he had a little spare time, he'd do some turning. These days, he's traded up to a larger lathe that resides in a spacious woodworking shop above his garage. He lives in Los Angeles with his wife, the actress Felicity Huffman, and their two daughters. Portraying Frank Gallagher on the Showtime® series "Shameless" consumes much of his time (and keeps him in shoulder-length hair and a days-old beard). Writing and directing feature films occupies another big part of his life. But when he's not on the set, he is almost certain to put on a t-shirt, jeans, and sneakers and tackle a woodworking project or turn a bowl. I spoke with him recently by phone to find out what he's been doing in the shop.
—David Heim

WM: What are you working on these days?

WHM: We own my wife's childhood home in Colorado. We're redoing a lot of the fencing on the property, and I've saved the most gnarly boards. They're all gray and deeply weathered. I'm using them to make benches. I made a jig so I can join two boards along their length with biscuits, then I use another jig to rout a recess on the underside of the top for legs and a stretcher. I take a palm sander and work on the more egregious spots—the places where someone's likely to get a splinter in their ass. I have lots of stains, so I use them to make the sanded spots gray again. It takes me a full day to make a single bench.

WM: Are you working on anything outdoors?

WHM: Yeah. I'm building staircases around the house in L.A., which is on a pretty hilly site. This is my exercise. I find it insanely gratifying to build these stairs. I call them my stairway to heaven, and I have a great view of downtown L.A. from the top.

Tasteful trim work. Macy and a friend built this fumed-oak fireplace surround, which is the centerpiece of his home office.

Photos: William H. Macy and David Heim

WM: A few years ago, when I visited, you had just completed an arched footbridge over a gully. How is that holding up?

WHM: I had to rebuild it. It rotted right out of its foundation. I'm not a very good carpenter, but I'm very enthusiastic.

WM: But I've seen some really nice work that you've done.

WHM: I'm very proud of the mantelpiece I built in my office, with my friend Charlie. We used white oak and fumed it with ammonia.

WM: The story of how you started woodturning when you were making "Fargo" is pretty well known. But how did you pick up your interest in woodworking?

WHM: I got it from my dad. He was very handy, and he was a Scotsman, so he'd repair something before he'd buy new. Everywhere he went, he made things better. When I was about ten, he and I started building a small log cabin, but we only got as far as making it knee-high. I'd love to build another log cabin one of these days.

WM: Is there a connection between woodworking and acting?

WHM: Usually, I answer that question no. But lately, I do see a connection. Everything we do in this life involves a lot of repetition. In the shop, you design something and lay it out, but at a certain point you realize you need twelve of one piece, and it would be best if they were all exactly alike. That's not different from what I do as an actor. Everyone rehearses their lines a couple of times, then a scene is blocked out and the cameras roll. There might be an interaction between you and me in the scene, and we might do it ten or twelve times. You want all the takes to all be the same, yet you also want them to seem spontaneous. So, wisdom comes from realizing that there has to be repetition, but also that the repetitions are never the same.

WM: What's next?

WHM: As far as woodworking goes, there's a huge barn on our place in Colorado, and I carved out one end for me and my shop. Here in L.A., my shop needs some love. I want to replace a lot of the machinery. Oh, yeah. And I'm directing an episode of "Shameless" and the annual benefit for the Los Angeles County High School of the Arts. The benefit has got me very nervous. ■

Good turns. Visible through the window is a bench Macy built for donation to a charity event; it's signed by Macy and Jimmy Carter.

Old wood, new bench. Macy's current passion is building benches like this from reclaimed fence boards.

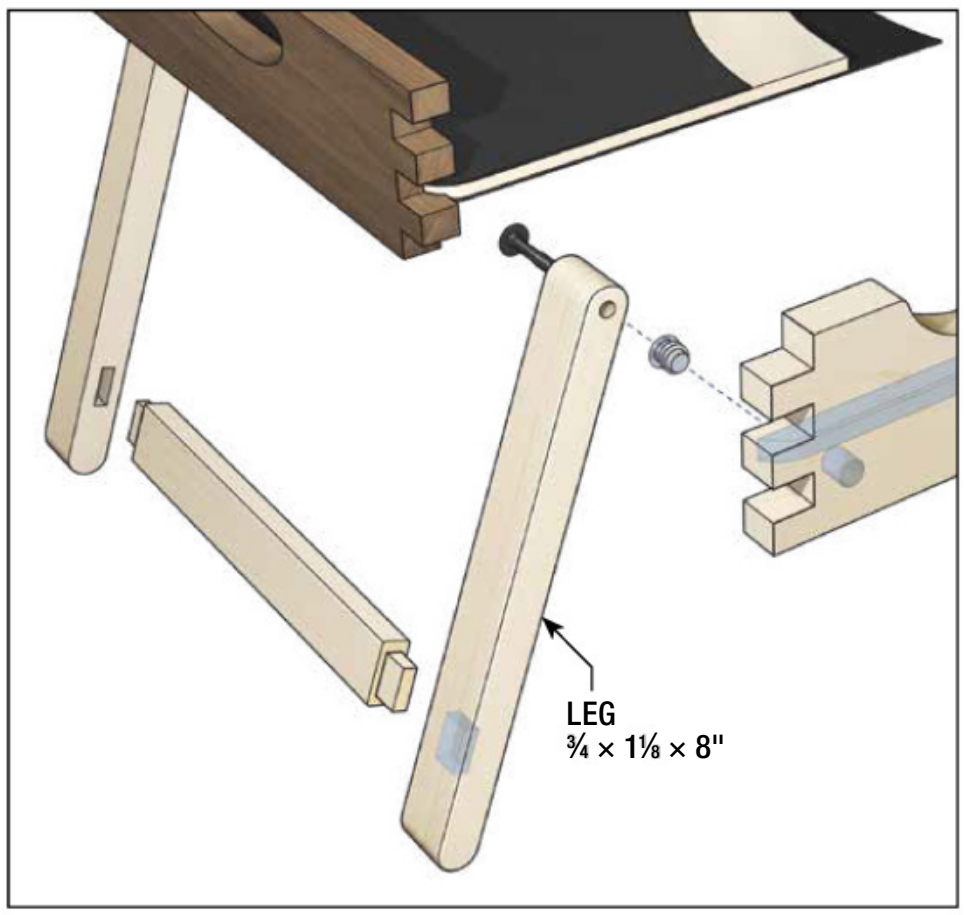
This project rocks

Thanks for the Sturdy Child's Rocker in the Dec/Jan 2019 issue. I modified the plans slightly and then painted them with Black Dog Salvage furniture paint. I know the great-grandchildren will cherish them for decades.
—Jack L. Dalton, via email

A long-legged tray

I like the Super Serving Tray article from issue #86 (Dec/Jan 2019) but noticed an error. The 9½" length provided for the legs would prevent them from both folding flat under the tray.
—Rob Zellmer, via email

Senior editor Tim Snyder replies:
You're right: 9½" won't work; the legs should be 8" long. I apologize for our mistake in the drawing, and I hope your tray comes out looking great and serving as it should.



Elusive bolts

I ran into a problem while gathering materials to build the Super Serving Tray. The author calls for "¼-20 × 1½" washer-head connector bolts." But I have searched high and low and can't find these fasteners. Any suggestions?
—Ronald Wood, Georgetown, TX

Serving Tray author Willie Sandry replies:
As noted in the Buyer's Guide on page 62, a 10-piece set is available for $12.24 at *amazon.com*. Alternatively, you can check your local hardware store. These fasteners are typically sold as "furniture connector bolts." If you can't find 1½" (38 mm), 1⁹⁄₁₆" (40 mm) will work for this project. If you choose metric, make sure your threaded inserts match.

Sharpening short stuff

After searching for an easy and inexpensive way to sharpen my planes and chisels, I was glad to find "Cheapskate's Guide to Diamonds" in issue #78 (June/July 2017). I recently built the sharpening station and have used it on a few of my plane irons and long chisels with great results.

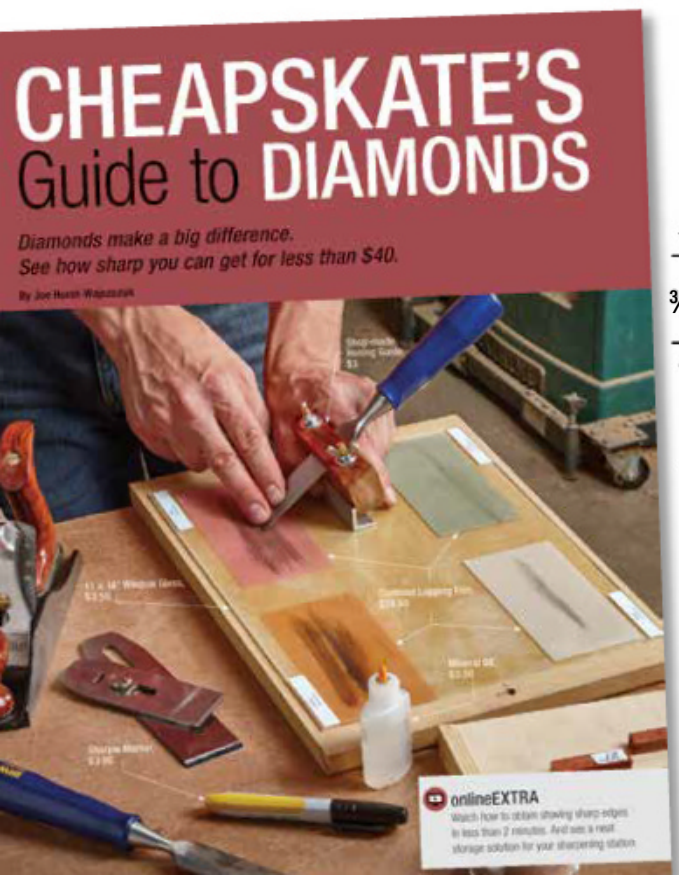
My problem is that some of my tools are too short to sharpen. When I set them in the honing guide, they can't reach the stops on the setting jig. How can I adjust the guide and/or setting jig to suit shorter tools?
—Tyler Newton, Fredericksburg, VA

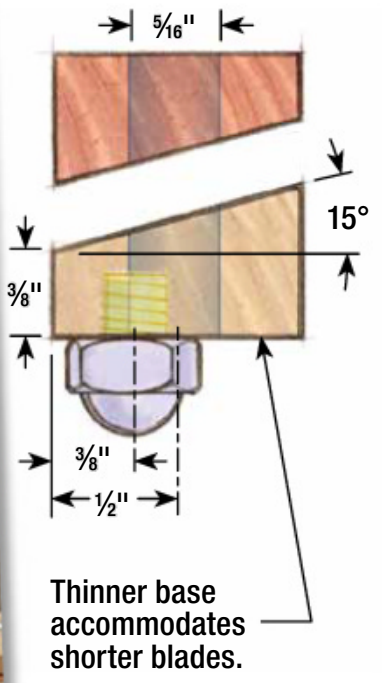
Senior Editor Joe Hurst-Wajszczuk replies:
I'm glad that you liked the story and, more importantly, that you have discovered the joy of a truly sharp edge.

The honing guide shown in the original story was one of several versions. I chose a mid-sized guide because it worked with a wide variety of blades. To accommodate shorter tools, simply trim the honing guide base, as shown below. You can eliminate the counterbores—the T-bolts can register on the bottom edge of the honing guide base—but you will need to the shorten the threaded hole so that it doesn't poke through the top.

An angle gauge can help to position new stops on your setting jig to match the modified guide, but you don't need to be that precise. To determine the location of a 25° stop, insert any blade with a factory edge into your guide and position it so that its bevel rests flat on the glass. Positioning a stop about ⅛" closer will create an approximate 2° secondary bevel.

Modified Honing Guide Side View





Software suggestion

What drawing/CAD software do you recommend? How about if you use a MAC? I'm looking for something inexpensive and easy to learn.
—Tom Winkler, Anchorage, AK

Contributor David Heim replies:
The software that I use and love is called SketchUp. It's easy to learn, and it's the biggest bargain of all the CAD programs out there: Download it for free at *SketchUp.com*. And SketchUp is right at home on a Mac; that's what I use. I wrote about SketchUp in the Feb/Mar 2019 issue. Go to *woodcraftmagazine.com* to download the article for free, and to view tutorial videos to help get you going. I urge you to give SketchUp a try; you won't be disappointed. ■

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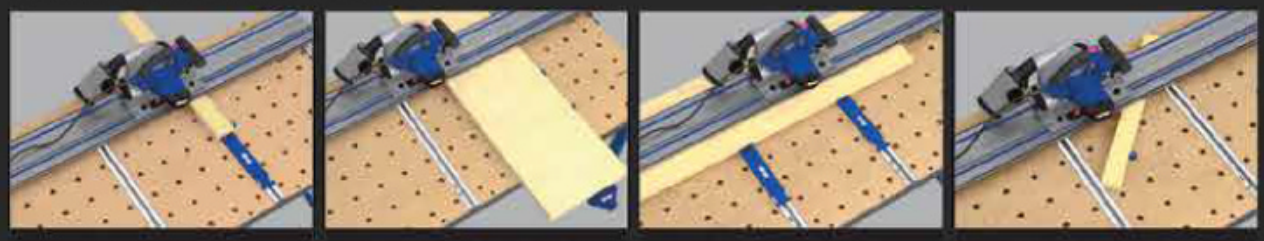

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California Air Tools 4710SQ Quiet Flow Compressor

onlineEXTRA

To hear this compressor in action, check out our 2-minute air compressor challenge video at *woodcraftmagazine.com*.

Power-tool woodworking is inherently noisy. But unlike the anticipated whine of a router or a nailer's percussive report, the ear-splitting chug of an air compressor often rears up unexpectedly. One second you're in a conversation or listening to music, and the next, you can't hear yourself think. Although I had devised some noise-coping tricks for my old compressor (e.g., starting it up and then stepping out for coffee, or setting it at the far end of my shop), I still had to keep my muffs within reach. After trying a Quiet Flow compressor from California Air Tools, I discovered the best trick yet: parking my old pancake-style compressor at the curb.

When tested at arm's length, the oil-free 4710 SQ registered 74 decibels (dB). Although still louder than normal conversation (60dB), it's about 25% quieter than the 92dB compressor I had been working with, which is like music to my ears. The noise level difference is partially due to the dual-piston pump. Whereas conventional direct-drive compressors run at 3450 RPMs, CA Air Tools' compressors operate at 1725 RPMs. In addition to reducing noise and vibration, the manufacturer claims that the slower and smoother running motor means a longer service life. Although my new Quiet Flow provides slightly less air than my old compressor (2.0 cfm at 90 psi vs. 2.6 cfm at 90 psi), this difference hasn't slowed me down in the workshop or on the jobsite.

If you're not sold yet, consider that this quiet compressor costs about the same as a noisier conventional model, and sometimes less. So, whether you're shopping for your first compressor or looking to buy a replacement, here's your chance to save your hearing, and maybe even save some money.

—Tester, Joe Hurst-Wajszczuk

Photo: Ralph Lee Anderson

Overview

- Quiet, compact, oil-free compressor
- 1.0 hp motor, 6.5 amp draw
- 4.7 gallon; 3.0 cfm @ 40 psi; 2.0 cfm @ 90 psi
- 43 lbs.
- $119.99

Self-setting jig = super-simple pocket screws

Armor Tool Auto-Jig Pocket Hole System

Pocket screws aren't the right choice for every project, but there's no arguing that they are here to stay. By enabling woodworkers at any skill level to quickly create strong joints with a drill, clamp, and a few screws, pocket screw joinery has earned a spot in many workshops. With a little practice, most jigs are easy to use, but the Auto-Jig Pocket Hole System from Armor Tool makes setting the jig and selecting the right screw fool-proof. Seriously, after using the jig once, you can trash the manual. You won't need it.

The heart/brain of this new tool is its patented Auto-Adjust Clamp. To use, insert the drill bit into the jig as shown in the photo, set a workpiece against the guide block, pull the handle until the clamping jaw touches the stock, and then press the lever. As the jaw grabs the board, the action simultaneously positions the stop collar on the bit and sets the height on the guide block. Now, tighten the stop collar, insert the bit in the guide block, and start drilling.

Selecting the correct screw length is a no-brainer, thanks to the chart printed on the guide block. In addition to simplifying screw selection, the coating on Armor's color-coded (Color-Coat™) screws provide corrosion protection, making these fasteners suitable for both interior and exterior use.

Another nice feature: The base provides built-in storage for drill and driver bits and the collar wrench so that you won't waste time searching for them at the start of the next job.

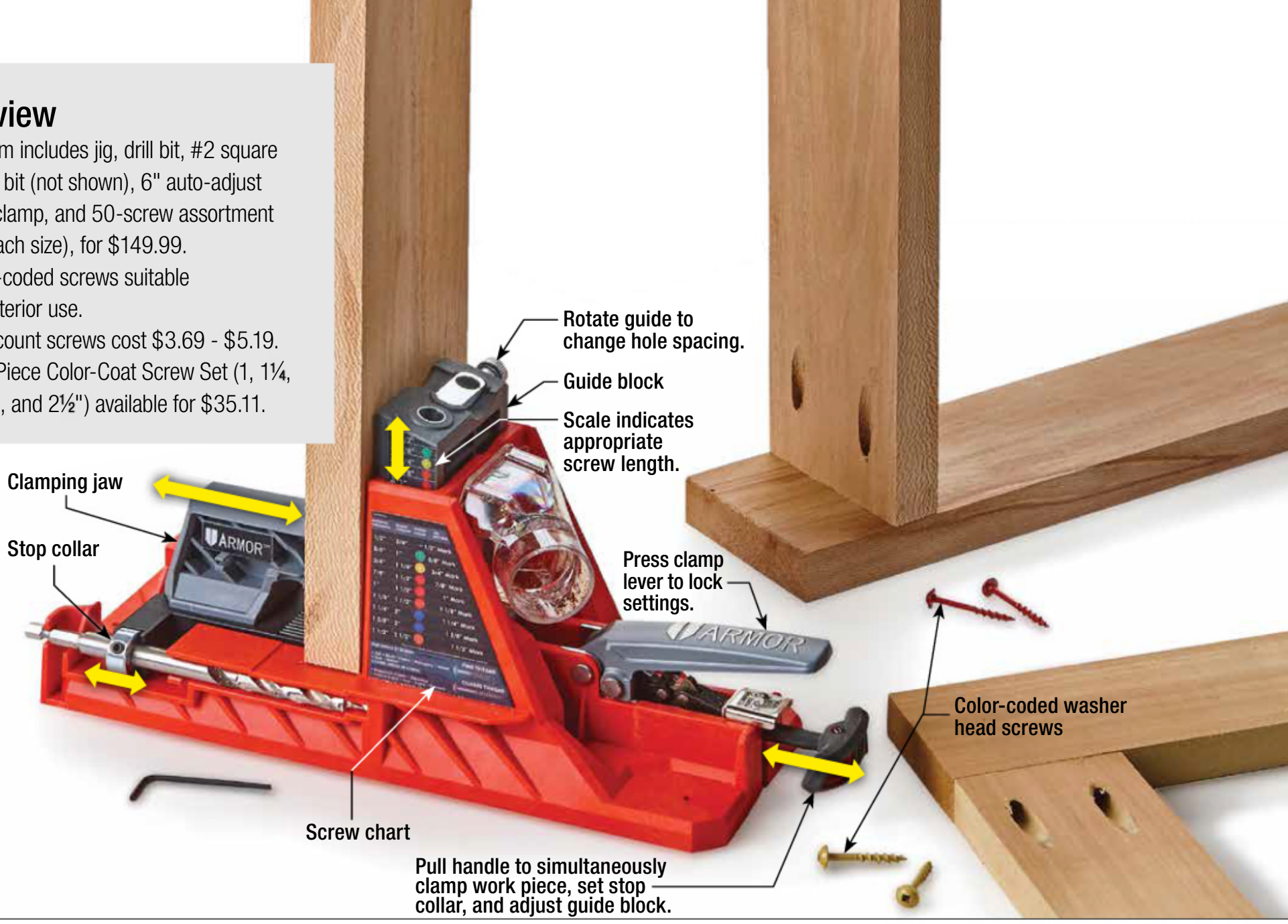
—Tester, Joe Hurst-Wajszczuk ■

onlineEXTRA

To see this jig in action, check out the video at *woodcraftmagazine.com*.

Overview

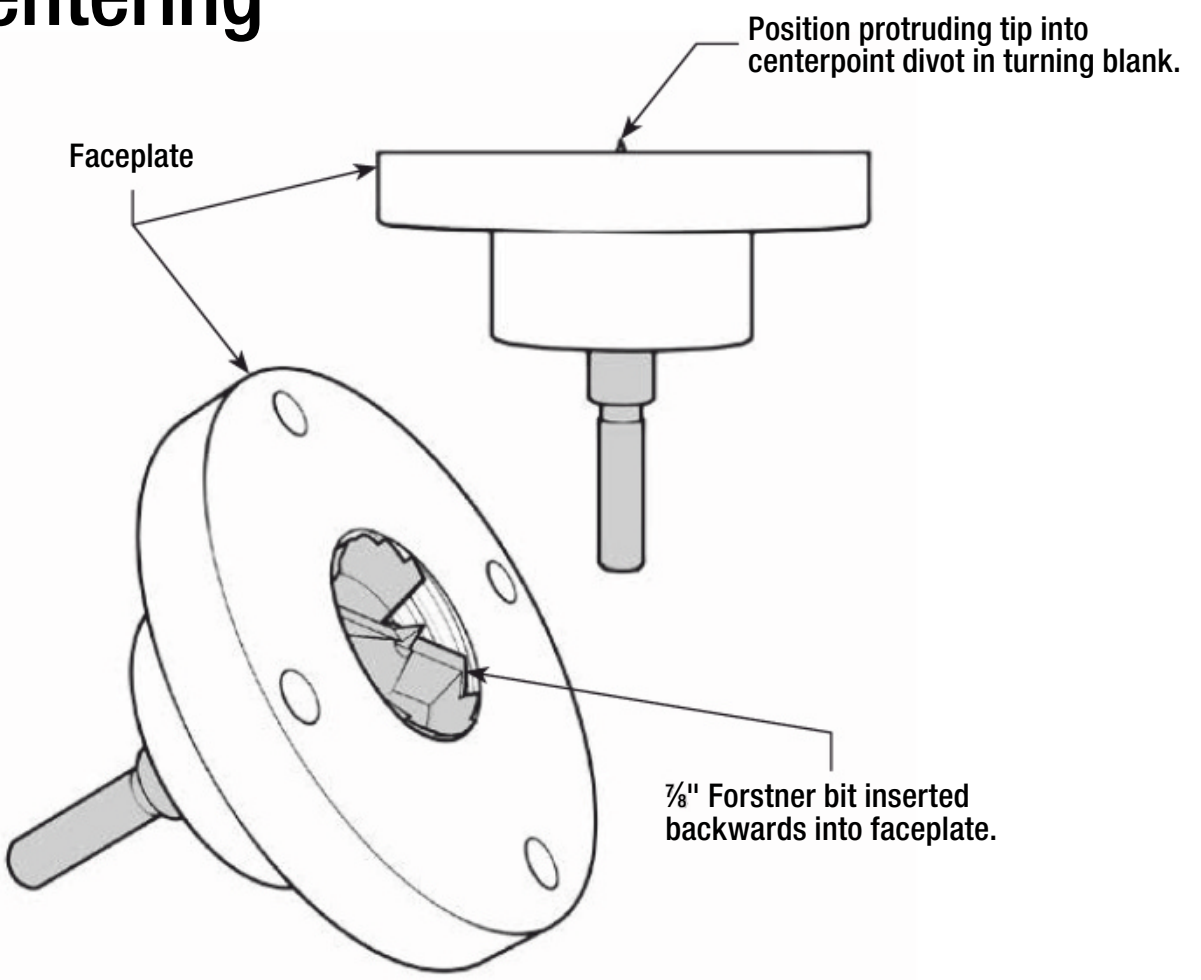
- System includes jig, drill bit, #2 square driver bit (not shown), 6" auto-adjust face clamp, and 50-screw assortment (10 each size), for $149.99.
- Color-coded screws suitable for exterior use.
- 100-count screws cost $3.69 - $5.19.
- 750-Piece Color-Coat Screw Set (1, 1¼, 1½, 2, and 2½") available for $35.11.



TOP TIP

Easy faceplate centering

I recently discovered a simple way to locate a faceplate precisely over a center point on the end of a turning blank. I find that a ⅞" Forstner bit fits exactly inside the threads of my 1"- 8 TPI faceplate. With the center point of the bit just protruding from the faceplate, I can position it into a center-punched divot on the end of the blank. Then it's just a matter of holding the faceplate securely at this location while drilling the screw pilot holes. Remove the bit, attach the faceplate, and you're ready to go.
—Bill Wells, Olympia, Washington



Illustrations: Christopher Mills

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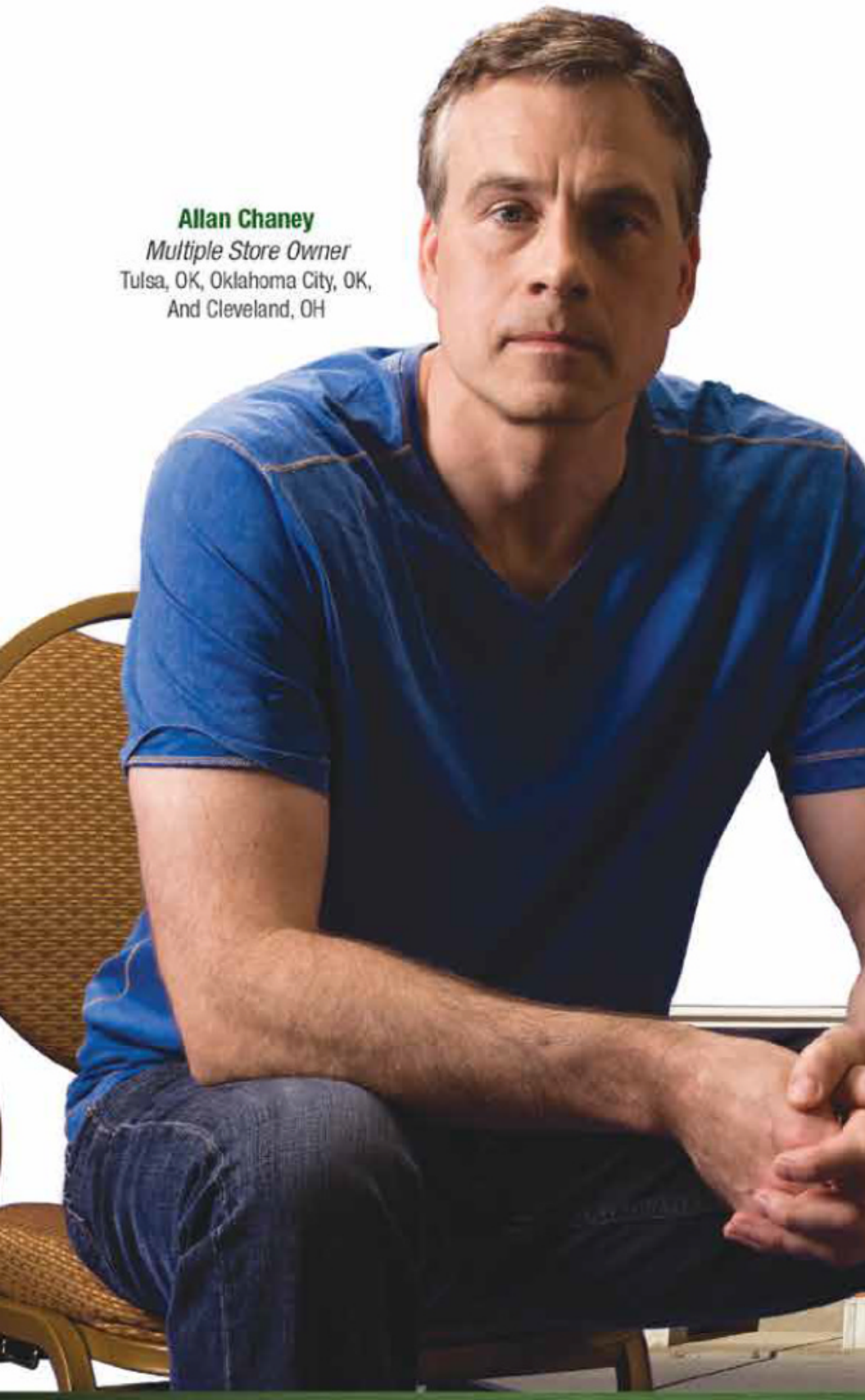

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Multiple Store Owner
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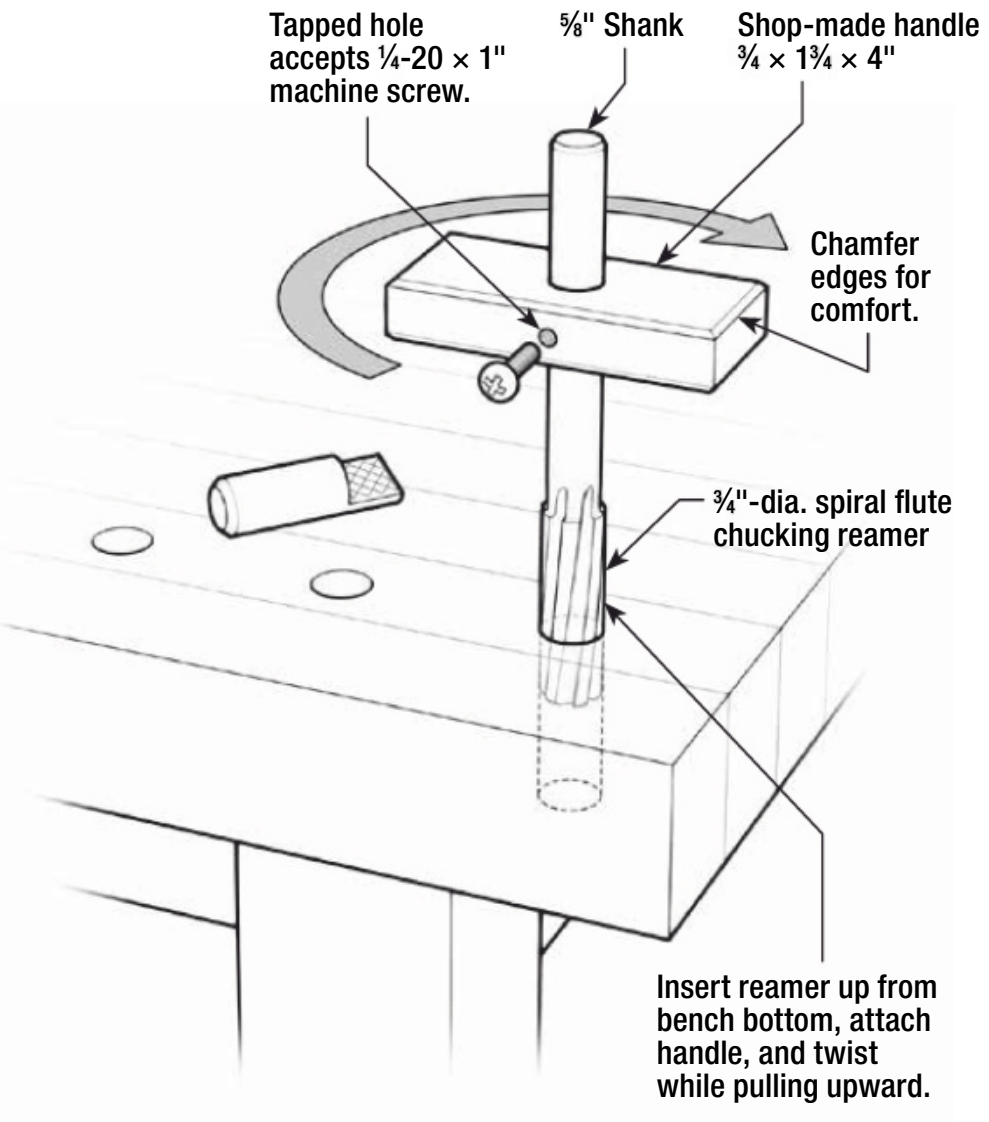
Dog hole cleaner

I was having trouble sliding my ¾"-diameter metal bench dogs in some of my workbench dog holes. Upon closer examination, I found that a couple of the problematic holes were a hair undersized, and a few were contaminated with glue or paint drips. I tried cleaning up the holes with an undersized dowel wrapped in sandpaper, but with little effect. It seemed to me that I needed a reamer of some sort. An online investigation uncovered a ¾"-diameter spiral flute "chucking reamer" for about $28. With its 7"-long shaft and 3"-long HSS cutter, it did a great job of reaching into deep dog holes and quickly shaving their sides to precise diameter.

The only problem was the bit's ⅝"-diameter shank, which wouldn't fit in a standard drill chuck. My solution was to make a ¾ × 1¾ × 4" wooden handle with a ⅝"-diameter hole for the shank. To lock the handle in place, I tapped it to accept a ¼-20 × 1" machine screw. To use the tool, insert it from the underside of a dog hole, attach the handle, then pull upward while slowly twisting clockwise to slice through the choke points.

—Joe Hurst-Wajszczuk, senior editor



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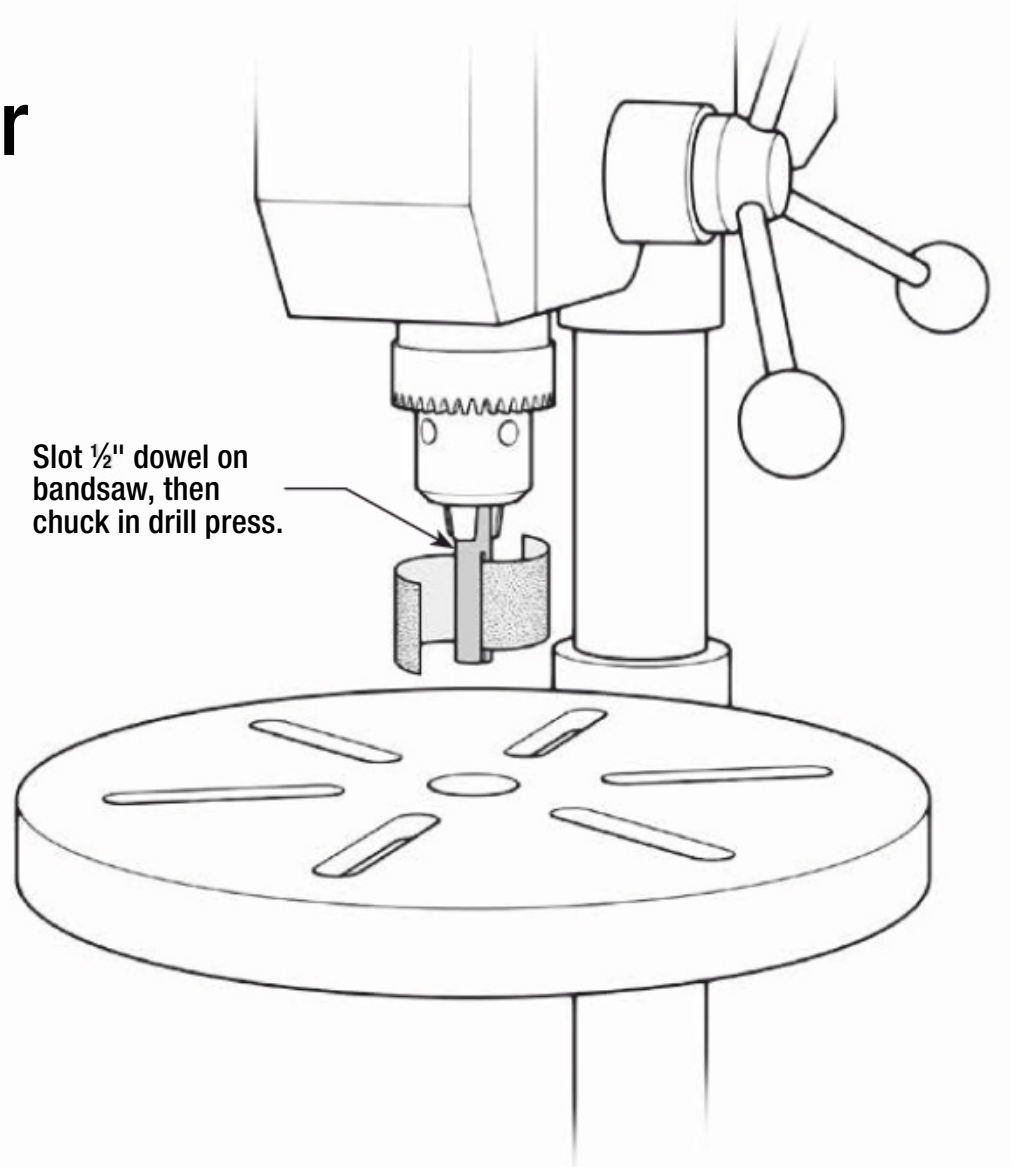
Makeshift drum sander

Sometimes I make little turned vessels with drilled-out interiors, and need to clean up the relatively deep openings. I've found that the best tool for the job is a ½"-diameter dowel that I use as a drum sander of sorts. I bandsaw a slot in the end of the dowel to accept a strip of sandpaper that automatically wraps itself around the dowel as it spins inside the hole. Refreshing the paper occasionally is a simple matter of tearing off the used section. This technique actually works well for sanding the edges of pierced scrollwork too. On large workpieces, you can chuck the sander into a hand-held drill for better maneuverability.

—Stu McPherson, Truth or Consequences, New Mexico



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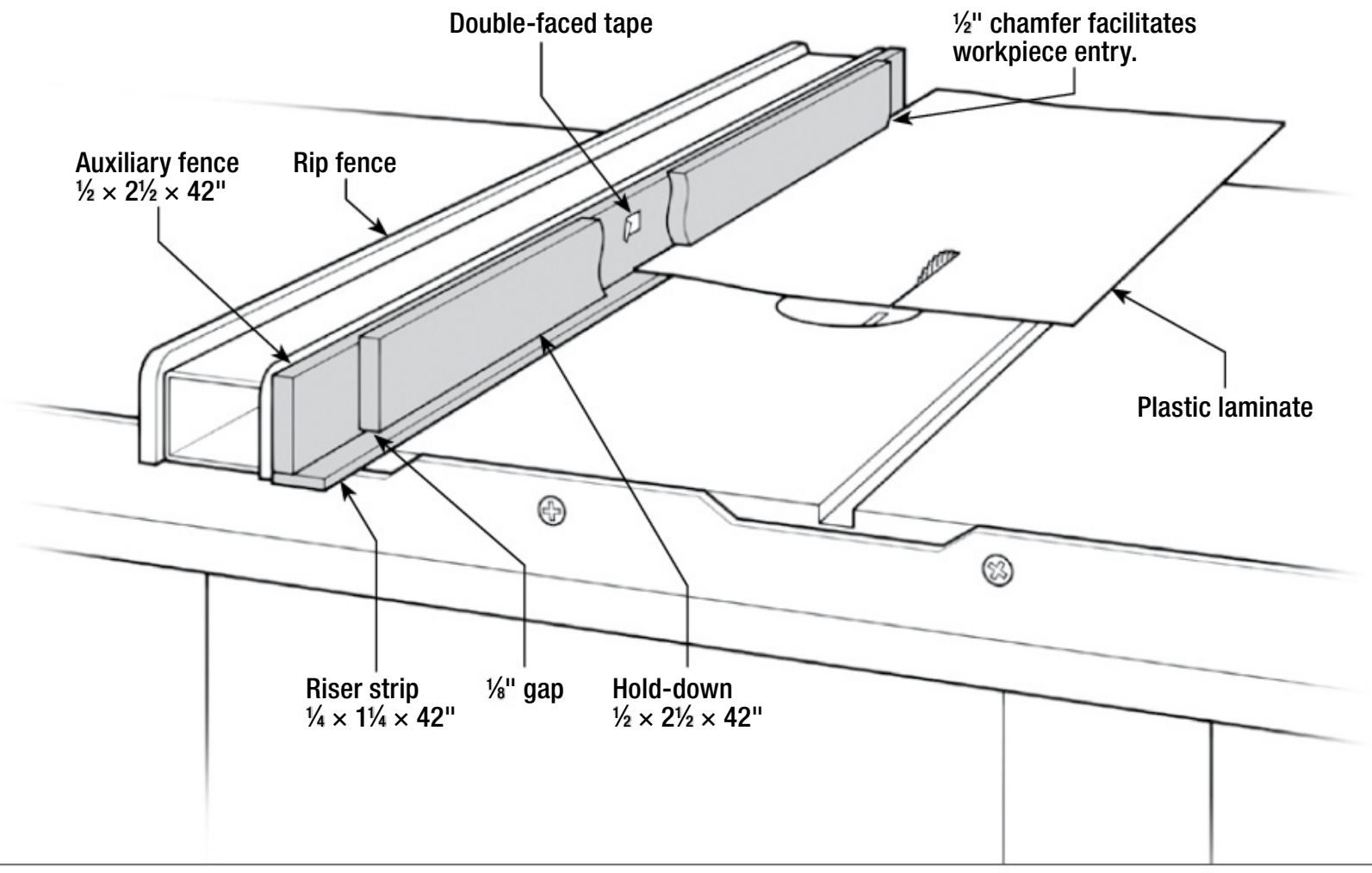
Laminate-sawing auxiliary fence

When feeding plastic laminate on the table saw, the material tends to pinch in the gap under the rip fence. It also wants to ride on top of the spinning blade if the sheet isn't held down. Furthermore, the heel of a push stick too often slips upward off of the thin stock. This simple jig neatly solves all three problems. Make the parts from plywood or MDF, gluing the riser strip to the bottom edge of the auxiliary fence. This configuration prevents the material from slipping under the rip fence, and lifts it enough for a push stick heel to easily catch. The hold-down, of course, prevents lifting.

I use double-faced tape to attach the hold-down board in case I need to raise it more than ⅛" to accommodate acrylic or other slightly thicker material. The hold-down is a few inches shorter than the auxiliary fence to allow inspection of workpiece/fence contact at both ends of the fence. For most cuts, you can simply clamp the jig to your rip fence. However, clamps can impede push stick travel on very narrow cuts, in which case I attach the jig to my rip fence with double-faced tape, applying clamp pressure to the taped areas for a few moments to ensure a good bond.
—Paul Anthony, Riegelsville, Pennsylvania ■



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Here's your chance to help someone become a better woodworker and get rewarded for the effort. The winner of next issue's Top Tip award will receive a Woodcraft Gift Card worth $250. All others will receive $125 for a published illustrated tip, or $75 for a non-illustrated tip. Published tips become the property of *Woodcraft Magazine*

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

A SIMPLE DOVETAILED TOTE

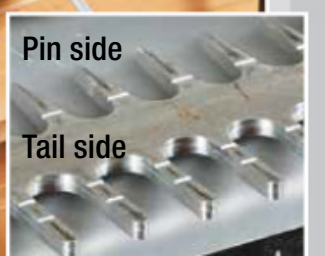
Sharpen your machine-dovetailing skills with this handy project.

By Steve Dando with Jeff Marsden

Set the Jig

The instructions that come with the jig are easy to follow, but here are a few tips to get you started.

- **Mill your stock, plus two extra boards to set the jig.** These boards are used to test setup and fit and for a spacer/backer board that will prevent tearout.
- **Start with the Tails.** Select the tail side of the template and the dovetail bit with its corresponding bushing. Mount the spacer board under and perpendicular to the template, registering it on the left-hand stops. Mount a tail board vertically in the front left of the jig, flush with the spacer board, again registering the stop. Set the router's depth of cut to a hair below the template, and cut the tails.
- **Rout the Pins.** Flip the template to "pin mode" and install the straight bit and bushing in your router. Mount an end piece (pin board) vertically. Set the router's depth of cut as before and rout the pins on your board.
- **Fine-tune the fit.** Aim to press-fit the joint about two-thirds of the way by hand and then lightly tap it home with a dead-blow mallet. To tighten the fit, move the template toward yourself, to loosen the fit, move it away.



Tackle the Tote

Cut the grooves and dadoes

At the table saw outfitted with a dado stack, groove the side and end pieces. Then dado the end pieces.

Make and shape the handle

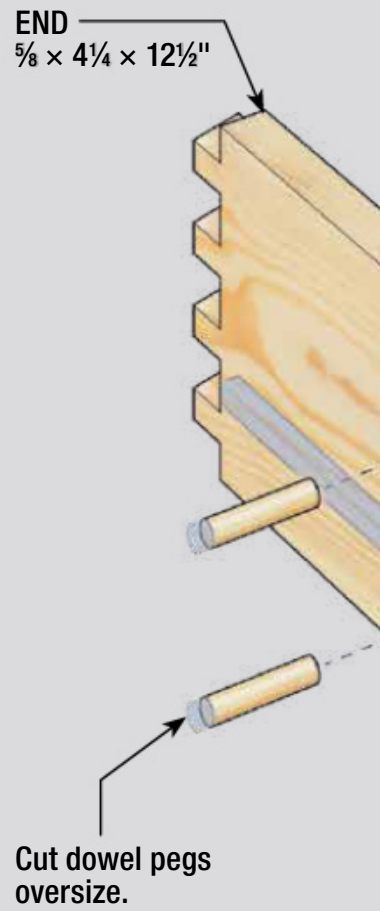
Finish-sand the sides and ends, then dry-fit the tote and cut the divider to fit. Affix the template (below, right) to the workpiece. Now use a 1⅝" Forstner bit to drill a series of holes for the handle. Bandsaw the top curve and end scallops. Smooth the curve at the belt sander, and the scallops and handle interior at the spindle sander.

Peg the ends

Measure and mark the holes for the pegs in the ends, and drill through the face of the end pieces and into the ends of the divider. Glue and tap dowel stock into the holes, and flush-cut when dry.

Finish up

Use a hand plane to smooth the pegs and dovetails. Knock down sharp edges with sandpaper and apply your finish of choice. ■



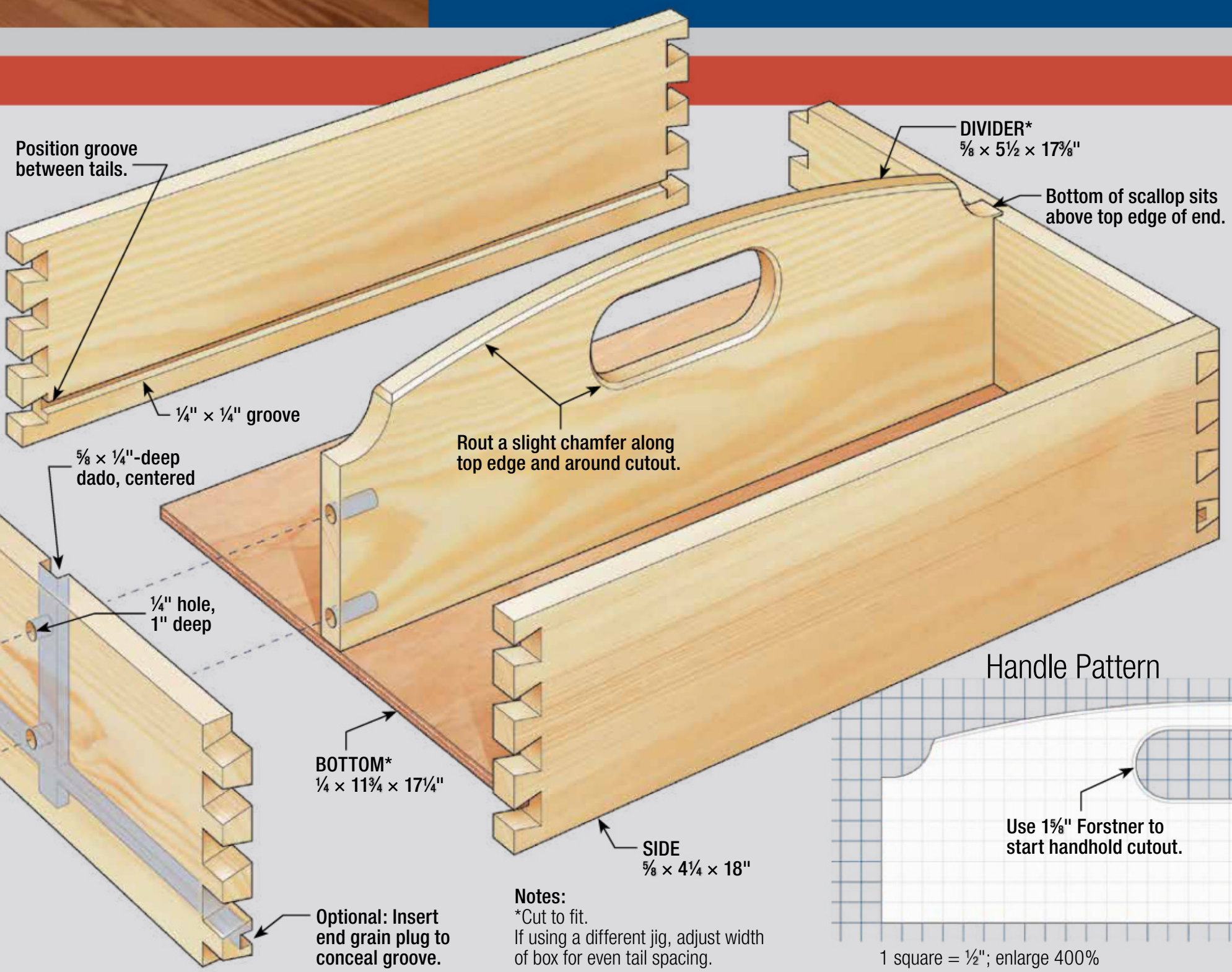
Photos: Doug Loyer; Illustrations: Greg Maxson

One of the best parts of my job as an employee at the Woodcraft Store in Seattle, Washington is sharing my love of woodworking with beginners. This project is a popular class that covers woodworking machinery and workflow, but the star of the show is the Porter Cable 4212 dovetail jig. Students enjoy learning how to use this jig and are surprised by how quickly they can make one of woodworking's most mystifying joints. And rather than sending them home with sample joints at the end of the day, graduates leave with this useful tote. Obviously, this carry-all can find all sorts of practical uses, but more importantly, it reminds them of a new-found skill.

But why should beginners have all the fun? More experienced woodworkers looking to hone their skills or use up leftover lumber will find this project easy to build, and quite handy.

onlineEXTRA

Visit our website to watch a short instructional video of Steve building this very tool tote.



Notes:
*Cut to fit.
If using a different jig, adjust width of box for even tail spacing.

Handle Pattern

1 square = ½"; enlarge 400%

METAL IN THE WOOD SHOP

Work wood? Then you probably work metal from time to time. Here are some excellent tips for fabricating aluminum, brass, and steel as nicely as you craft wood.

By Andy Rae

At some point in our woodworking pursuits, most of us work a bit of metal in the shop. Whether we incorporate it in our work for structure or decoration, or use it for workshop jigs and fixtures, metals—mostly soft metals such as brass, copper, and aluminum—are comfortably at home in the wood shop. One fact is guaranteed: Cutting and smoothing metal is a challenge due to its inherently much harder (and sharper!) nature. The good news is that typical woodworking tools like the bandsaw, table saw, drill press, and miter saw will do a fine job of cutting these materials as long as you take a few precautions. Throw in a hacksaw, and you've just about got a complete metalworking shop—for us wood guys, anyway.

While woodworking is inherently dangerous, working with a much harder material like metal raises the safety bar a few notches. Proper setup and tooling are key, as is taking appropriate safety precautions (see box, right). In this article I'll address metalworking basics, from marking and layout to cutting and drilling soft and hard metals. I'll show you how to finish and smooth edges, and how to polish surfaces to make them glow. I'll discuss tooling, and help you choose the right bits and blades. (Relax; you probably already have 'em.) We'll also take a look at a few metalworking tools and supplies that you may not be familiar with, but which won't break your budget.

You can buy metal through catalogues and online, but a better alternative is to ask a local metal supplier for scraps, or *falls*. A more fun approach is to visit your neighborhood metal recycler, where you can root through bins and barrels for interesting and unusual bits. (Bring along a magnet to check for ferrous metal hidden under various coatings.) I think you'll find that expanding your skills into metal working can really increase your woodworking capabilities.

Playing it Safe

Sharp edges, flying chips, and red-hot, skin-sizzling material are real hazards for you and your shop. To keep things safe, clamp your work securely, and slow your feed rates substantially to avoid 'grabbing' or catching. Sweep and clean your work area, and turn off all dust collection. Heated shards can start a fire if they come in contact with a small pile of dust, especially inside a wind-driven dust pipe. To protect yourself, don this safety gear when things heat up:

Opening photo: Ralph Lee Anderson

Marking out

Unlike wood, metal doesn't respond very well to pencil marks or pricks from an awl. Instead, markers, paint, and punches allow you to make accurate layout marks and cut lines. Before marking, it's smart to clean metal surfaces with a solvent to remove any dirt and oxidation. A swipe with a rag dampened with denatured alcohol will remove most of the dirt. For tougher spots, try mineral spirits.

Most clean metals can be marked with a black felt-tipped pen. However, reflective metal surfaces can impede visibility. In these cases, it's better to incise a line with a hard marker, such as a carbide-tipped pen. For even clearer sighting, you can paint the surface, and then score a line through the paint. When drilling, a spring-loaded punch will create a small divot that registers the tip of a drill bit to prevent wandering.

Black matters. A fine-tipped permanent marker leaves a distinct line when precision counts. Medium and wide markers work as fast-drying paint, letting you scribe through the dark background to create a visible 'white' line.

Sawing soft metals

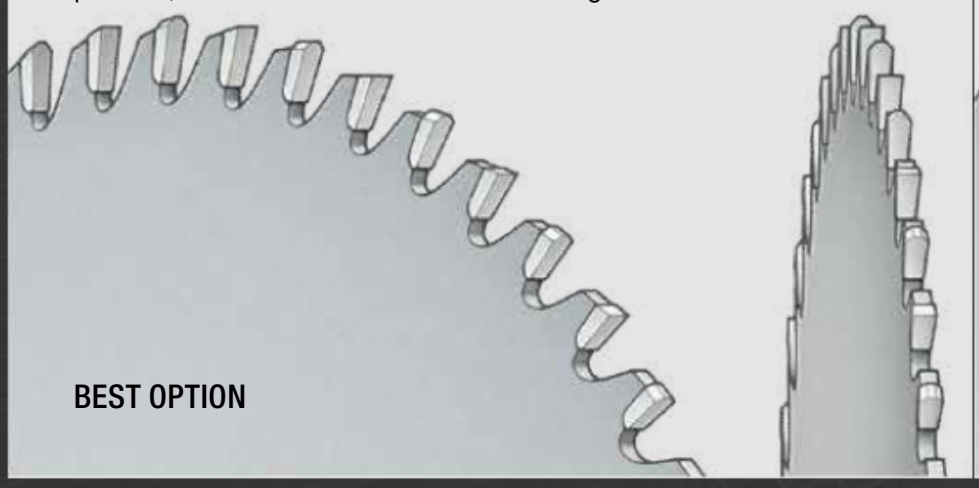
A typical woodshop table saw and bandsaw are perfectly capable of cutting thin sheets of brass, aluminum, and other soft metals. Sheet thickness is indicated by a gauge number, with higher numbers representing thinner sheets. In my opinion, a 12-gauge sheet (about 3/32") is about as thick as you can cut safely on these machines. Metal plate, bar stock, and other thicker material should be sawn elsewhere, perhaps on a miter saw or with a jigsaw equipped with a metal cutting blade.

As for blades, the more teeth the better, as they'll provide clean cuts with minimal wear on the blade. A triple-chip grind (TCG) table saw blade is a good choice, as is a 14-TPI bandsaw blade with regular teeth. For safety and cleaner cuts, use a zero-clearance throat plate. A 60- or 80-tooth crosscut blade often comes standard on miter saws and will do a serviceable job if you saw very slowly.

Round contact. A V-shaped wooden cradle provides enough grip to prevent round stock like this copper pipe from spinning. A woodcutting bandsaw will cut softer metals such as copper and aluminum with ease. More teeth are better, but even a 3-TPI blade is OK as long as you keep the feed rate slow.

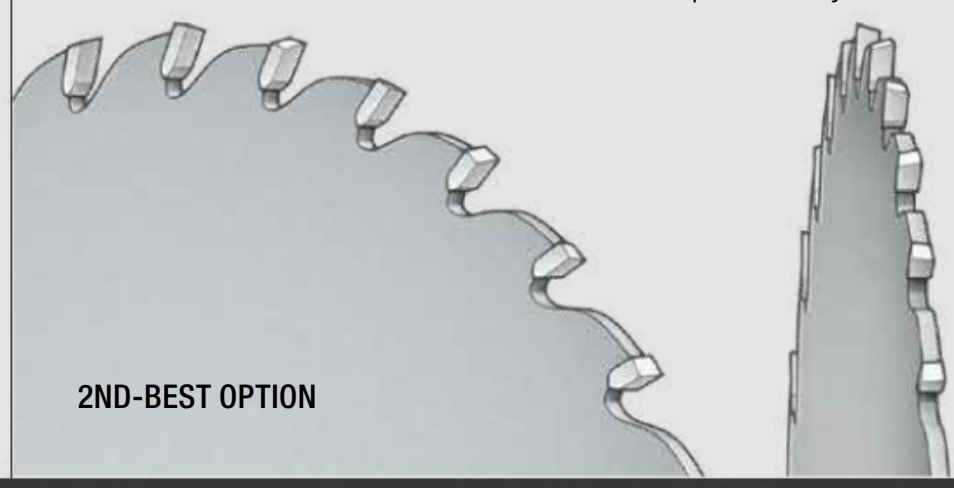
Mild Angles for Mild Metals

TCG (Triple-Chip Grind) saw blades feature a large number of carbide teeth with squared and chamfered cutting profiles, which suits them well for cutting soft metals.



BEST OPTION

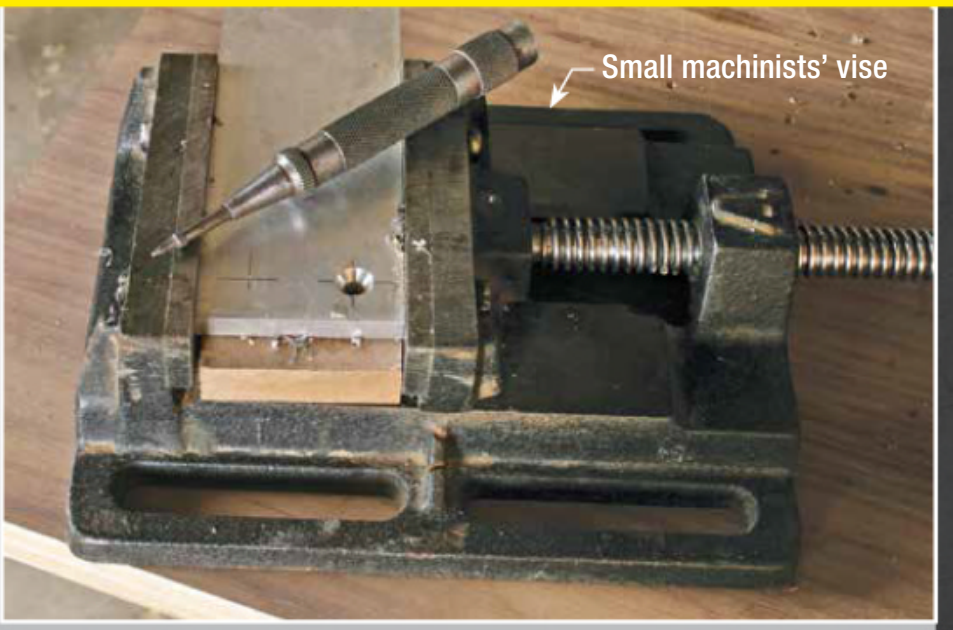
ATB (Alternating Top Bevel) blades have steeply-angled teeth for clean cuts in wood. While they'll cut most soft metals, the teeth will dull faster and the blade will wear out prematurely.



2ND-BEST OPTION

Project photos: Andy Rae; Illustrations: Christopher Mills

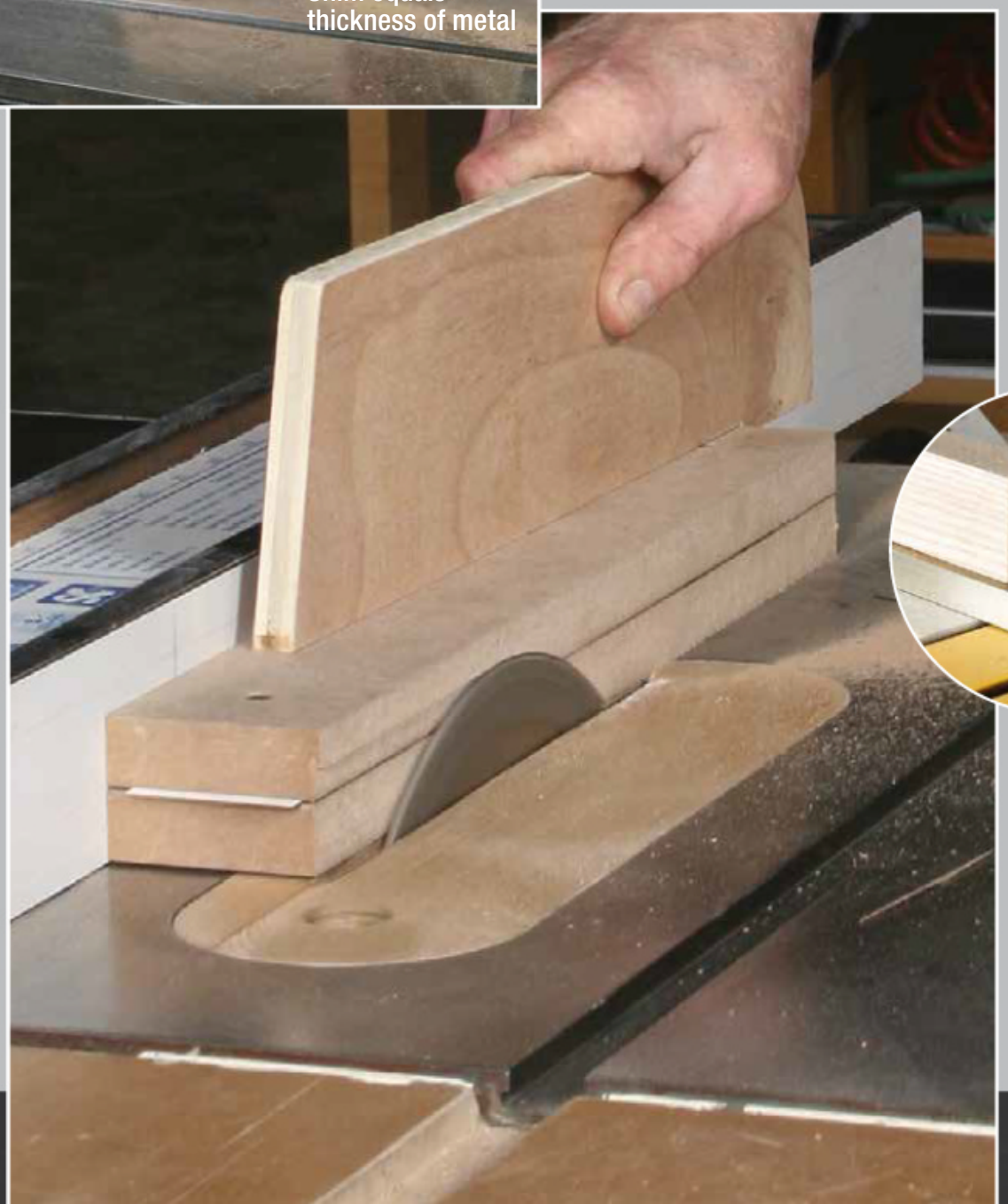
Seeing red or blue. When dark lines won't show, try cutting through some paint instead. Dab or spritz some alcohol-based red layout fluid or machinists' *bluing* on the area to be marked, and then scribe a line that's easy to see.



No skitter. Indenting your mark with a metal punch accurately registers the tip of the bit precisely where you want to drill. On hard metals such as steel, repeat the punching process two or three times for a deeper dimple.

Pack it flat. Sandwich thin metal between two pieces of hardwood or MDF screwed together, using shims at either end to equalize pressure over the package. Use a push stick to keep hands clear of flying debris, and push slowly and consistently.

Close the gaps. For thicker sheets (the kind you can't bend with your hands), use a zero-clearance throat plate, and clamp a board to the rip fence to close the gap at the table. A long shoe-style push stick with a small heel puts pressure over the entire panel.



Tight clamps; slow feed rate. Secure the stock firmly to the table between wood blocking, and lower the blade gently—and very slowly—into the workpiece, taking small cuts to prevent grabbing.

Cutting steel

Because of their hardness, ferrous metals such as cast iron, and mild, carbon, and stainless steels pose a significant challenge to most of our stationary woodshop machines. Forget the bandsaw, table saw, and miter saw. Instead, get out a hacksaw and a jigsaw outfitted with a metal-cutting blade. Whenever necessary, wear heavy gloves to protect your hands from sharp edges and excessive heat caused by the friction of cutting. Steel can retain heat for a long time, so be cautious before handling freshly cut work with bare hands.

Keep in mind that cutting steel generates sparks, a potential prelude to fire. So work in a clean, dust-free area, and check your surroundings after cutting to make sure stray metal particles haven't mixed with any overlooked dust.

An old standby. A hefty metalworking vise provides a steady clamp for accurate cutting with a hacksaw. Oil or wax the blade for smooth action, and pad the metal jaws with wood to protect the work.

The do-all tool. A jigsaw equipped with a metal-cutting blade can tackle straight cuts and curves. A "zero-clearance" throat insert helps to control chips and minimize burred edges. You can spot a metal-cutting blade by its wavy edge and numerous small teeth (inset).

Drilling

The drill press and a hand-held power drill are important metalworking tools, especially when equipped with the right bits. Standard twist-style, high-speed steel (HSS) bits do a fine job drilling into most metals. Look for bits with a flatter, 135° tip angle. Bits with 118° tips are meant for wood and cut too aggressively for most metals, especially steel. Cobalt- and titanium-coated bits last longer and are definitely worth the extra money. Drill metal slowly, and lubricate the process with light machine oil to help prevent overheating. Keep a few countersinks on hand—both single-flute and multi-flute—to allow seating screw heads and the like in soft and hard metals.

Metal

A shallow pitch is best used for drilling into hard materials.

Wood

A steeper pitch minimizes wandering when drilling wood.

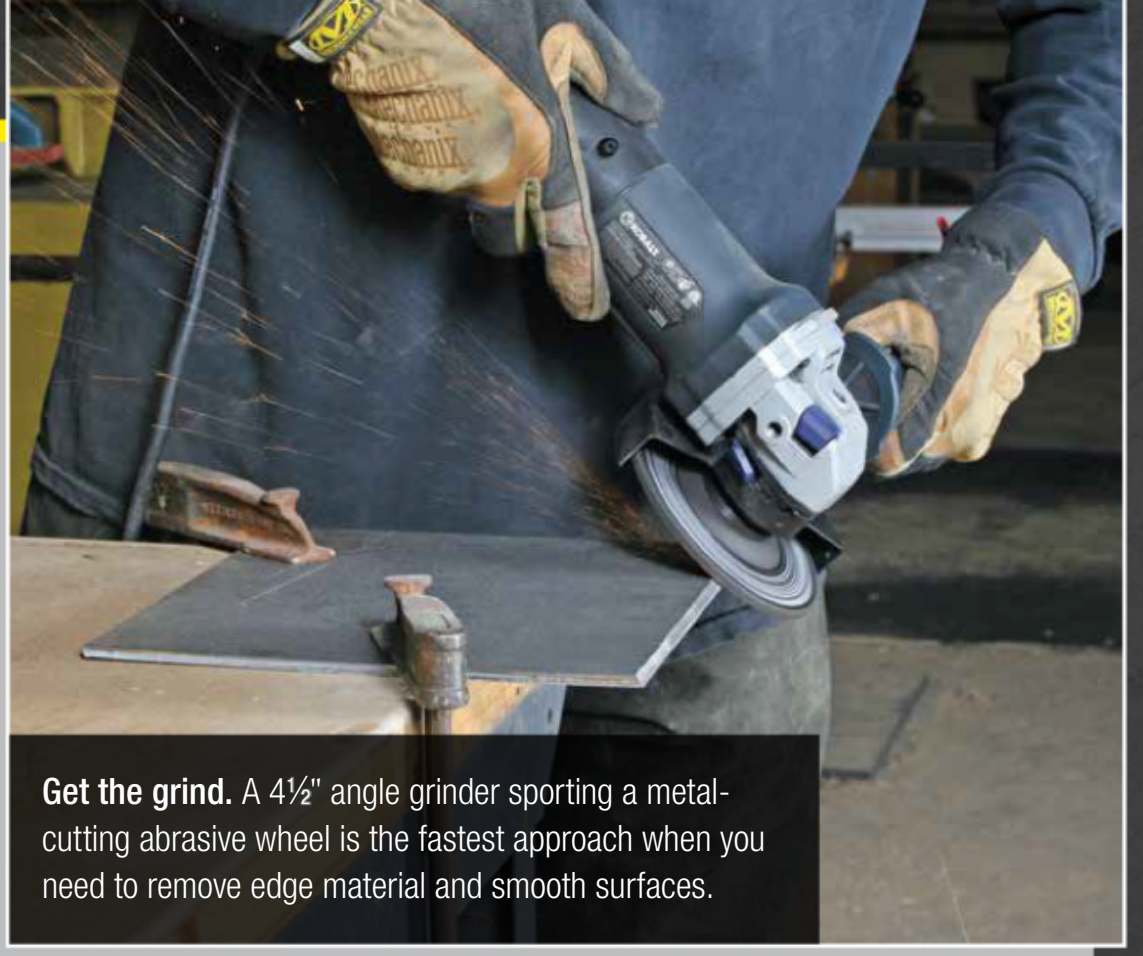
Keep it straight. A drill with a ½" chuck has the heft and muscle for boring big holes, especially when using a handle extension to help control the extra strong torque. Start a big hole by first drilling a small hole as a guide for the bigger bit.

Counter culture. Single-fluted countersinks do a better job and leave a smoother surface on soft metals like brass and aluminum. For steel and other hard metals, a multi-fluted bit is your best bet.

The virtues of a vise. Firm clamping is essential for safe, accurate drilling. A small machinists' vise has enough grip and heft that a single handhold is sufficient when drilling small holes or counterboring.

Cleaning up

Cut and drilled edges on metal are typically rough and sometimes razor sharp. You'll need to remove tool marks and ease over sharp corners, or *arrises,* for a workmanlike job that's comfortable to the touch. Here, routers and hand planes sit idle; it's time to grind, sand, scrape, and file. If your edges are really rough, an angle grinder makes quick work of clean-up and beveling. Sharp edges can also be sanded smooth with coarse grits, and a deburring tool is handy for removing burrs, or flashing. A mill file is another important part of your kit, letting you smooth long edges as well as file into inside corners.

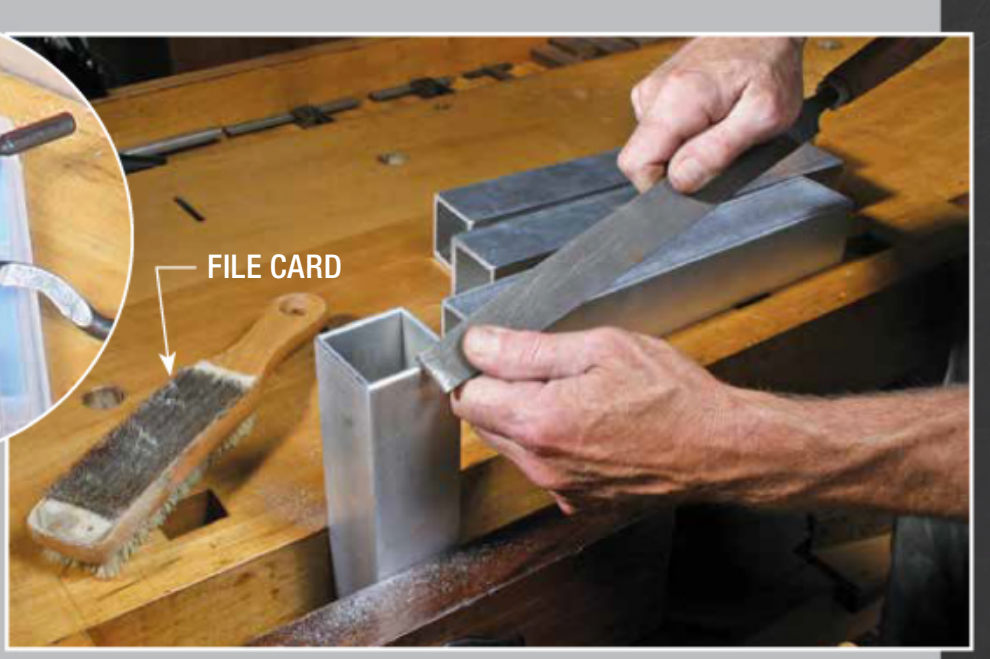


Get the grind. A 4½" angle grinder sporting a metal-cutting abrasive wheel is the fastest approach when you need to remove edge material and smooth surfaces.

Shape n' smooth. A disc sander with 80-grit paper and a shopmade guide make quick and accurate work of smoothing raw edges.

Spin a bevel. Beveling is fast and accurate when you chuck round work into the end of a drill. Hold the spinning rod at an angle against a hard-backed sanding block.

Ridges be gone. Relieving sharp-edged holes is fast and painless with a deburring tool. With a pulling motion, the pivoting hard-steel cutter follows the hole's circumference and cuts a small bevel.



Old-school smooth. Long, even strokes with a 12" mill file will smooth rough edges and remove tool marks. Clean the file teeth with a file card to prevent clogging, which impedes cutting.

Polishing

Just like a fine finish on wood, metal deserves special care once all the shaping and smoothing are done. There's a wide spectrum of surface finishes possible, from a sanded, dull surface all the way to a high polish. Begin by sanding with progressively finer sandpaper if necessary to remove any scratches or crud that won't wash off. Then, for a finer finish, you can follow up with polishing compounds, which also come in coarse- and fine-cutting versions. Automotive rubbing compound, which leaves a matte finish, is your best bet for fast stock removal, especially for harder metals. For a more reflective shine, use buffing compounds, starting with white diamond and finishing up with tripoli. Be sure to separate your polishing wheels and pads to prevent cross contamination.

A fine hand. Use a progression of grits, starting with coarse paper wrapped around a hard block. Finish by sanding with fine paper on a soft block for a matte finish.

Spin a finish. A small rotary tool with a soft pad loaded with buffing compound will produce a nice shine on most metals. A selection of soft and hard wheels in a variety of shapes let you progress from rough to fine polish.

Show-me shine. Polishing compound rubbed into a soft cloth will remove sanding scratches and other defects, creating a mirror surface on many metals.

Power buff. To put a shine on larger surfaces, you'll save time by using a random-orbit sander faced with a pad that's charged with buffing compound.

TURNED TABLE LAMP

A stack-laminated blank looks great and solves wiring problems.

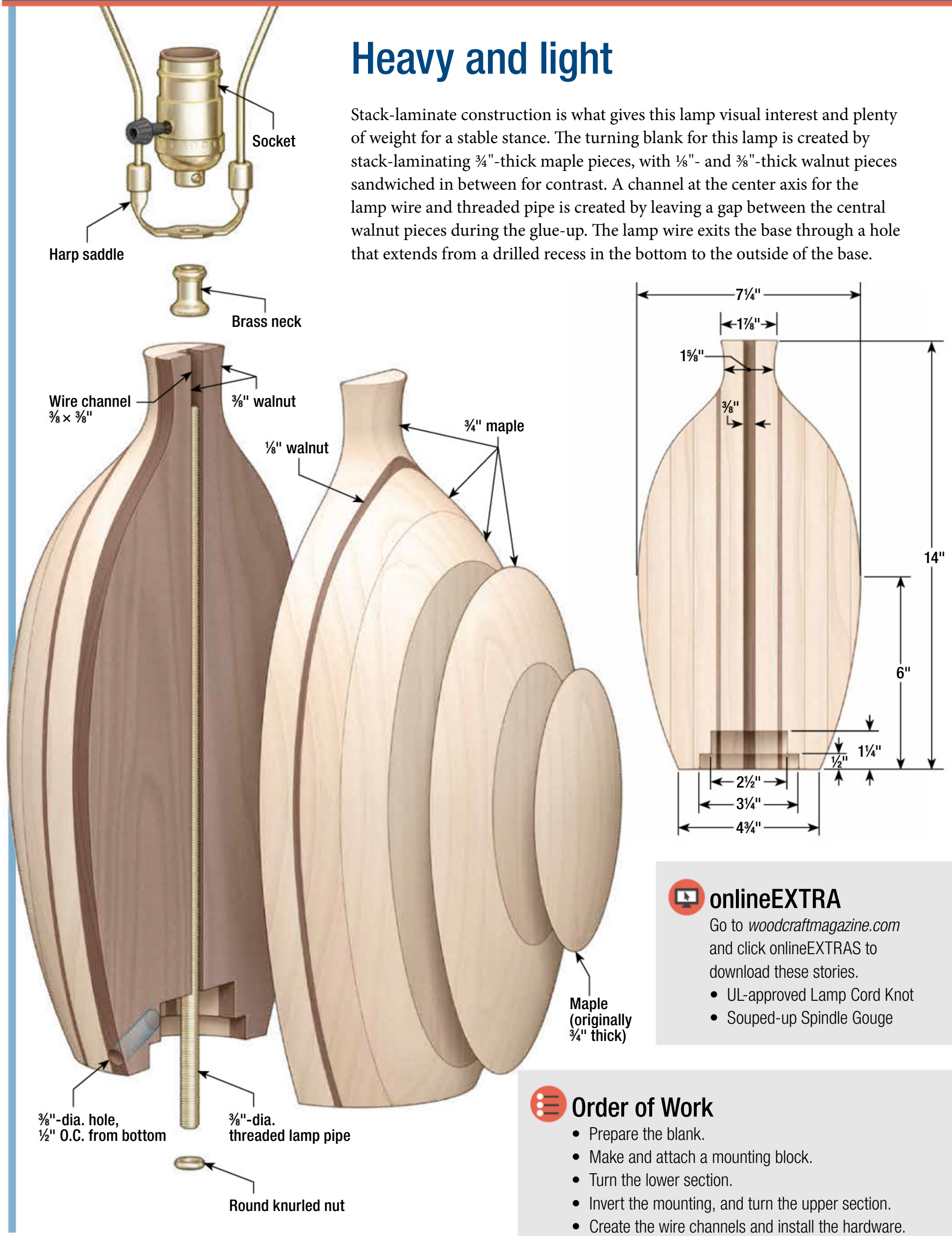
By Michael Kehs

A table lamp is a useful, attractive turning project that's not hard to make at all. That said, there are certain criteria for any turned lamp, which this design meets nicely. It's a good height and overall size for a classic vase form, although there's no need to hollow it. In fact, the weight and mass of the solid form gives it great stability. One challenge with a wood lamp is creating a wire access hole through the center, since even a bit that's long enough for the job would inevitably drift off course. The solution here is to stack-laminate the blank, creating a ⅜"-square channel through the axis by leaving a gap in the centermost laminate. Stack-laminating also allows the opportunity to incorporate some design flair in the form of contrasting woods. I used maple here for the main wood, with walnut laminates. Of course, laminating your blank like this also saves you the trouble and expense of finding a large kiln-dried piece of turning stock, which wouldn't be as stable as a laminated blank anyway.

I'm pleased with the shape of this lamp and the lamination pattern, but feel free to experiment, and don't worry about following the shape exactly. The most important thing is to aim for nice, fair curves. Have fun with it!

Heavy and light

Stack-laminate construction is what gives this lamp visual interest and plenty of weight for a stable stance. The turning blank for this lamp is created by stack-laminating ¾"-thick maple pieces, with ⅛"- and ⅜"-thick walnut pieces sandwiched in between for contrast. A channel at the center axis for the lamp wire and threaded pipe is created by leaving a gap between the central walnut pieces during the glue-up. The lamp wire exits the base through a hole that extends from a drilled recess in the bottom to the outside of the base.



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- UL-approved Lamp Cord Knot
- Souped-up Spindle Gouge

Order of Work

- Prepare the blank.
- Make and attach a mounting block.
- Turn the lower section.
- Invert the mounting, and turn the upper section.
- Create the wire channels and install the hardware.

Project photos: John Hamel; Inset photo: Doug Loyer; Illustrations: Christopher Mills

The blank comes first...

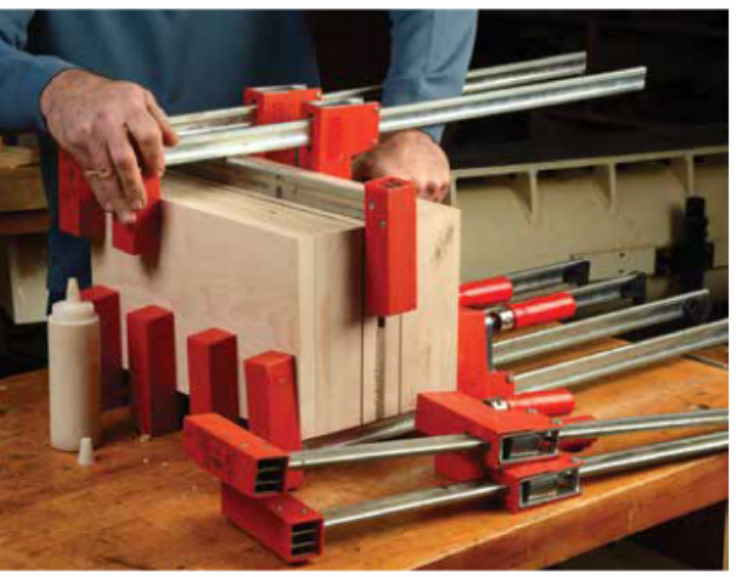
Prepare your laminations by dressing 10 pieces of maple to ¾ × 8 × 14½" and 2 pieces of walnut to ⅛ × 8 × 14½". Also dress 2 pieces of walnut to ⅜ × 4 × 14½". (If resawing is a problem, thin stock is available commercially. See page 70.) Glue up the blank as 2 halves, using Titebond III for longer open assembly time. Trim one end of each half, then crosscut both pieces to 14" using a stop block, and glue the halves together as shown. Now draw an 8"-diameter circle on one end of the blank (noting it with an "A"), and mark the corners for wasting. Because the blank is not square in cross section, bandsaw the waste as shown to produce balanced symmetry.

Half and half. Glue up each blank-half in turn. When gluing up the half that includes the ⅜"-thick walnut center pieces, use a thick caul to flatten them out, and a ⅜"-square waxed stick to separate them, creating a wire channel at the center.

Mark for wasting. After marking an 8"-diameter circle centered on one end of the blank (marked as "A"), use a combination square as shown to draw corner cut lines tangent to the circle.

First pair of waste cuts. Referencing a waste cut line, locate your bandsaw fence to saw away the first corner. After making the first cut, rotate the blank (with the "A" end still leading), and slice away the opposing corner as shown.

Ready, set… With clamps at the ready, use a wide plastic putty knife to spread a thin, consistent coat of glue onto both mating surfaces of the prepared halves.

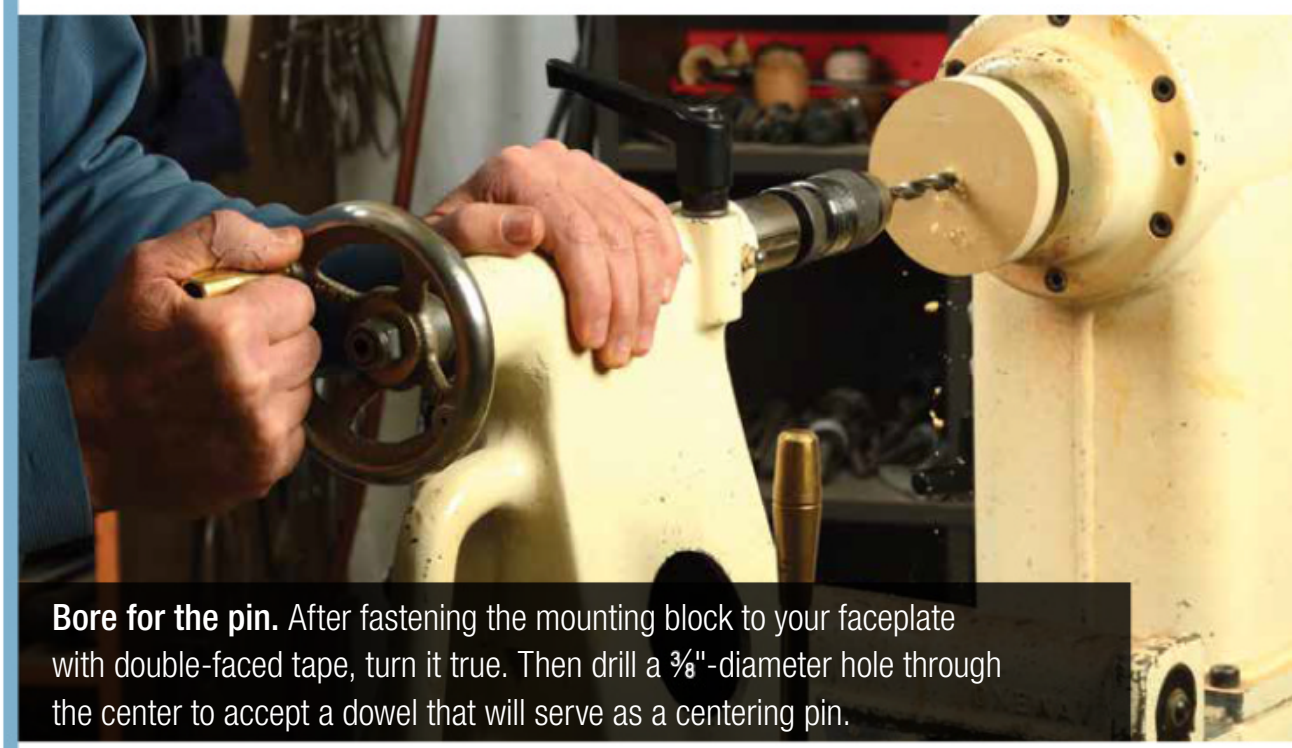


…and clamp. Snug up the bottom clamps just enough to press the faces together, then use an end-to-end clamp to pull the ends into alignment before attaching the top clamps and tightening all.

Second pair of waste cuts. Rotate the blank end-for-end, and saw away the remaining corners in the same fashion. This cutting approach results in a balanced blank from an out-of-square block.

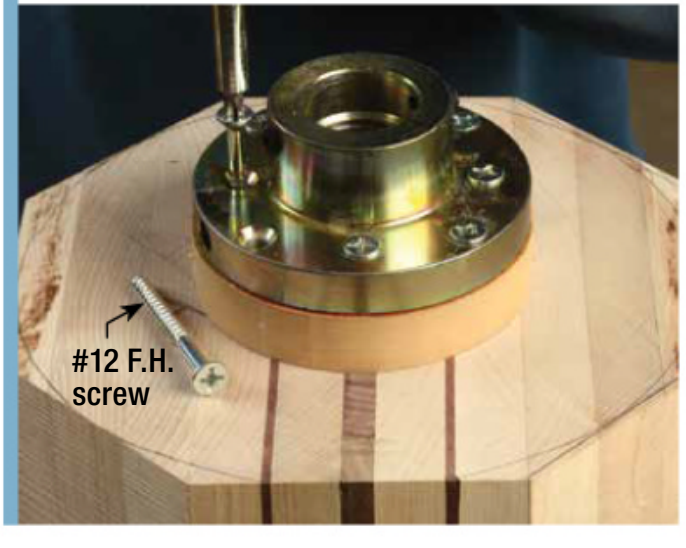
...then the mounting block

Make a ¾"-thick waste block with a diameter that matches a lathe faceplate on which the screw holes are at least 2" apart diametrically. Then bore a ⅜"-diameter hole through the center of the block, and press a ⅜"-diameter × 3"-long dowel into the hole as shown to serve as a centering pin. Fasten the pinned mounting block to what will be the top end of the lamp blank.



Bore for the pin. After fastening the mounting block to your faceplate with double-faced tape, turn it true. Then drill a ⅜"-diameter hole through the center to accept a dowel that will serve as a centering pin.

Press-fit. Use a scrap block against your tailstock to press the centering pin into its hole without damage.

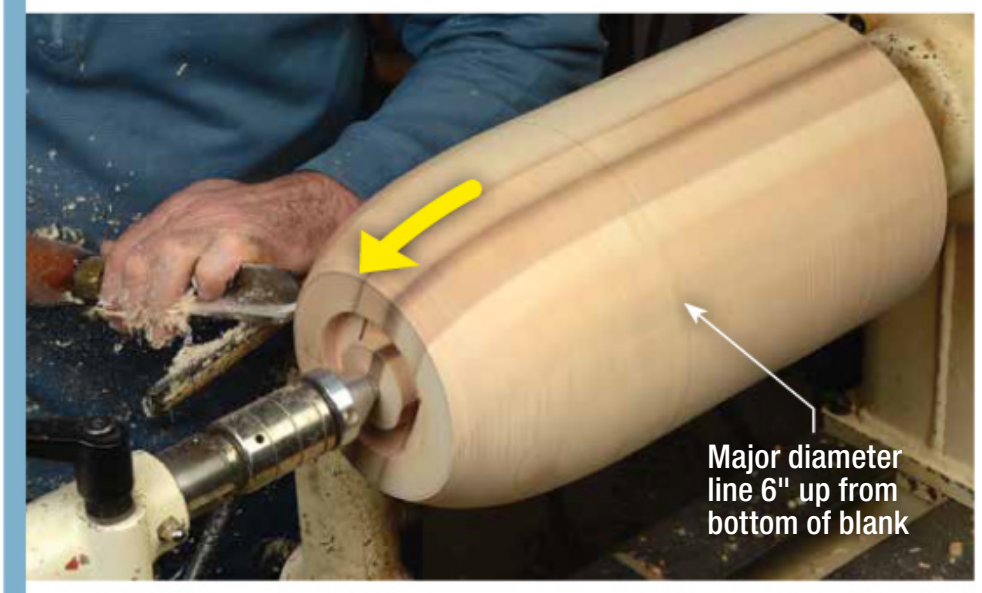


Attach the mounting block. After drilling all the clearance holes through the mounting block, slip the centering pin in the wire channel, and press the block to the blank. Drill a pilot hole for one screw, install it, then install the remaining screws. Make sure your screws extend at least 1¼" into the blank.

Turn the lower section...

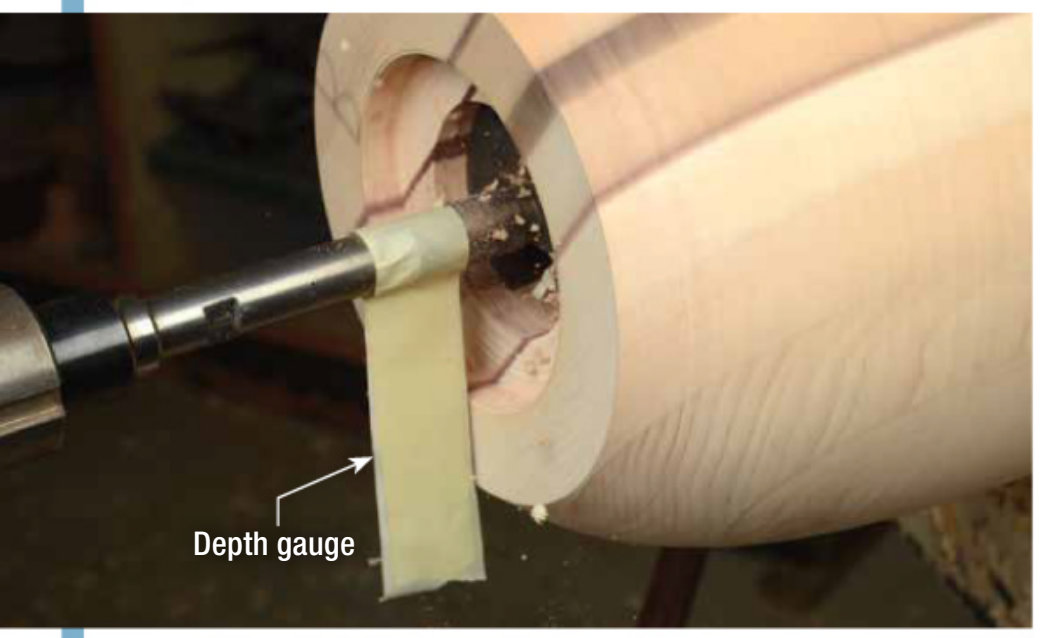
Mount the blank on the lathe, supporting it at the tailstock end with a live center. Round the cylinder end-to-end using a large spindle roughing gouge. Mark a 4¾"-diameter circle on the bottom to establish the outside perimeter and a 3¼"-diameter circle for the bottom recess. Then cut the chuck recess perimeter as shown. Mark a line 6" up from the bottom as a major-diameter reference. Rough out the profile below the line, then above it. To finish up, drill out the bottom recess and then finesse the bottom surface.

Cut the chuck recess perimeter. Use a ⅛" parting tool to cut a 3¼-diameter × ¾"-wide groove that's a hair shallower than the length of the jaws on your 4-jaw chuck. This recess will accommodate your 4-jaw chuck when the piece is remounted later to shape the top section.



Rough-shape the lower section. Referring to the drawing on p. 37, shape the lower 6" of the blank using a large spindle roughing gouge.

Rough-shape the upper section. While the blank is still firmly mounted to the face plate and supported by the tail stock, it's wise to take the opportunity to remove most of the mass from the upper section of the blank.



Drill the bottom recess. Using a 2½"-diameter Forstner bit, drill out the 1¼"-deep secondary recess in the bottom.

Finesse the bottom. After putting the tailstock live center back into play, use a ½" spindle gouge to true the bottom, turning a very slight concavity.

...then the upper

Remount the blank with the bottom now in the expanding jaws of a 4-jaw chuck, and the top end supported by a live center in the tailstock. Then mark the neck perimeter. Use a large roughing gouge to start defining the body's shoulder as you begin to create the neck. Then refine the neck. Finish up smoothing using a scraper, and then true the top.

Mark the neck. Draw a circle on the top end just inside the ⅛"-thick laminations to indicate the top perimeter of the neck.

Shoulder the body. Using a large roughing gouge, and working from your major diameter line toward the top, begin defining the shoulder of the body.

Refine the shoulder and neck. Switching to a ½" spindle gouge, refine the top section of the blank, moving from the center toward the top and from the top downward to the neck, referring to the diameters on the drawing.

Scrape to smooth. Use a scraper to smooth the shoulder and neck.

True the top. Use a ½" spindle gouge to true up the top end, flattening it in the process.

Ream, bore, and sand to finish up

To clear away any excess glue squeezeout from the wire access hole, first ream it out with a drill bit. Then, to finesse the cleanout, don a pair of tough gloves, and put the lathe very slowly in reverse while repeatedly inserting and retracting a 30" length of threaded lamp pipe. Complete the wire access path by drilling a hole through the side as shown before sanding the turning through 400 grit. Apply your favorite finish. I wiped on 6 coats of General Finishes' Wood Turners Finish, scuff-sanding between coats and rubbing out the final coat with 0000 steel wool. I then followed that up with a coat of Renaissance Micro-crystalline wax polish. Finally, install the hardware as shown in the drawing on p. 37. For safety, knot the wire at the socket using a UL-approved lamp knot. (See OnlineEXTRAS.) ■

Ream the center wire channel. Mount a 16"-long, ⅜"-diameter drill bit in a tailstock drill chuck, and ream out the center channel to prepare it for the threaded lamp pipe. Rather than cranking the bit forward, simply muscle the entire unlocked tailstock in and out to do the job.

Drill the side wire hole. Using a ⅜"-diameter brad-point bit, drill the cord hole into the ⅜"-thick walnut section, ½" on center up from the bottom. Angle the hole slightly upward to avoid hitting the chuck jaws.

Finish sand. Smooth your work using a power disk sander while spinning the piece slowly on the lathe. Sanding through 400 grit will yield a surface that begs to be touched.

Spin a finish. Apply your finish while spinning the piece very slowly on the lathe.

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Workbench REHAB

Build a sled-guided router to shave a little (or a lot) off the top.

By Joe Hurst-Wajszczuk

Woodworkers have long debated the importance of a dead-flat bench top. Some say a workbench is made to get beat up and doesn't need to be flat. Others, like me, prefer not to relocate from bench to assembly table during a project; I like to build and assemble all in one spot. I've found that having a bench in good working order brings out my best work.

Over the last decade, my bench developed a discernible hump across its length, and a divot near the front vise. Flattening a bench with a jointer plane isn't difficult, but it is a real workout, and somewhat intimidating for first timers. The sled-guided router is easier to master, and saves sweat for other repairs.

Order of Work

- Remove the vises.
- Scrape away glue and paint.
- Inspect the top.
- Build the jig.
- Attach the rails and rout.
- Repair, reassemble, and refinish.

Photos: Ralph Lee Anderson

Clear the deck

To prepare the top for planing, remove the vises and any other hardware. Next, scrape off any lumps that could interfere with your straightedge. If your bench has had a hard life, checking the top with a metal detector can catch hidden screws or nails that would damage a bit.

Dislocate the jaws. Removing the vises makes room for the side rails that guide the planing sled.

Banish the bumps. Using a heavy burr, scrape off any glue or paint that might interfere with your diagnosis.

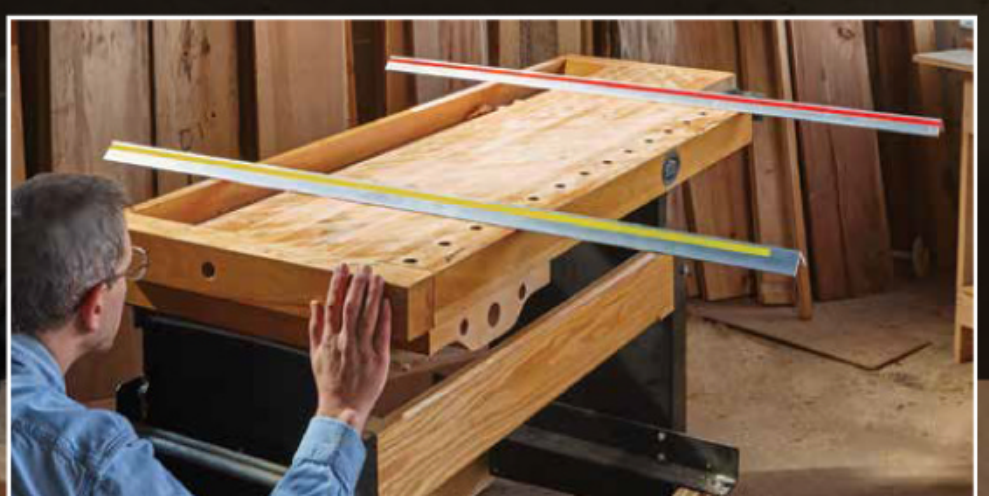
Inspect the top

Like grinding a chipped plane iron or chisel, the goal when flattening a benchtop is to remove as little material as possible. Before making a diagnosis, use shims to level the base. This eliminates any false-readings that could be caused by an uneven floor. (My Adjust-A-Bench base includes casters, so I raised it on 2×8 beams.)

Using a straightedge and winding sticks, check for low spots or a twist. You'll use these spots to install the rails and set the bit.

Level the playing field. Shim the legs to cancel out any floor issues. To accommodate casters, I used beams for rock-solid stability.

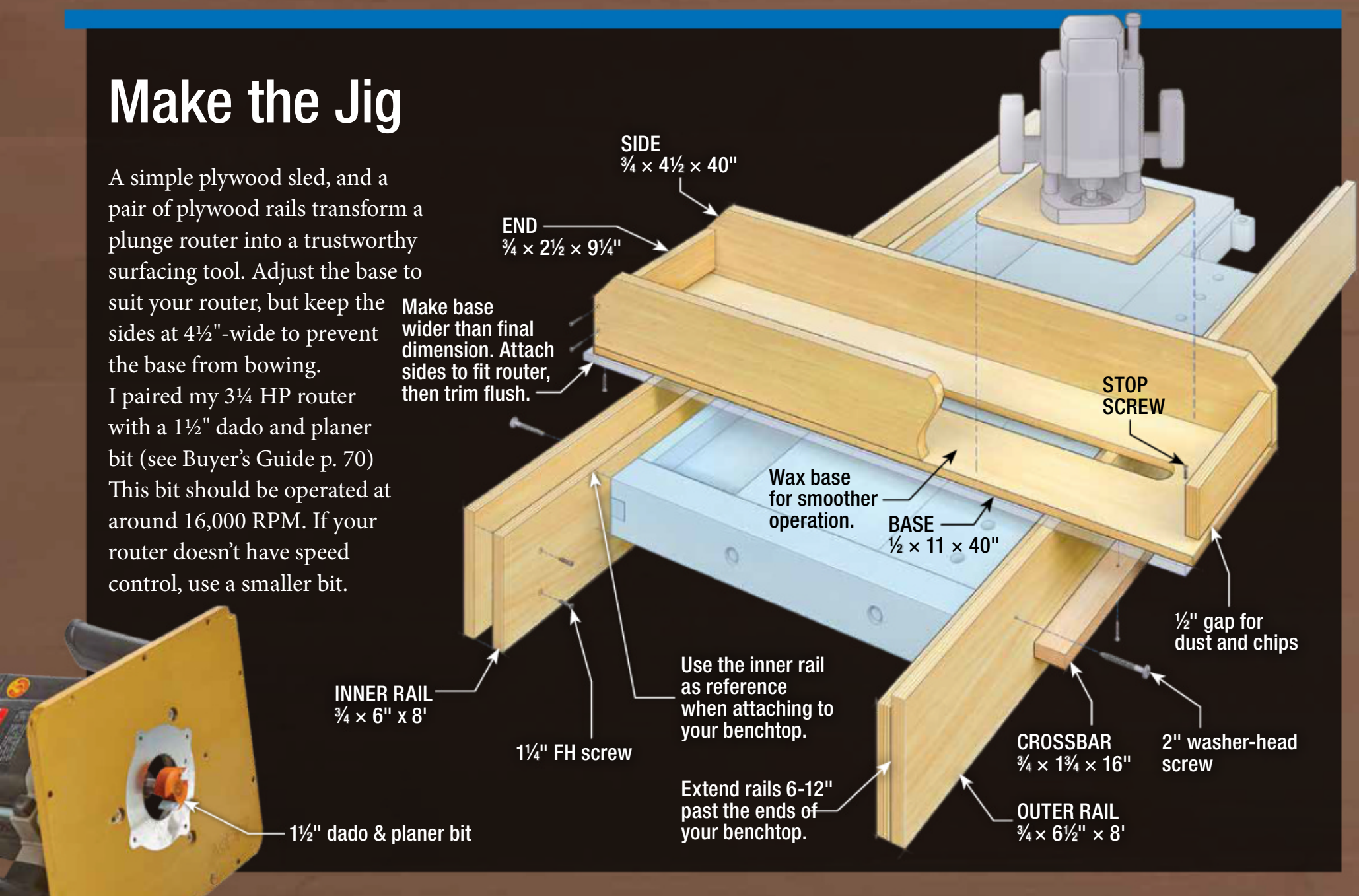
Look for highs and lows. Mark where the straightedge rocks and where light shines through.



Twist teller. A pair of 4-foot long, ⅛"-thick aluminum angles make a reliable set of winding sticks. I attached colored tape for better visibility.

Make the Jig

A simple plywood sled, and a pair of plywood rails transform a plunge router into a trustworthy surfacing tool. Adjust the base to suit your router, but keep the sides at 4½"-wide to prevent the base from bowing.
I paired my 3¼ HP router with a 1½" dado and planer bit (see Buyer's Guide p. 70) This bit should be operated at around 16,000 RPM. If your router doesn't have speed control, use a smaller bit.



Install the rails

Starting at your bench's lowest corner, install the first rail so that the rabbet sits a hair below the benchtop. To set the rail parallel with the top, I used a digital level. Simply measure the top, then set the rail to the same angle.

Next, use the level to determine the front to back angle, and install the second rail as shown. *(Note: If you don't want to mar you bench with screw holes, you can attach cleats to your bench's bottom face.)*

Better than a bubble. Thanks to its LCD display and 0.2° accuracy, a digital level is the perfect tool for mounting the rail parallel with the top.

Use the first rail to set the second. Once the first rail is in place, use its top edge as your reference surface for installing the second rail.

Illustration: Dan Thornton

Ready to rout

Thanks to the prep work, this step goes quickly. To set the cutting depth, position the sled above the lowest spot on your benchtop, and adjust the bit so that it grazes the surface. If the difference between the lowest and highest points is more than ⅛" inch, raise the bit and flatten the bench in two passes. Listen and watch the bit as you rout. Minor adjustments to your feed rate can make a big difference in the cut quality. Move the sled to your left, as shown. If the bit should catch, the rotation will push the router back onto a previously-routed section, rather than diving into the uncut section.

Slow and steady. To minimize track marks, push and pull the router along the same path, and then shift the sled to your left. You don't need to clamp the jig to the rails.

Use the slot to set the bit. For best results, overlap each pass by ⅓ to ½ the width of the bit. The bench's till serves as a handy stopping point when shifting the sled.

Bridging the gap. The 1½"-thick rails support the sled over the tail vise section.

Clear the tracks. Use a scraper plane, or a sanding block with 100-grit sandpaper, to remove track marks.

Post-flattening first aid

While routing the top eliminates stains and minor blemishes, it will reveal damage that's more than skin deep. To fill small holes and other oddly-shaped divots, mix epoxy with fine wood dust and fill the spots as shown.

When the epoxy reaches the rubbery stage, slice away the excess. For bigger divots, try using a patch, or "Dutchman." Doing more damage seems counterintuitive, but a well-matched patch can make the repair almost invisible.

A couple of dabs will do it. Epoxy mixed with fine sawdust is a fast fix for small- to medium-sized holes. Corral the holes with painter's tape, overfill slightly, and then slice away the excess.

For big repairs, try going Dutch. Cut a piece of wood slightly larger than the damaged area, scribe the patch around the spot, and then rout or chisel out a cavity.

Finishing Up

The last few steps go quickly, but these details matter, so take the time to get them right. First, clean, lubricate, and reinstall both vises. After installation, use a straightedge to verify that the vises are flush with the top. In some cases, the mounting can be adjusted; if that's not possible, you may need to pull out a plane. Finally, wipe on a coat or two of your favorite oil/varnish blend to provide some defense against glue and other staining agents. (Don't use wax. You don't want your stock to slide off your bench.) After this effort, you'll want to keep your workbench in tip-top condition. For messy chores, protect your benchtop with rosin paper, or even a Masonite top. ■

Smooth (and flush) operator. Brush off crust and rust, and then lubricate the rods and threads. When planing the vise, use tape to track your progress. When the blade touches the tape, scrape or sand.

WHITESIDE

ULTIMATE
Trim Bits

"ULTIMATE" Flush Trim/Pattern Router Bits

"ULTIMATE" Trim Bits are perfect when working with templates or when using a router to flush trim matching wood surfaces. Whiteside's compression spiral design, along with a ball bearing guide, makes this bit easy to use in the router and produces a superior quality trimmed edge. The "ULTIMATE" Trim series brings industrial engineered bits, previously manufactured for CNC machines, right into your shop.

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154276 (B) Pattern/Plunge
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Basic BUILDS

Garden OBELISK

Help your garden grow up with a mini-monument for climbing plants.

By Tim Snyder

My wife is an avid gardener, and I love woodworking. We've been able to create some nice projects by combining these two passions, including the garden obelisk featured here. These wooden steeples can be attractive punctuation marks in many yards and gardens, creating focal points that integrate architecture with the natural beauty of climbing plants.

We found that the wooden obelisks we purchased were too easily damaged; their nailed-together joints can't stand up to New England's blustery weather. Why not make a "woodworker's obelisk," that can provide any yard with a peak experience, while standing strong and long?

If you like this design, I suggest buying enough lumber for two or more. Even if you only use one in your garden, any friend with a green thumb is sure to want one.

Order of Work

- Set up the work board.
- Groove the post's inside edges.
- Cut the rungs to length, then cut tongues on the rung ends.
- Glue up the base and trim the post ends.
- Make and install the peak assembly.
- Make and install the trellis assemblies.

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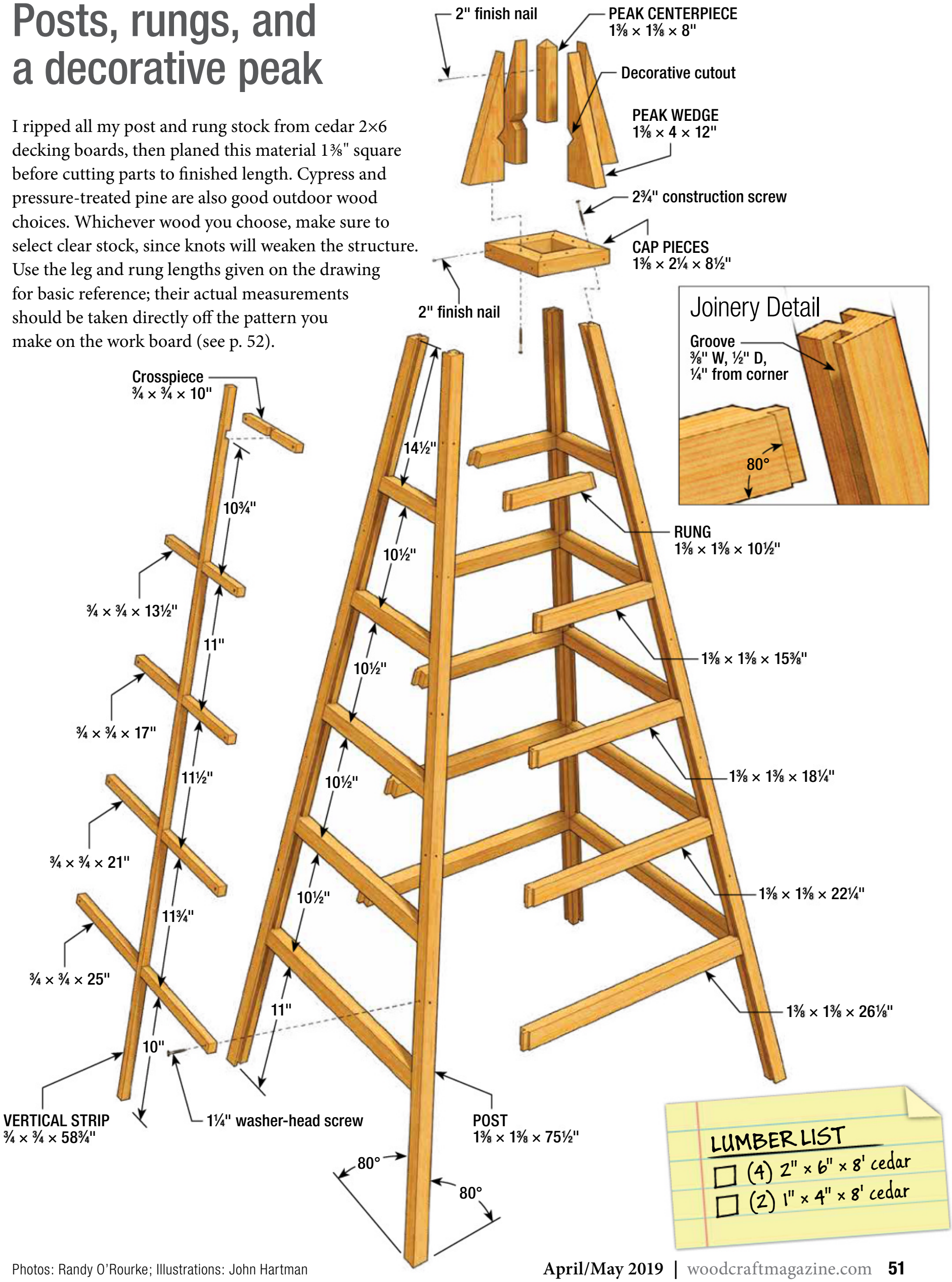
Go to *woodcraftmagazine.com* and click onlineEXTRAS to download a cutlist.

Posts, rungs, and a decorative peak

I ripped all my post and rung stock from cedar 2×6 decking boards, then planed this material 1⅜" square before cutting parts to finished length. Cypress and pressure-treated pine are also good outdoor wood choices. Whichever wood you choose, make sure to select clear stock, since knots will weaken the structure. Use the leg and rung lengths given on the drawing for basic reference; their actual measurements should be taken directly off the pattern you make on the work board (see p. 52).



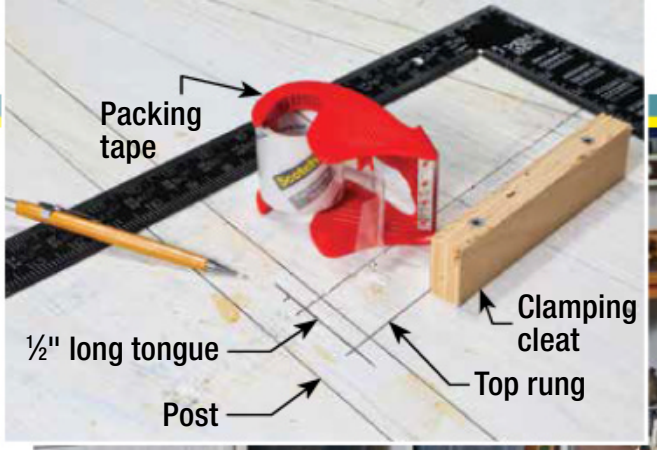
LUMBER LIST

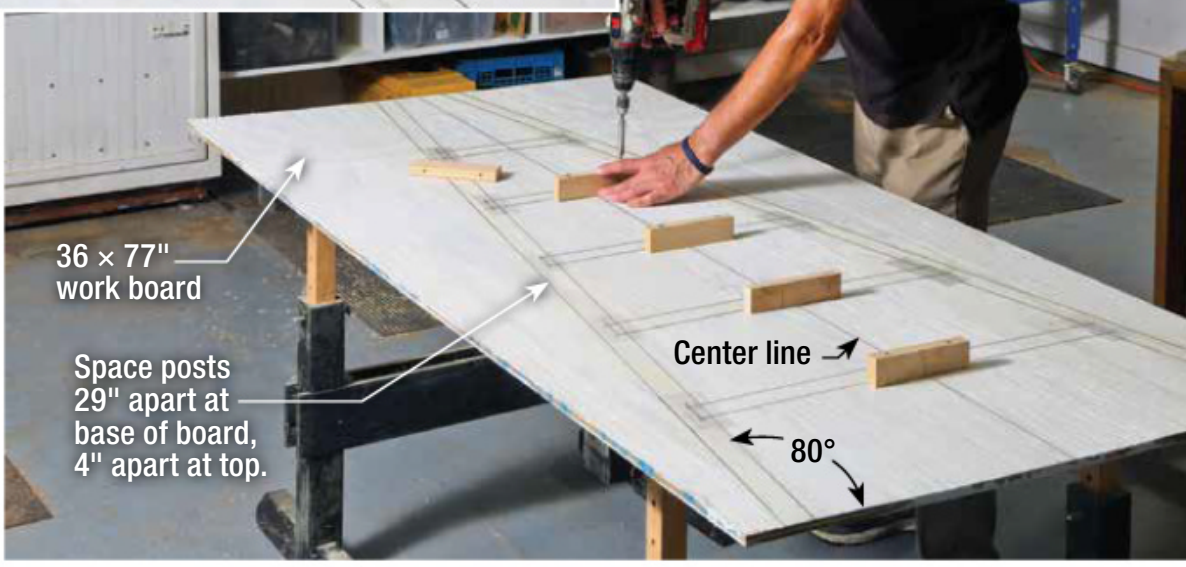
- ☐ (4) 2" × 6" × 8' cedar
- ☐ (2) 1" × 4" × 8' cedar

Photos: Randy O'Rourke; Illustrations: John Hartman

Make a work board to ensure accurate layout and super smooth assembly

With so many angled joints to lay out, cut, and assemble, it helps to have a flat work surface that contains a full-scale pattern of the post-and-rung assemblies you'll be building. I made my work board from a piece of inexpensive, ½" CDX plywood, coating the work surface with primer so my layout lines are clearly visible. After laying out the posts and rungs, screw cleats down the center of your board at each rung location. You'll use these to clamp rungs in place during assembly. When your work board is complete, record the length of each rung (including tongues), and start cutting your parts to size.





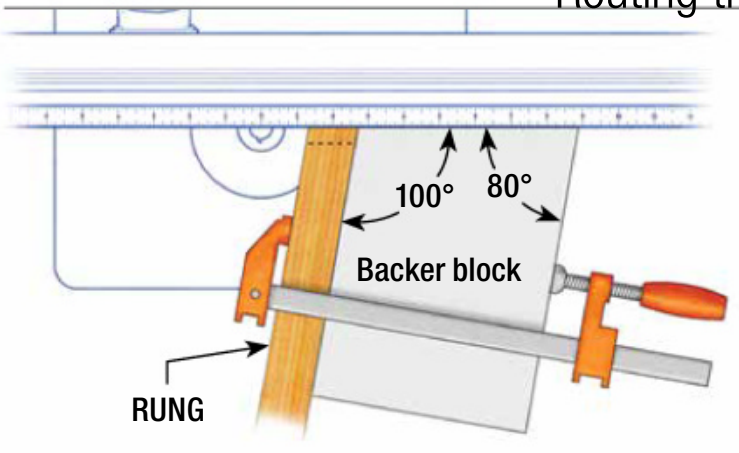
Full-scale layout. Begin the pattern by marking a center line down the length of a plywood panel. After laying out the 2 posts, mark the rung locations, keeping them perpendicular to the center line. Space the bottom rung 12" from the board's bottom edge. Space the remaining rungs 10½" apart. Lay out ½"-long tongues, and cover each post/rung joint with packing tape to prevent glue adhesion during assembly (inset photo).

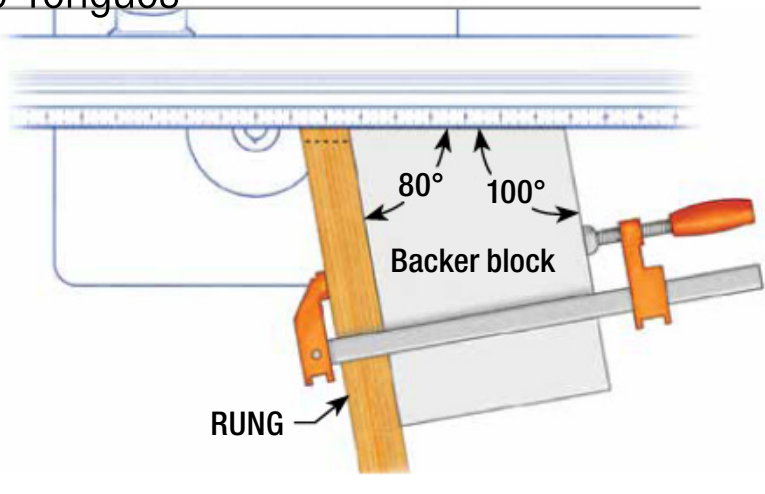
Tongue & groove joints on the router table

To speed and simplify the joinery work, I milled a pair of grooves along the length of each post, then set up a quick way to cut matching tongues in rungs. This work gets done on the router table. It's important to offset the grooves in your posts as shown in the drawing (p. 51) because centered grooves will weaken the post. Make sure to have some scrap rung stock on hand, so you can mill some sample tongues and make any adjustments necessary for accurately made joints.

Groovy posts. Rout the grooves with a ⅜" straight or spiral flute upcut bit. Adjust the bit height to ½", set the fence ¼" from the cutter, and guide the post against the fence to mill the first groove. Then flip the post end for end and rotate it 90° to mill the second groove.

Routing the Tongues





A big block for routing tongues. Set up a ¾" straight bit in the router table, with ½" of the cutting width showing outside the fence. Cut an angled backer block that will ride against the fence with a rung clamped in place as shown at left and in the drawings above. Two different bit heights are required to rout offset tongues, with rungs guided at 100° and 80° angles.

4 posts, 20 rungs, 40 joints

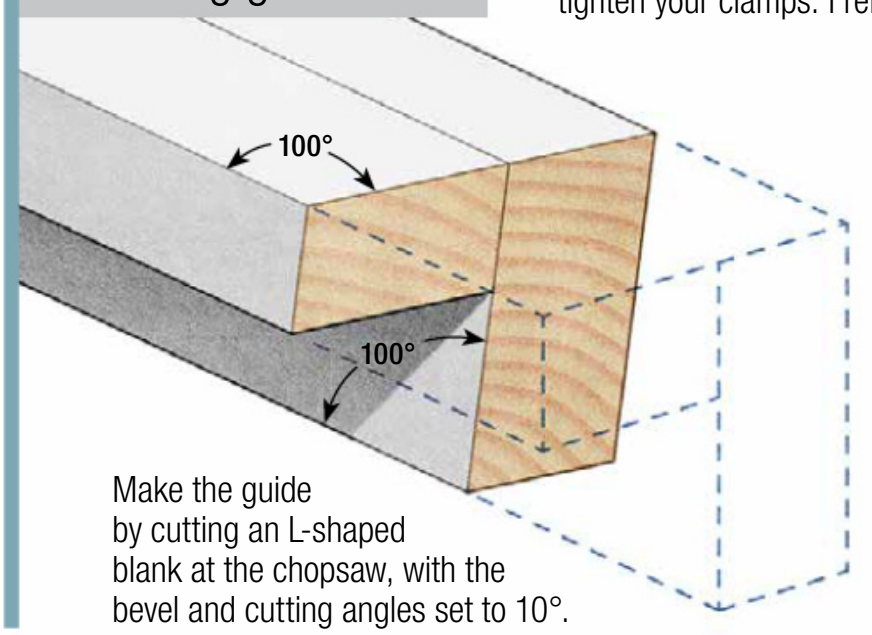
Use the work board as an assembly aid to keep parts aligned as you make each tongue-and-groove connection. Titebond III is good to use for this build; it's waterproof and easy to apply, with a longer open time than other outdoor glues. Use a small brush to coat each tongue with glue, and press your post-and-rung joints together to assemble the first ladder frame. Then repeat this procedure to complete the opposite frame.

Joining the two ladder frames together demands some nimble maneuvering, because you're installing 10 rungs at once. To aid the assembly process, use a chisel or some sandpaper to create a slight chamfer on the end of each rung's tongue. This will avoid snags when getting joints engaged.

Create a pair of tapered ladders. Start by spreading glue on all the rung tongues, and clamping each rung to its clamping cleat. Slide posts into place with open grooves facing up. As you clamp the assembly, make sure that the bottom corner of each post is even with the work board's bottom edge.

Complete the base assembly. Start the glue-up by clamping a set of rungs to their work board cleats, as in the previous step. Then stand both previously assembled frames on edge to engage the tongue-and-groove joints. When the lower set of joints are loosely clamped, you can begin to install the opposite rungs. Tap joints into alignment as necessary, then tighten your clamps. I reinforced each joint with a pair of 1¼" stainless steel finish nails.

Compound-angled cutting guide



Make the guide by cutting an L-shaped blank at the chopsaw, with the bevel and cutting angles set to 10°.

Use a cutting guide to trim post ends. Make the guide from an L-shaped blank, as shown in the drawing. Clamp it to post tops and bottoms where you want to make your level cuts, and use the angled faces to guide your saw.

Now peak at the top

An obelisk needs a nice crowning touch. The peak detail I came up with is easy to build. It consists of a square cap frame made from four identical mitered pieces, and a peak assembly made from four 12"-high wedges that surround a pointed centerpiece. I cut the wedges with my circular saw, then clamped all four together to saw the decorative triangular cutout.

Use a stop to create a perfect point. Start with a centerpiece 1⅜" square and at least 10" long. By making four 45° cuts with the butt of the workpiece positioned against a stop block, you can create a perfect point.

Trick out your tower with a trellis

Now it's time to put the finishing touches on your obelisk, in the form of four trellis assemblies that overlay the frame. Made from lap-jointed, ¾"-square stock, these delicate details add visual appeal, while also providing many more anchor points for climbing plants. ■

Finishing Tips

Outdoor woods like cedar and cypress will weather to a nice natural patina without any protective finish, while also resisting rot. But if you plan to treat your obelisk to an outdoor finish, apply your finish coats while the base, peak, and trellis assemblies are separate. You'll get more complete coverage, and have a much easier time with finish application. Suitable outdoor finishes include milk paint, outdoor stain (semi-transparent or solid color), and exterior varnish.

One pass for four lap joints. I cut the lap joints for the trellis assemblies on the router table, guiding sets of 4 identical parts (crosspieces and vertical strips) over a ¾" straight bit with a shop-made miter gauge. To set up for this gang-cut, tape each set of trellis parts together, and clamp the assembly to an extended fence on the miter gauge. Bit height should be half the thickness of your parts.

Screw wedges to the frame. Glue and nail all four wedges to the pointed centerpiece before fastening this assembly to the mitered cap frame.

Fasten the cap to the post tops. Position the peak's cap to overlap the posts evenly on all sides, and trace the post ends onto the underside of the cap. This will enable you to drill a pilot hole for a screw that will extend into the "meaty" part of the post, well away from the grooves. Angle your pilot holes slightly, to match the 10° post angle. Then fasten the cap to the posts with 2¾" washer-head screws.

Get your garden ready! I varnished the trellis assemblies and obelisk frame separately before attaching the trellis assemblies with 1¼" washer-head screws. To avoid splitting the wood, drill a screw clearance hole ¾" from the ends of each trellis crosspiece.

CARBIDE GETS A TURN

Can insert tooling replace traditional high speed steel tools? See what happens when 4 veterans tackle turning tasks with carbide cutters.

By David Heim

Sergio Steve Andy Alan David

4 testers, 3 projects, plenty of shavings. A small bowl, a lidded box, and a finial (shown at left) demand a broad range of turning tasks. Each turner produced one set of objects with new carbide tools, and another with their favorite HSS tools.

Photos: Randy O'Rourke

When Easy Wood Tools introduced its carbide-insert tools in 2010, I was surprised to see the reactions from some of the turners I knew. Trained on gouges and skew chisels made from high-speed steel (or even older carbon steel), these veterans were skeptical, to say the least. They couldn't imagine how the newfangled scrapers could cut cleanly or require no sharpening. Myself, I tried to keep an open mind. I use scrapers a lot in my own turning work because I find them great for light finishing cuts.

At least seven other companies have brought out their own sets of carbide-insert tools since Easy Wood's introduction, and opinions about them continue to vary. So I decided to find out what woodworkers really think. I invited Alan, Andy, Sergio, and Steve—four friends from my local woodturning club—to join me for an intensive day of testing at our local Woodcraft store—The Woodworker's Club, in Norwalk, CT. The goal wasn't to identify winners and losers, but to learn how these new turning tools fit into the established arsenal.

My woodturning buddies brought their own high-speed-steel tools and I provided maple turning blanks and plans to follow. Easy Wood Tools and Woodpeckers provided 4 sets of carbide tools, enabling the group to get an intensive workout. Each guy made a small bowl, a spindle, and a lidded box—first with their regular tools, then with the carbide. That way, they could compare the two types of tools on identical pieces. Each project tested the tools in a different way. The shape of the spindle tested the tools' ability to get into tight quarters and produce crisp details without breaking the wood. In bowl-turning, the tool hits endgrain twice in each revolution, so torn grain is always a possibility—a good test for smooth cutting capability. The lidded box also posed a series of important challenges: roughing, hollowing end grain, smoothing, and creating a precise friction fit. For all the tests, the turners strived for the best finish they could get right off the tool, with no sanding.

Insert tooling at a glance

The carbide turning tools shown above represent the three main types that are currently available. The types are based on the different shapes of the carbide inserts: Easy Wood and Woodpeckers, the two manufacturers who provided carbide tools for this test, offer their insert tools in several sizes. You can expect to pay between $110 and $140 for a medium-sized carbide tool like the ones shown here. Replacement inserts cost between $10 and $20 apiece.

Sharp edges without sharpening. Loosening a set screw on a carbide insert tool enables you to expose a sharp edge or install a new insert.

Traditional vs. new. Conventional HSS tools like the spindle roughing gouge shown above have the cutting edge ground like a chisel. In use, you angle the tool so the bevel rides the wood, then tilt the handle up to begin the cut. With carbide tools (right), you keep the tool level and guide the edge into the wood.

Fine touch. By angling the finishing tool as shown in the photo, you can make a fine cut known as a shear scrape. This is the same kind of cut you'd make with a conventional HSS gouge.

> "The carbide rougher was a time-saver when turning the lidded box. I could use two edges of the tool when hollowing out the interior."
>
> —Andy

Roughing with the square insert: Carbide cuts best with a horizontal handle

The task of roughing a blank revealed a major difference in how a square carbide roughing tool works compared to a roughing gouge. To cut with a gouge, you drop the handle so the bevel contacts the wood, then raise the handle until the edge begins to take a shaving. But with the carbide rougher, you need to keep the tool shaft horizontal and the cutting edge aligned with the center of the stock. As the testing progressed, it became clear that old habits die hard. A couple of the guys had to be reminded to raise a carbide tool's handle to keep it on the level.

All three inserts can make finishing cuts

Making a shear scrape is a technique that you can accomplish with steel and carbide tools. With a conventional gouge, you roll the handle so the tool's flute faces the work, then drag the lower cutting edge along the work. To make this cut with the round carbide insert, you angle the cutting shaft and lightly touch the edge to the workpiece to shear off shavings. The diamond-shaped shafts on Woodpeckers tools register nicely on a tool rest for shear cuts. But some turners may prefer Easy Wood's square shaft or the round shaft found on other carbide insert tools.

> “The carbide finisher is great for spindle work. I got less torn grain than with my gouge.”
> —Sergio

The detailing insert was a surprise favorite

Turns out, the detailer can do a lot more than detailing work. Using the detailer to turn spindles, Sergio got less torn grain than with his steel tools. Andy was surprised at how well the detailer could hollow out a small bowl (see photo at right). The turners agreed that a sharp-pointed detailer is more adept at producing crisp details than one with a slightly rounded tip. But both profiles produced impressive results, even when compared to tried-and-true HSS tools. Easy Wood offers both types of detailers, while Woodpeckers only has sharp-pointed detailing inserts.

The final spin

After a day of intensive turning, my buddies agreed that carbide insert tools are a great addition to turning technology, even though they won't replace high speed steel tools. When making aggressive hollowing cuts with the roughing tool, the guys noted more chatter than you'd get with high speed steel tools. Bowls turned with carbide tools also showed more torn grain. But in other areas, the advantages of carbide insert tooling are too good to pass up—sharp, durable edges that eliminate sharpening downtime and produce quality results.

Pen turners who like to work with hard acrylic blanks are certain to be fans of carbide turning tools because their hard, replaceable edges provide a big gain in productivity. Novice turners also benefit because an investment in three basic insert tools enables you to explore a wide range of turning work—no grinder required. And if your focus is making furniture rather than bowls, you still might need to turn out some spindles and tenons now and then. For these tasks, carbide is the easy answer. ■

Smooth finish. The carbide finisher received good reviews from everyone, especially for spindle work. The guys agreed that the tool cut cleanly and left a good finish.

Unexpected versatility. Not only did the detailer work well in tight quarters; it also hollowed bowls quickly, with less torn grain than the rougher.

Making a point. The sharp-pointed detailing inserts from Easy Wood and Woodpeckers excelled at producing fine details.

BOCOTE

A study in contrast

By Ken Burton

Bocote (pronounced boh-KO-tay or boh-KO-tee) is one of the showier woods native to Central America. Its heartwood is a yellowish-orange with distinctive dark stripes. Over time, the lighter areas darken somewhat, losing their vibrant hues, but the sharp contrast remains. The sapwood is a grayish yellow and is clearly demarcated. If you happen to find a piece of quartersawn stock, you'll see the flakes from the medullary rays really sparkle on the surface. Given that most of the US-bound bocote is on the small side—typically less than 8" wide and 7' long—you'd think it would come from smaller trees. This doesn't seem to be the case. The trees reportedly are between 60' and 100' tall and 3-4' in diameter. The issue appears to be that bocote is tricky to dry, especially in larger dimensions.

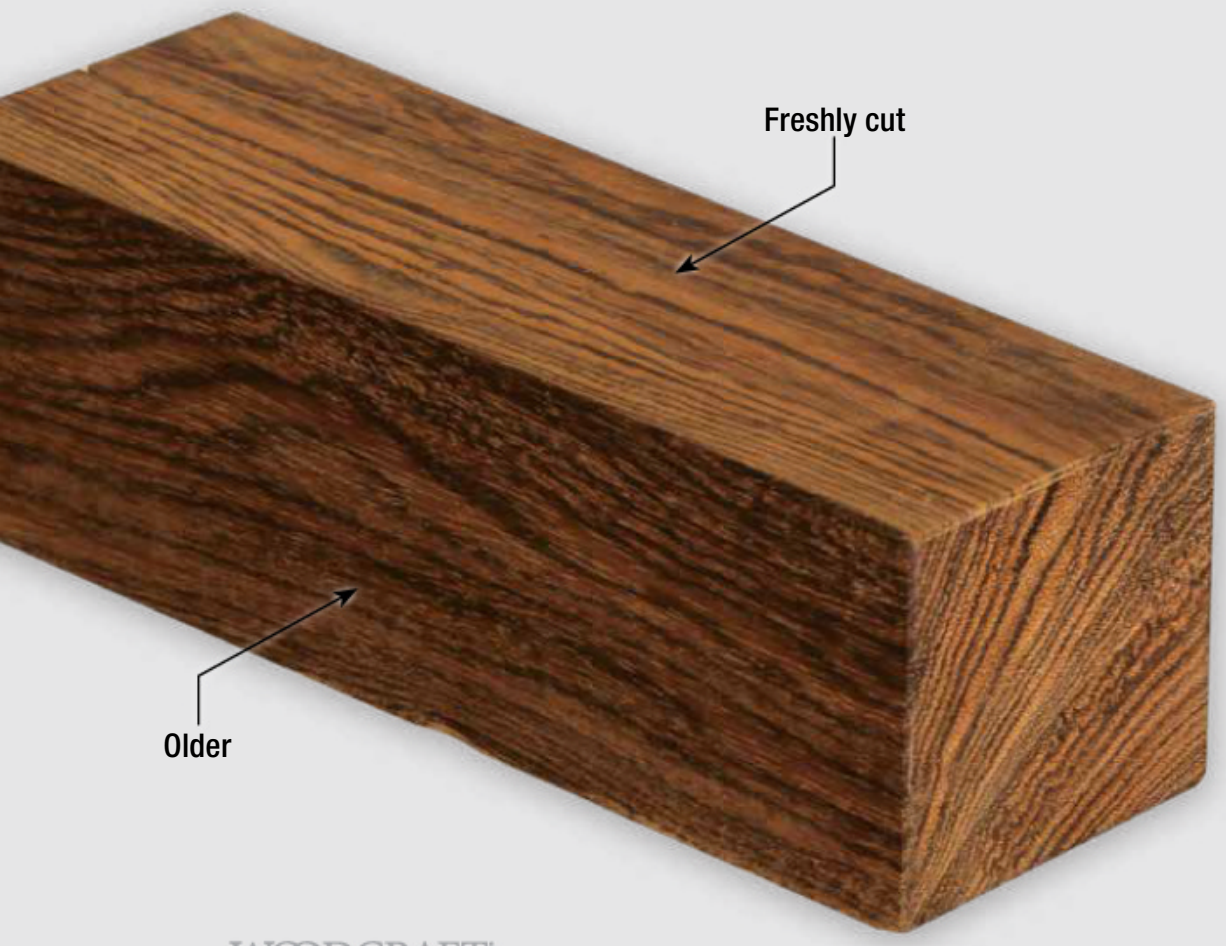
Along with the contrasting stripes, bocote often features birdseye figure (above, right). Unlike birdseye maple, the eyes in bocote rarely cause trouble when machining. As with most species, highly figured pieces command a premium price. But even "average" bocote is spectacular.

Where the wood comes from

There are six related species of trees cut and sold as bocote (*cordia spp.*). Of those six, *cordia elaeagnoides* yields most of the lumber imported into the United States. It grows in the drier areas of southern Mexico and Central America. As of this writing, bocote is not on the IUCN (International Union for Conservation of Nature) Red List of Threatened Species or in the CITES (Convention on International Trade in Endangered Species) Appendices. Many of the specialty wood suppliers claim bocote is logged selectively (as opposed to clearcutting) and that the logs are dragged out by mule, eliminating much of the damage caused by trucks. But given the political unrest down south, coupled with the fact that much of the readily accessible forest has already been logged, bocote's status and availability may soon change.

History in woodworking

Being a "New World" lumber, bocote isn't found in European or even classic American antiques (which mostly turned to Europe for inspiration). In its native region, bocote is used in building construction for everything from trim to flooring. (Carpenters must pre-drill this tough stuff for nails.) These days, a quick survey of on-line photos shows it mainly used for small decorative items such as boxes, pens, knife and razor handles, and even yo-yos.



Bocote Quick Take	
DENSITY	53 lbs/cu. ft.
HARDNESS	Hard to very hard
STABILITY	Good
ROT/INSECT RESISTANCE	Rot resistant, but susceptible to insect attack
TEXTURE	Medium
TOXICITY	Moderate: Skin and respiratory irritant, especially to those who have already developed sensitivity to woods such as cocobolo, ebony, and most rosewoods
USES	Turnings, furniture and cabinetry, musical instruments, flooring, gunstocks, gift items such as pens and handles

Photos: Ken Burton

Light to dark, it's all good. Bocote varies a lot in color from yellow to orange with distinctive dark stripes. It tends to darken with time.

Selecting the best stock

Bocote is available through many specialty wood dealers. Online retailers often post photographs of individual boards so you can see what you're buying. Expect to pay $20 to $30/board foot for typical stock, but prices can vary widely.

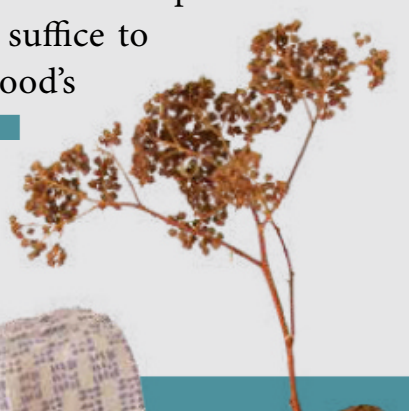
Working bocote

For such a heavy wood, bocote works surprisingly well with both hand and power tools, although the embedded silica grit found in some boards can be hard on edge tools, including jointer and planer knives. Also, the "rowed" or interlocked grain on some boards may tear out no matter which way you work it. Here, scraping may produce better results than planing.

Despite imparting a waxy feel, bocote's natural oils don't seem to present a problem when gluing or finishing. However, the wood will quickly load up sandpaper. You'll need to change abrasives more frequently than usual. Using stearated paper can help.

Finishing

Bocote accepts both stains and finishes well. But staining rather defeats the purpose of using such a showy wood, so why bother? Instead, carefully color match your stock up front so a simple clear coat will suffice to enhance the wood's natural beauty. ■



Bocote: Working Notes

It had been a long time since I'd had occasion to use bocote, but as soon as I cut into it again, the memories came flooding back. Bocote has a very distinct smell. Some liken it to dill pickles, but I must be buying different pickles. To me, it just smells exotic, and very unique. If you're used to working with domestic species, bocote boards will probably seem particularly heavy. But the wood's density doesn't really make it difficult to work.

I started my bocote investigation by turning a small vase. After marking the centers on the ends of the blank, I cut an "X" on one end to engage my lathe's spur center. Then I tried to dimple the other end with an awl for the live center, but bocote's density resisted. I drilled a small divot instead, and soon had the piece mounted. The turning blank was dark in color—a chocolate brown marbled with those distinct darker stripes. But as soon as I cut through that outer layer, the color changed markedly. Here was the famed yellow-and-black-striped stock I remembered.

Despite my troubles with the awl, my spindle gouge cut beautifully, leaving a smooth, burnished surface. Sanding went well, though the dust generated had kind of a greasy feel to it and stuck to everything. I found it didn't pay to skip grits and the paper loaded up quickly. I stopped at 400 grit, satisfied with the polish.

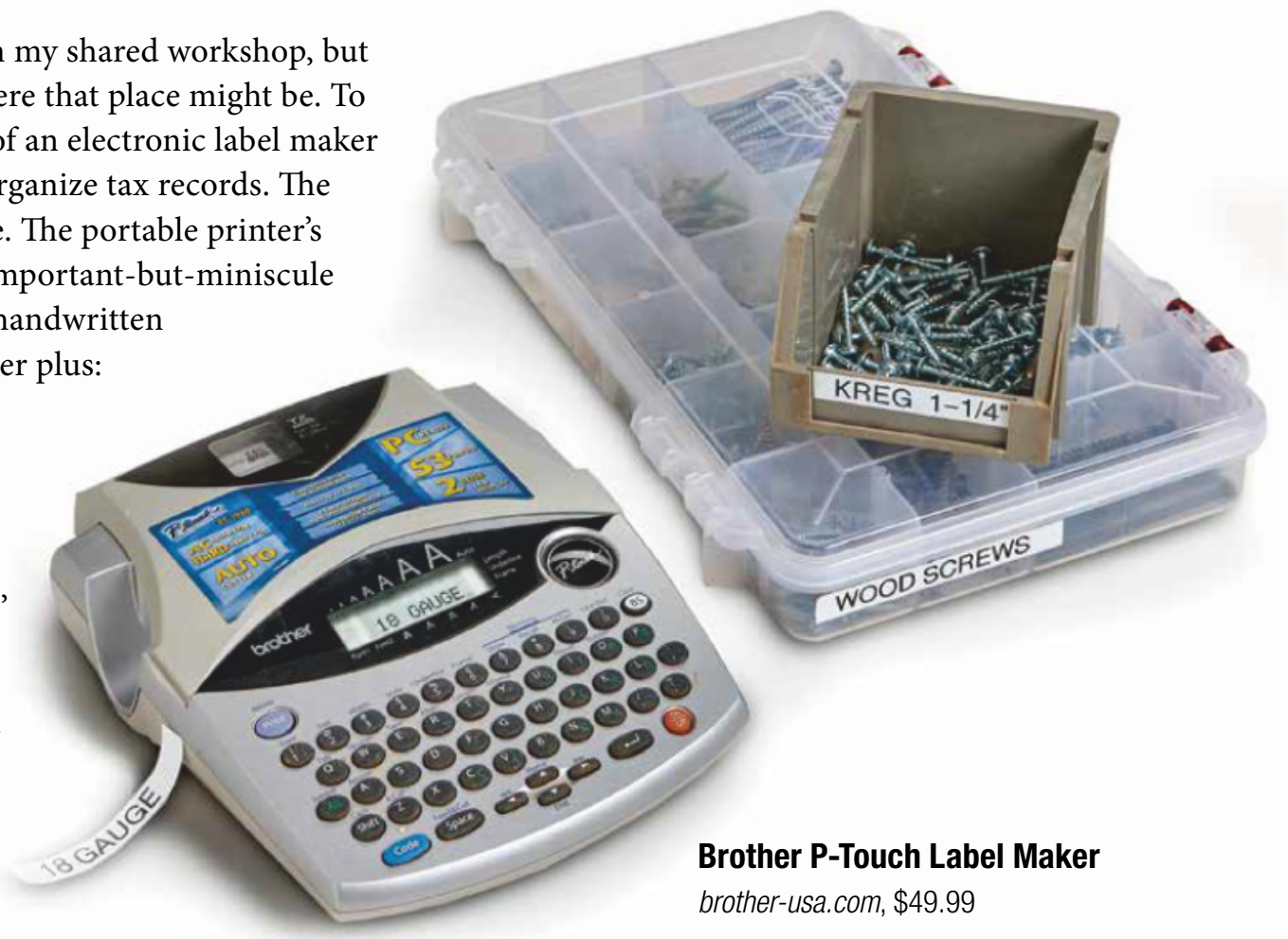
The only real problem I had with bocote was drilling into the end grain to hollow the vase shown at right. In a case like this, I'll usually start with a ¼" bit, and work my way up to the finished hole size in several jumps. With the bocote piece, my ¼" brad point started well enough but quickly drifted off center. The subsequent bits chattered so much that I eventually gave up drilling at the lathe and finished the hole on my drill press. I think the lesson here is not to be lulled into complacency by the ease at which bocote's face grain cuts—it is a very dense wood that will remind you of the fact in unexpected ways.

The second piece that I made with the test boards was a napkin holder (above). I resawed the leaves and was pleased to see they stayed remarkably flat. I was apprehensive about this since most bocote is air-dried, and inconsistent seasoning can cause resawn pieces to cup. I used my block plane to remove the saw marks. Bocote planed like a much softer wood. Both resawn pieces tore a little along one edge, due to the rowed grain. The lap joints for the feet cut easily on the table saw and paring them to fit was no problem with a sharp chisel. The only trouble I had was seeing my layout lines on the contrasting grain. I added masking tape and drew on that instead. Over all, I am pleased with the end results and look forward to making more things with the rest of the sample boards.

Make sense with stickers

There's a place for everything in my shared workshop, but until recently, no one knew where that place might be. To rectify this, I enlisted the help of an electronic label maker that I originally purchased to organize tax records. The labeler hasn't left my shop since. The portable printer's type is easier to read than the important-but-miniscule info printed on a tool, and my handwritten scribbles with a Sharpie. Another plus: The tags don't smudge, and can be peeled off as storage needs change. In addition to labeling hardware bins and cases for tools, drill bits, and other items, I've stuck all sorts of reminders in the shop. The labels make it easier for my shopmates to find what they're looking for, and, at the end of the day I don't hear, "Where does this go?"

—Joe Hurst-Wajszczuk



Brother P-Touch Label Maker
brother-usa.com, $49.99

Photo: Ralph Lee Anderson

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Affordable diamonds

I've found that a coarse diamond stone can just about eliminate the need for a grinding wheel. Sure, it takes a little longer to repair a nicked edge compared to what you can do on a grinder, but consider the advantages: It's a super-compact sharpening solution that doesn't shoot sparks or put you at risk of burning a cutting edge. The WoodRiver 400/1200 diamond stone lets you enjoy these advantages for a very affordable price. For under $80, you get a large (10 × 2¾") 400-grit surface that aggressively removes metal. On the flip side of the stone, 1200-grit diamonds enable you to refine the scratch pattern in preparation for honing. In addition to sharpening, the stone is big enough to do useful flattening work on chisels, plane irons, and small block planes.

—Tim Snyder

WoodRiver 400/1200 Diamond Stone
#163082, $79.99

Photo: Staff

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Increasing glue open time

Q *I know that you can buy special glues that offer extended working time, but I can't buy this type of glue locally. I've heard that you can water down standard PVA (polyvinyl acetate) glue to extend working time, but I'm afraid of weakening the bond strength. If I don't have the special extended working time glue on hand, what are my options?*
—Sam Paley, via email

A Water-based glue dries in two ways: (1) evaporation of water into the air, and (2) wicking of water into the wood. PVA glues can be diluted with 5% water before beginning to appreciably weaken. The working time increases, but viscosity decreases, rendering the glue more runny and messy. Another way to increase working time is to moisten the joint, which slows the wicking process. With this approach, you'll need to increase the clamping time to allow the watered-down glue to reach maximum strength. I'd recommend keeping clamps on overnight just to be sure. Of course, your best option is to keep glue on hand that's designed to provide extended working time—like Titebond Extend or (for exterior use) Titebond II Extend.
—Answered by Bob Behnke, adhesives expert at Franklin International (manufacturer of Titebond glue) ■

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Looking **Ahead**

Here's a sneak peek at our next issue.

Buyer's **Guide**

Hot New Tools (p. 14)

1. California Air Tools 4710SQ Quiet Flow Compressor ..... #427629, **$119.99**
2. Armor Tool Auto-Jig Pocket Hole System with 6" Face Clamp *armor-tool.com*, **$149.99**

A Simple Dovetailed Tote (p. 26)

1. Porter Cable 4212, 12" Dovetail Jig ..... #146049, **$184.99**
2. Freud 8" Dado Set ..... #163017, **$99.97**
3. WoodRiver 1⅝" Forstner Bit ..... #125940, **$14.99**
4. Freud Chamfer Router Bit 45°, ⅞" CL, ½" SH ..... #828728, **$36.97**
5. Fisch ¼" Brad Point Bit ..... #854363, **$4.25**

Metal in the Wood Shop (p. 29)

1. Lutz - File Card and Brush ..... #06D01, **$23.99**
2. SimiChrome Polish, 1.76 oz ..... #111134, **$15.99**

Turned Table Lamp (p. 36)

1. Woodcraft Woodshop, Walnut ⅜ × 3 × 24" (3 needed) ..... #50W52, **$15.99**
2. Woodcraft Woodshop, Walnut ⅛" Thin Stock Pack - 2 sq. ft. (2 needed) ..... #827950, **$26.99**
3. Portfolio 3-Way 250-Watt Brass Lamp Socket Parts Kit ..... *lowes.com*, **$12.98**
4. Portfolio 0.38 × 30" Brass Lamp Pipe ..... *lowes.com*, **$5.48**
5. General Finishes Wood Turners Finish, 8 oz ..... #153331, **$11.99**
6. Renaissance Micro-Crystalline Wax Polish, 200 ml ..... #08G22, **$29.99**

Workbench Rehab (p. 44)

1. Woodpeckers SERX Straight Edge Rule, 36" ..... #154074, **$65.99**
2. Risepro Digital Inclinometer, Spirit Level, and Angle Gauge ..... *amazon.com*, **$24.90**

Workbench Rehab (cont.)

3. CMT Dado and Planer Router Bit, 1½" D, ⅝" CL, ½" SH ..... #822349, **$31.99**
4. Veritas Scraping Plane ..... *leevalley.com*, **$179.00**
5. WoodRiver Cranked Neck Chisel Plane Set ..... #151240, **$43.99**
6. Slipit Sliding Compound, pt ..... #124948, **$17.99**

Garden Obelisk (p. 50)

1. Whiteside Carbide Spiral Upcut Router Bit, ⅜" D, 1¼" CL, ½" SH ..... #08K61, **$52.62**
2. Whiteside Straight Double Flute Router Bit, ¾" D, 1½" CL, ½" SH .... #822035, **$22.65**
3. ToolPro Spring Clamp, 4", 2-Pack ..... #423238, **$4.99**
4. General Finishes Exterior 450 Varnish, Satin, qt. ..... #148385, **$24.99**

Carbide Gets a Turn (p. 56)

NOTE: Other sizes and types of carbide insert turning tools are available from Woodpeckers and Easy Wood Tools. Replacement inserts are sold separately.

1. Woodpeckers Ultra-Shear Mid Size Square ..... #163466, **$99.99**
2. Woodpeckers Ultra-Shear Mid Size Round ..... #163468, **$99.99**
3. Woodpeckers Ultra-Shear Mid Size Detail ..... #163467, **$99.99**
4. Easy Wood Tools Easy Rougher, Mid Size ..... #149928, **$119.99**
5. Easy Wood Tools Easy Detailer, Mid Size ..... #872743, **$119.99**
6. Easy Wood Tools Easy Finisher, Mid Size ..... #151018, **$119.99**

Great Gear (p. 62)

1. Brother P-Touch Label Maker ..... *brother-usa.com*, **$49.99**
2. WoodRiver 10" Diamond Stone, 400/1200 Grit ..... #163082, **$79.99**

Items above available at Woodcraft stores, at *woodcraft.com*, or by calling (800) 225-1153, unless otherwise noted. Prices subject to change without notice.

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Woodcraft is proud to partner with John Malecki, a former NFL offensive lineman turned self-taught woodworker and furnituremaker. John crafts custom furniture in Pittsburgh, PA, as well as producing tutorials and videos on his website, JohnMalecki.com and YouTube channel, JohnMaleckiBuilds.

John attended the University of Pittsburgh and played four seasons in the NFL. After wrapping up his NFL career, he began building and selling furniture in 2014. Since then, he has worked with brands like Lululemon and West Elm Workspace PGH to build high-end industrial and reclaimed style furniture. John emphasizes the use of metal and wood in almost all of his furniture, pairing modern and industrial styles brilliantly.

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Woodcraft is delighted to partner with West Coast furnituremaker Jory Brigham, who grew up among generations of woodworkers and craftsmen, discovering his own creative voice at an early age. Learning the craft without formal training gave Jory a greater appreciation for the freedom his career path has afforded him.

Since 2008, Jory has designed and built custom furniture for his own company, Jory Brigham Design, as well as offering classes in furniture building. He uses mostly domestic hardwoods and time-honored techniques to craft unique furniture at his San Luis Obispo, California, studio.

To learn more visit brighamworkshop.com

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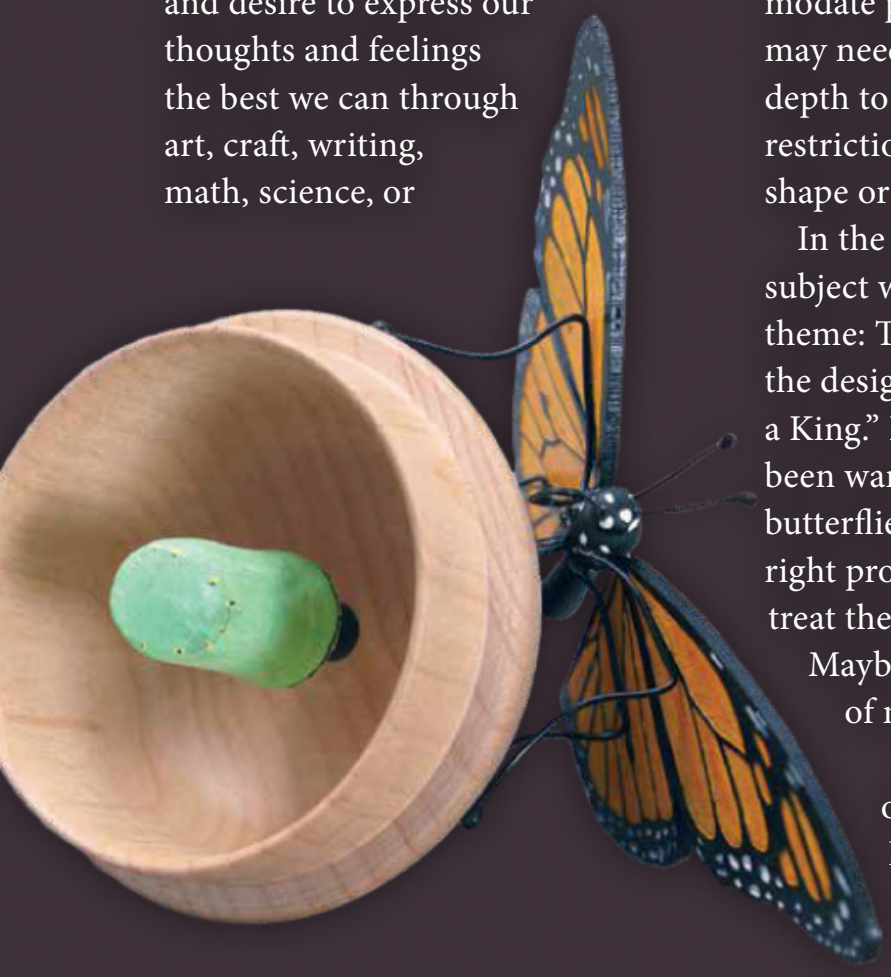
Learning Creativity

Let limitations set you free!

By Michael Kehs

I recently attended an art exhibition opening that included a piece of mine. It was a maple, cherry, and ebony teapot festooned with six carved, painted monarch butterflies and a single caterpillar. Removing the lid revealed a green painted carved chrysalis hanging from the underside. The work really tickled another attendee, who asked to hire me to teach him "how to be creative." Now, I'm not sure creativity is something that can be "taught," but it got me to thinking.

What is creativity? I think it's simply the human ability and desire to express our thoughts and feelings the best we can through art, craft, writing, math, science, or whatever we're passionate about. If you're reading this, there's a good chance that your chosen palette, like mine, is wood. But since the medium offers such a wide world of things to make, where do you begin? How do you jump-start the flow of ideas?



It might seem counterintuitive, but I've found that one way to spark the imagination is to begin with limitations. These might be integral to the nature of the piece, or they may be arbitrarily self-imposed. For example, a cabinet or box may need to be sized and compartmentalized to accommodate particular items. A bowl may need to be a certain diameter or depth to suit a certain purpose. Or, a restriction can be as loose as a simple shape or perhaps a title of some sort.

In the case of my gallery piece, the subject was dictated by the show's theme: Teapots. I thought I'd base the design on the title "Tea Fit for a King." Right. A monarch. I had been wanting to do something with butterflies, so maybe this was the right project for them. But how to treat them? Stylized? Abstracted? Maybe just incorporate the colors of monarch butterflies?

Let your imagination play off of the things you love. For me, it's nature. On the other hand, I have a friend who is enamored with numbers and geometry who makes beautiful multi-sided, mathematically ornamented projects. A Vietnamese man I once knew often incorporated into his work dragonflies, which he delighted in seeing on his beloved Mekong River.

What fascinates you? Maybe cars. Then let that be your limitation. You don't necessarily want a cabinet that looks like a Corvette, but perhaps you can integrate that clean fender curve into the door rails. Beautiful! Or how about turning tiny headlights for the door pulls? Run with it. Do something—anything—to start the flow of ideas. Even if you don't use them all right away, put 'em in your pocket for next time. Practice playing. Make quick sketches or mock-ups in modeling clay, styrofoam, scrap wood—whatever. Venture into the unknown; learn that new technique that will help you bring your next piece to life. And don't worry. Embrace failure as a teacher who helps you learn what *doesn't* work.

As to whether creativity can be taught, who knows? But I'm convinced it can be learned if you stay open to it. Go forth and limit yourself! You might be surprised at the results. ■

Photos: Michael Kehs

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