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- Multi-axis bowl turning
- Bowed wall shelf
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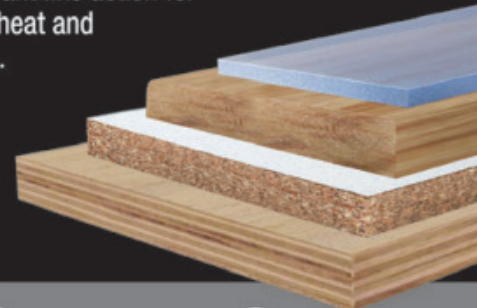


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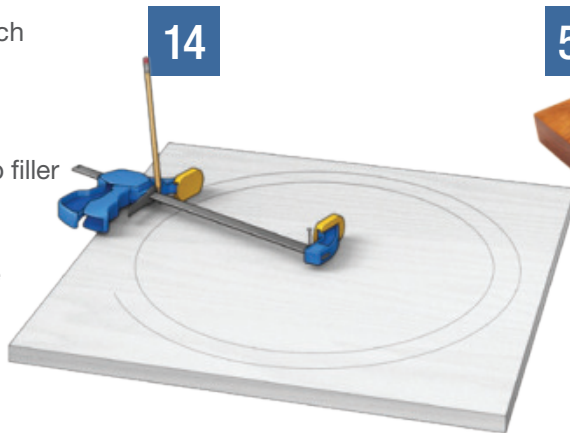
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Saying goodbye, saying hello

One who enjoys learning about woodworking as much as I do, being employed at a woodworking publication is a real treat. I'm in a fortunate position to absorb information from a knowledgeable, talented readership, a stable of expert contributors, and of course, the best staff in the business. One such staff member is Paul Anthony, the magazine's most senior editor. He has not only consistently fed my insatiable appetite for woodworking knowledge through the years, but he also taught me the value of good work and what it really takes to produce that work. After over a decade with the magazine, Paul is retiring. This is his last issue.

Paul started working with Woodcraft in 2010, but his career began nearly 50 years ago. He ran his own custom woodworking business in California for 20 years before moving to Pennsylvania in 1994 to join *American Woodworker* magazine. When the publication was sold a few years later, Paul immediately began working as a freelance woodworking photojournalist. During that time, his writing and photos graced the pages of all the major woodworking magazines. He has also written three books on the subject, edited a dozen more, and has been featured in a number of instructional videos. In addition to his

journalistic commissions, he has taught woodworking classes around the country.

For his final duties with us, Paul expertly designed and documented the build of a Parsons-inspired table (p. 32). There, you'll find a sensible approach to flattening large panels using a belt sander, as well as other reliable shop-proven practices. Technique-filled projects by the rest of the staff continue on page 46, with a bowl turned on three axes by Ken Burton, a cleverly designed bowed wall shelf by Derek Richmond (p. 19), and a pair of my own shop ponies, which provide a great platform for practicing joinery techniques (p. 40). Finally, try out sharpening your hand tools by plugging in (p. 25).

I've already learned a few things from Paul's replacement: Baltimore-based furniture maker Sarah Marriage. (Learn more about Sarah on page 6.) I'm looking forward to my continued education working alongside Sarah and the rest of the capable crew at *Woodcraft Magazine*. Together, we'll no doubt produce a fresh mix of projects and techniques to learn from. Stay tuned. Paul will surely keep in touch, and you may find his work on these pages in the future. But for now, here's to my mentor, my friend, Paul Anthony. Happy retirement, pal. ■



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Magazine Marriage



Sarah Marriage, furniture maker and woodworking educator, is joining the *Woodcraft Magazine* team. From a young age, Marriage searched for a way to combine her interests in math, science, and art, which led to her studies in architecture at Princeton University, and a specific interest in designing and building at the smaller scale of furniture and everyday objects. After a decade of self-guided woodworking education through magazines and books, Marriage studied fine furniture making at The College of the Redwoods (now The Krenov School), and launched her career as a professional furniture maker. Her work explores complex geometries and simple solutions that make everyday life a little brighter and more beautiful. Marriage is also the founder of A Workshop of Our Own (WOO), an educational woodshop in Baltimore, MD, with a mission of increasing gender diversity in the woodworking field through workshops and training opportunities.

Aspen a question

I was surprised not to find aspen listed as a viable secondary wood in the Dec/Jan 22 issue's WoodSense column (p. 54). I've found the wood to be straight and stable, free of knots, averse to splitting, and readily available. Plus the creamy color of aspen is far more attractive than poplar.

—Charles Landey, Brookfield, WI

Senior Editor Ken Burton replies:

I considered including aspen, but it's not as widely available as pine, poplar, and soft maple. But you can look for us to cover aspen in an upcoming WoodSense column.

How to reach us

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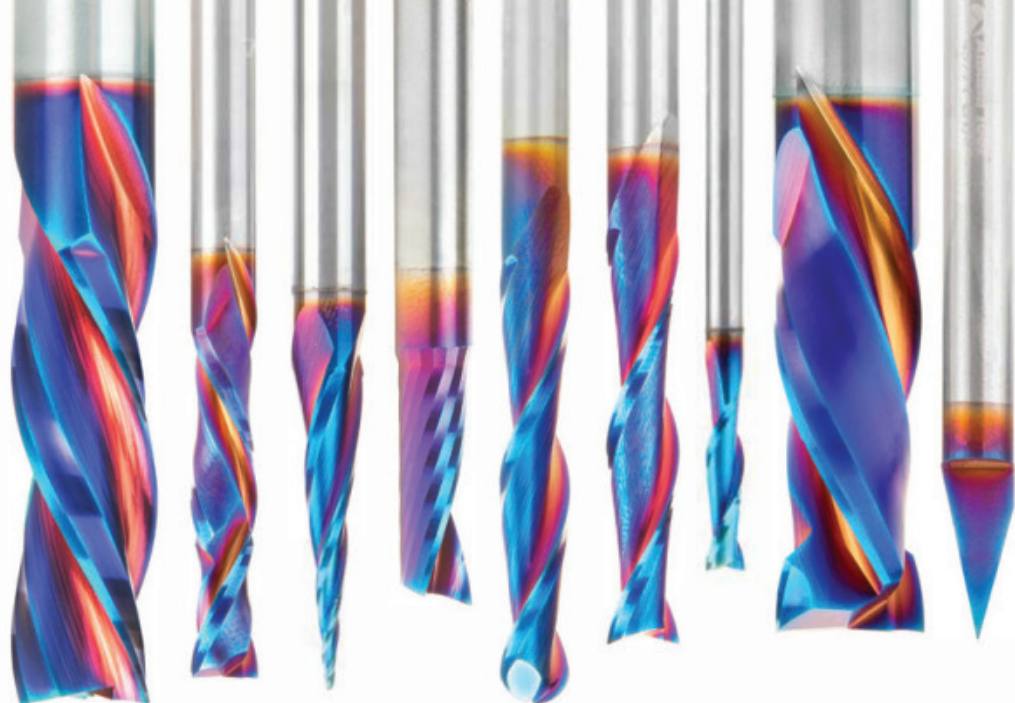
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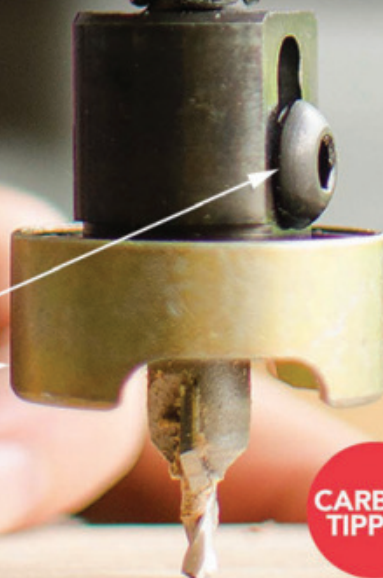
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Peter Korn retires



Peter Korn, founder of the Center for Furniture Craftsmanship, retired from his role as its Executive Director in December 2021. The Center began as a school in Korn's home shop in 1993, founded on the idea that "creating useful, beautiful objects in

wood can be as profound an exploration of the human spirit as any other visual art." In retirement, he plans to continue teaching and making furniture, while pursuing other passions of writing, sailing, and cooking. Meg Weston, former president of the Maine Media Workshops + College, succeeds Korn as Executive Director of the Center for Furniture Craftsmanship on an interim basis.

Bar clamp holddown



I've been using a trick similar to the Bar Clamp Hold-Down tip (Dec/Jan 22), but less destructive to the clamp. I drill out the rivet at the end of the bar so I can remove the handle end. Slip the bar through the bench dog hole from below, then reinstall the handle above the table. I replace the rivet with a spring clip to keep the clamp parts together. Changing positions is a little slower, but clamping through the table means no chance of slipping.

—Paul Raupagh, via email

Pen mightier than sword



Woodcraft's 18th annual Turn for Troops National Turn-a-Thon brought in more than 12,000 handcrafted pens to be distributed to U.S. military personnel deployed overseas. Many Woodcraft

locations held in-store turning events for the first time since before the pandemic. For information on donating pens, visit woodcraft.com/pages/turn-for-troops. ■



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Reader Showcase



DON OLSON,
PORTLAND, OR

Modified side. When new subscriber Don Olson saw the single-drawer side table (Aug/Sept 20), he knew he needed to build one. Olson's table features a taller backsplash and wider shelf board spacing than the original. He also added beaded apron extensions and squared the top's corners. Olson says the table was a challenging but fun build, and it now looks grand in his home office.



RICK SUTTON,
WEST CHESTER, PA

Light of his life. A retired mechanical engineer and lifelong tinkerer, Sutton first jumped into the deep end of woodworking 20 years ago when he built a 15-foot sailboat. Opting for something a bit smaller this time, he crafted this Arts & Crafts-style desk lamp from

Issue 52 (April/May 13) to light up his wife's desk. Sutton used quartersawn white oak and made the shade supports thicker for better support, but otherwise stuck to the plans. He finished the lamp with a combination of dye, stain, and shellac.



GARY R. ROHS, CINCINNATI, OH

A chest with hidden treasure. Inspired by a mechanic's toolbox, Rohs designed and built this drawered jewelry box for his wife. The carcass and drawer fronts are walnut, with poplar and Baltic birch secondary woods finishing out the drawers. Porcelain knobs give access to the seven full-slide drawers, while the carcass top slides forward to reveal a compartment for stashing the expensive stuff hidden behind the drawers. Overall dimensions are 17½" wide, 9¾" high, and 11" deep.



EVERETT ISRAEL, LEESBURG, FL

Nuts for party trays. Israel has been making router party trays and serving dishes for 20 years. For the base of this lazy-susan tray, he laminated walnut with ¼"-wide strips of maple. He continued the pattern up the sides, alternating walnut and maple in a stack before routing the cavities. The tray is finished with walnut oil and polyurethane. Quite a dish! ■

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Bosch GEX34-6N Random Orbit Sander

Bosch has revamped its line of random orbit sanders for better dust collection and decreased vibration without sacrificing performance. I got my hands on their 6-inch GEX34-6N to see for myself. I put the tool through its paces, sanding a half-dozen hard maple cutting boards along with the parts for the wall shelf on page 19. Here's what I found.

The well-balanced tool tips the scales at 5.3 pounds, making it hefty but not overweight for its class. The front handle is removable to get into tighter spaces, but is helpful for guiding the tool over large surfaces or when holding the tool sideways to sand edges. Bosch also plans to introduce a 6" polishing pad, which will give the tool even more utility.

The pistol-grip handle offers a long comfortable grip with a trigger lock on the left side. The sander's variable orbit speed ranges from 5,500 to 12,000 orbits per minute. Turn the accessible speed wheel on the motor housing, and the sander moves smoothly through that range while in operation. Even at its highest speed, the unit remained relatively vibration-free, meaning extended use before that tingling sensation in your hand tells you it's break-time.

Bosch achieved this smoothness by rethinking its pad-dampening system while overhauling the pads for better dust extraction. The sander comes with a medium pad, but the company also offers hard, soft, and even extra-soft pads

for various sanding jobs. But they're proprietary, so only Bosch-branded pads are compatible. The sanding pad features an array of small holes for dust collection and hook-and-loop attachment for the paper. The pad's multi-hole design works with virtually any brand of sanding discs. Bosch-branded paper worked well, but every paper brand I tried lined up enough holes that the sander's dust collect worked efficiently.

And dust extraction is where this sander really shines. The unit includes both a microfilter dust canister and a vacuum hose adapter. The canister sits below the trigger handle and contains a replaceable ½-micron filter. Its rigid design does a better job collecting dust

Overview

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- Vacuum hose adapter
- Variable speed 5,500-12,000 OPM
- Removable front handle



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than bag-equipped models. When it's time to empty, simply unscrew the cap, pull the filter out of the canister, and tap both on the sides of your trash can to quickly clean them. Then, reinstall the filter and reattach the canister. Replacement filters are available from Bosch retailers.

Though, for truly superior dust collection, attach your shop-vac via the included 1½" vacuum hose adapter. Either option leaves very little sawdust on the work surface, mean-

ing fewer hard-to-remove swirls and longer paper life.

Bosch claims that the increased airflow from the multi-hole sanding pad and redesigned dust extraction leads to increased tool life. At least in my testing, the motor stayed cool even during lengthy sanding operations.

Bosch set out to improve dust collection and decrease vibration in its 6-inch sanders, and has done so with aplomb. ■

—Tester, Derek Richmond



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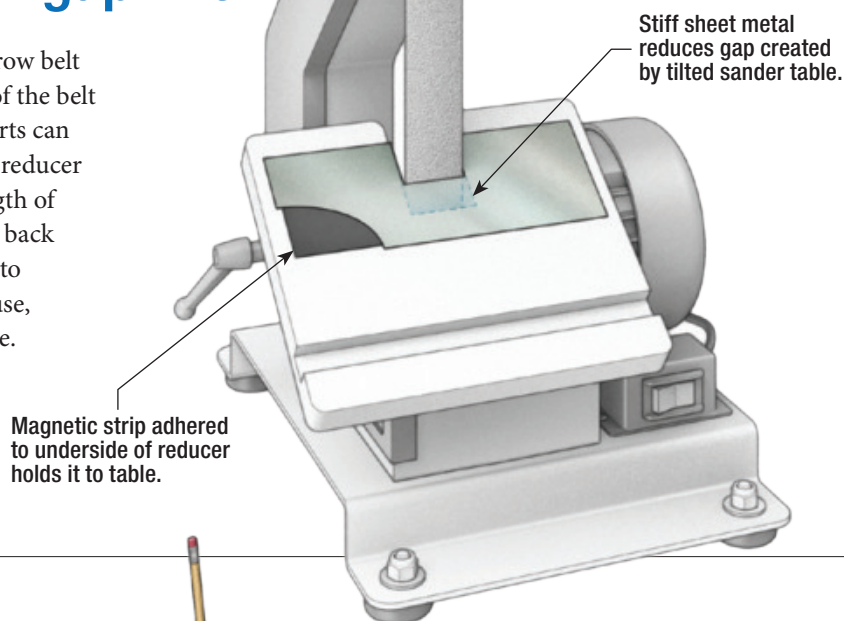
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TOP TIP

Narrow belt sander gap filler

When I tilt the table on my stationary narrow belt sander for beveled work, the gap in front of the belt grows wider to the point where smaller parts can drop through. To close this void, I made a reducer from a piece of stiff sheet metal with a length of self-adhesive magnetic strip adhered to its back side. The magnet holds the reducer firmly to the sander's table as shown. When not in use, I simply store it on the back of the machine.

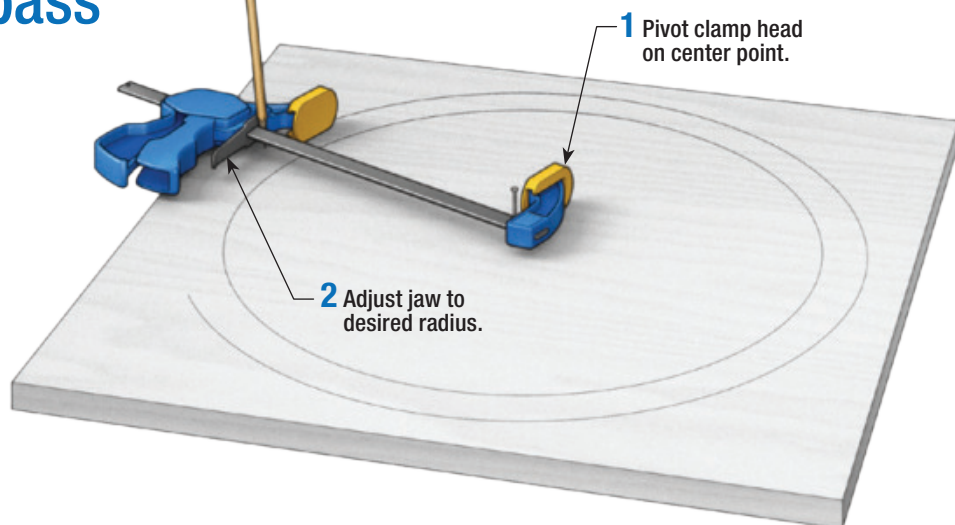
—Dave Black, Holdrege, Nebraska



Bar clamp compass

When a project requires you to draw a large circle, you don't necessarily need a trammel. Instead, try using a quick-set bar clamp. Hook the fixed jaw over a nail driven at the center point and hold your pencil at the intersection of the moveable jaw and bar. Squeeze the handle to precisely adjust the pencil's location to match the radius you need.

—Richard Entwistle, Highland Lakes, New Jersey



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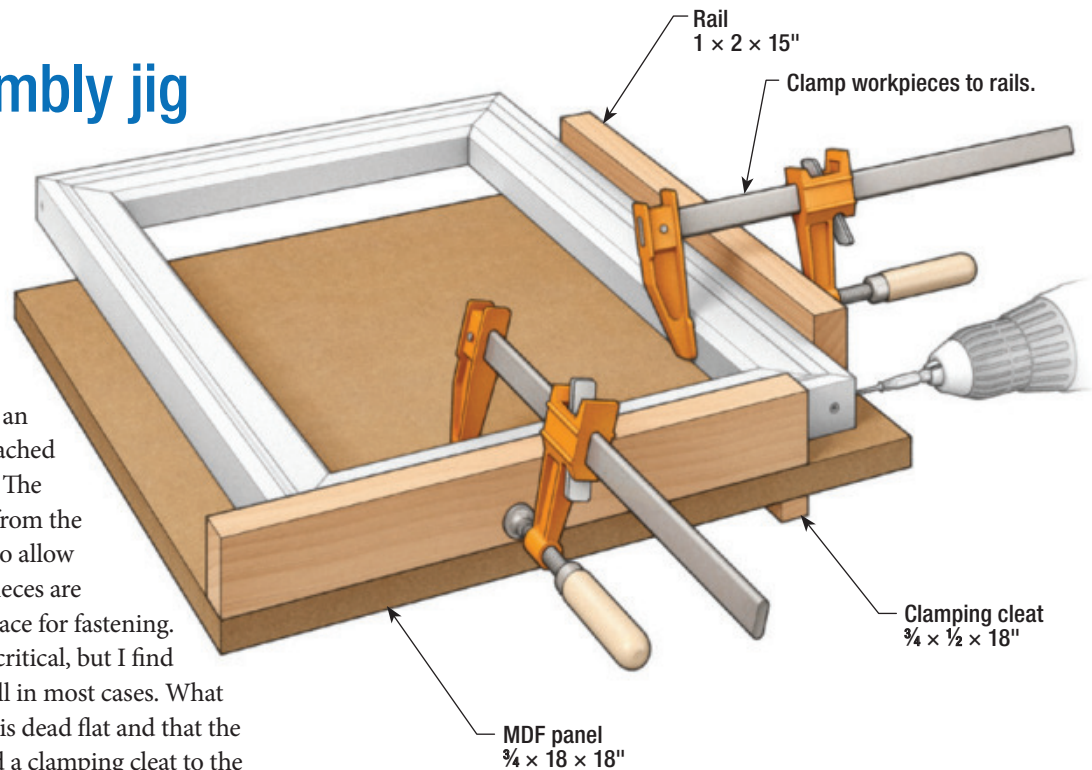
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Frame assembly jig

When nailing or screwing together the corners of picture frames or even small boxes, you need a way to hold the parts together for fastening. This simple assembly jig does the trick nicely. It's nothing more than an MDF panel with two rails attached at precisely 90° to each other. The ends of the rails are set back from the business corner of the panel to allow tool access when the frame pieces are positioned and clamped in place for fastening. The part dimensions are not critical, but I find that the sizes shown work well in most cases. What is important is that the panel is dead flat and that the rails sit square to it. I attached a clamping cleat to the underside to secure the jig to a bench vise when in use.

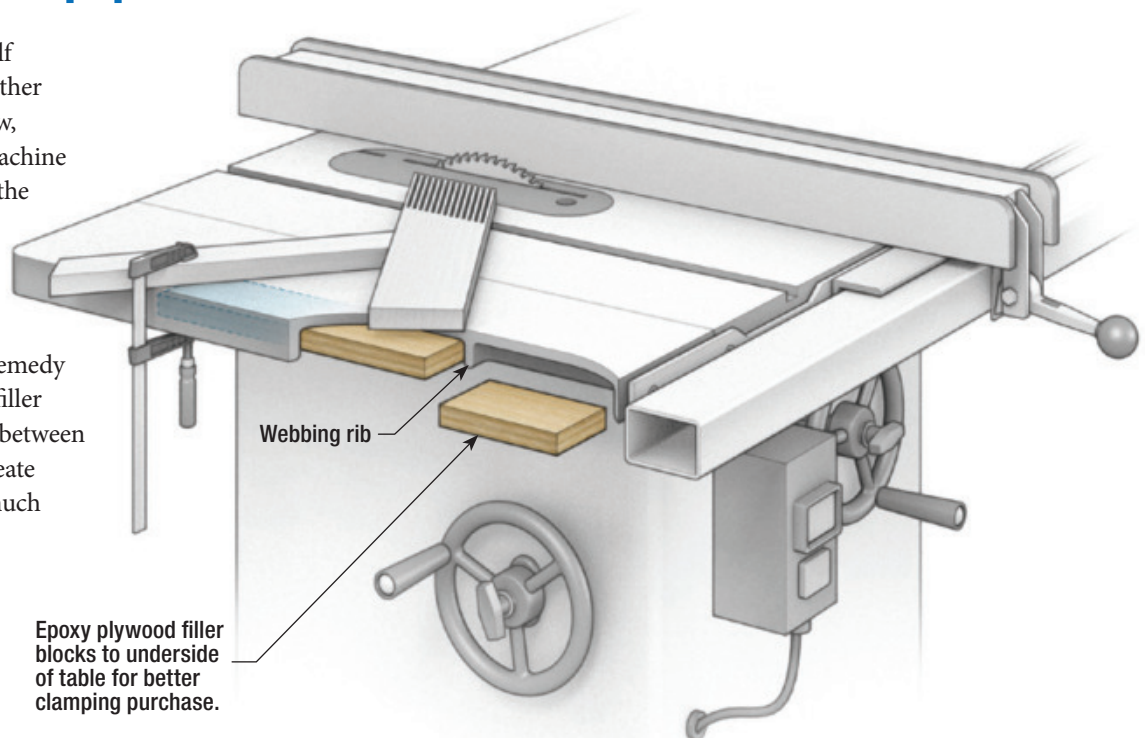
—Tom Washington, Billings, Montana



Better clamp purchase on machine tables

I frequently find myself clamping fences and other fixtures to my table saw, bandsaw, and other machine tables. Unfortunately, the cast iron webbing on the underside of the tables can make finding solid footing for clamps tricky. To remedy this, I fit and epoxied filler blocks of 3/4" plywood between the webbing ribs to create flat surfaces that are much more clamp-friendly.

—Rick Lombardi, Dublin, Ohio





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Bow-front WALL SHELF

*A shallow display
for small treasures*

By Derek Richmond

My wife and I enjoy collecting small treasures—carvings, figurines, and tiny potted succulents to name a few. But they tend to get lost on large shelves or atop furniture. So I decided to design a wall shelf to display these items that included a good amount of shallow shelf space. And, while I didn't want the shelf to overwhelm the items upon it, I wanted to include some subtle detailing to give the piece a touch of personality of its own.

Stacking three long but narrow open shelves on a pair of wall-mounted uprights accomplished the first goal. The shelves aren't so deep that small items get lost on them, and the entire piece is shallow enough that it doesn't intrude into the room. This grid-like arrangement also creates "framed" spaces for showcasing our collection.

The front bows, pierced by decorative brass rods, add depth and decoration. They also contribute to the sense of enclosure and the feeling that your displayed items are protected against the errant bumps from passers-by. The thin strips make a design statement, but are narrow enough not to obscure treasures on display. I made my shelf from gray elm, but feel free to use your favored wood species.

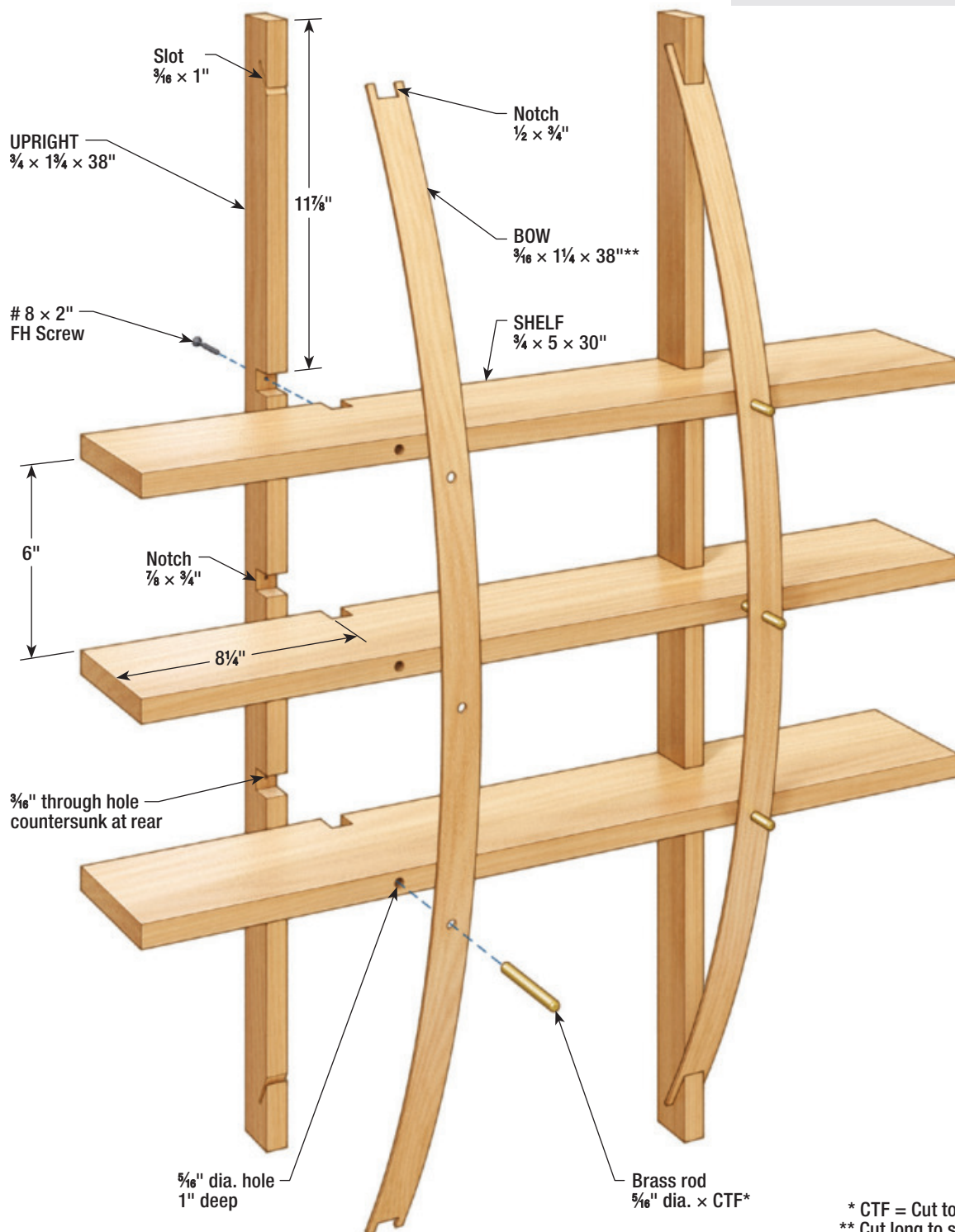


Notched shelves with bows and brass

Shelves slide into uprights via half-lap joints reinforced by screws driven from the rear. Thinly planed parts with notched ends bend to slip into slots in the uprights, trapping them in their bowed shape. A drilling guide ensures proper spacing and orientation where the decorative brass rods pierce through.

Order of Work

- Notch the shelf parts
- Make the bow drilling jig
- Cut and drill the bows
- Cut the bow notches
- Finish and assemble



* CTF = Cut to Fit
 ** Cut long to start

Cut the half-laps

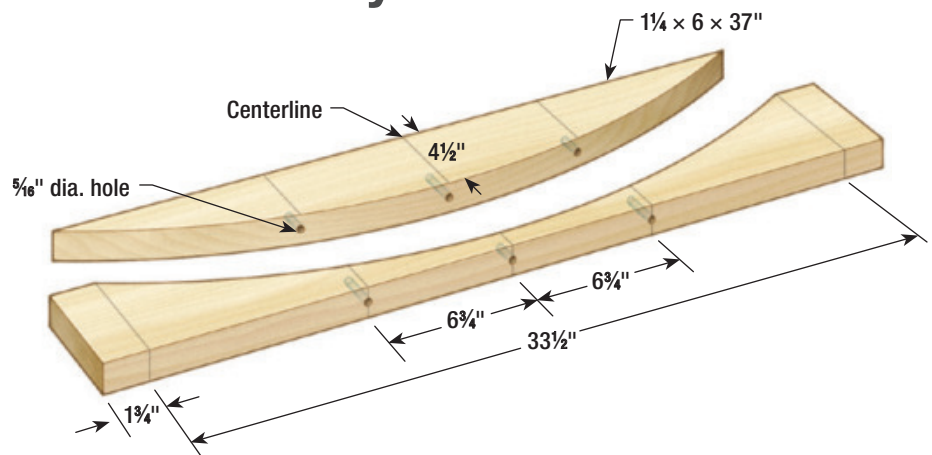
Mill the shelf and uprights to size. Adjust a dado blade in your table saw to precisely match the thickness of your pieces and set the height to half the width of the uprights. Gang similar parts together when cutting so the notches align. Later, you'll drive screws through the joints from behind to hold them together.



Notch the parts. Stack and clamp the shelves and cut their notches with a dado blade, then repeat with the uprights. A standoff block against the fence helps locate the cuts accurately and safely.

A drilling guide ensures accuracy

The bow drilling guide accurately spaces the brass rod holes and orients them at the proper angle to intersect the flexed bows. I made my guide from 6/4 poplar, but a length of 2-by construction stock would work as well. Plane the guide stock to match the width of the bows, then lay out the curve with a fairing stick. Mark the drilling locations on the face and edge of the board, then use a bandsaw to cut along the curve.



Fair is fair. After laying out the ends and apex of the curve, use a fairing stick made from thin, straight-grained stock or hardboard to draw the curve. A looped string and a toggle attached to both ends of the stick maintains the curve, leaving your hands free for positioning and penciling.



Cut the curve. Cut the curve at the bandsaw, making one smooth, continuous pass.



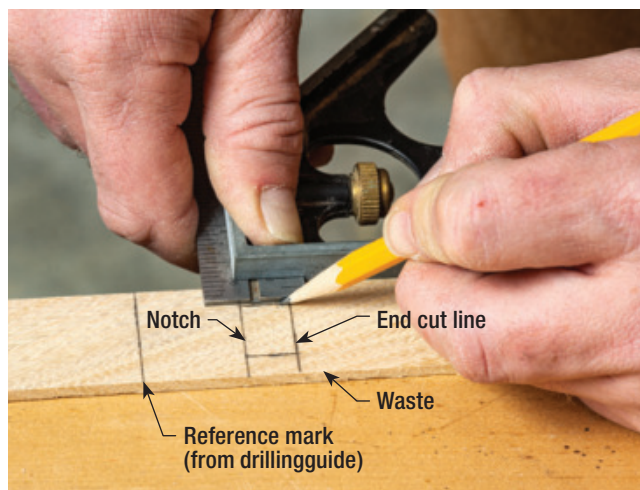
Drill the rod holes and notch the bow

Saw or plane the bow stock to width and thickness, leaving the pieces a few inches oversized in length for now. Sandwich a bow in the guide and drill as shown. While at the drill press, bore two $\frac{5}{16}$ " diameter holes 1" deep into the front edge of each shelf to accept the brass rods. Mark for the length of the bows. Then lay out and cut the notches at the end of each.



Mark the ends. Before unclamping the bow stock, strike a reference line on the back of each end where it exits the drilling guide.

Drill the bows. With the first bow blank clamped in place, drill into the guide's edge and through the bow. Use these same holes when drilling the second bow.



Lay out the notches. Lay out $\frac{1}{2}$ "-long, $\frac{3}{4}$ "-wide notches 1" past the reference lines you made. These notches will mate with slots in the uprights.



Chop it off. Trim the bows to length and cut the sides of the notches at the bandsaw. Then square off the end of each notch with a chisel, holding the pieces in place with a block that serves as a fence.

Assemble and finish

On each end of the uprights, mark the length and width of the slots that will accept the bows. On the back of each upright, rout a keyhole slot a few inches from the top to use when hanging the unit. Then, with the shelves and uprights dry-fit together, drill a pilot hole, clearance hole, and counterbore for a #8 × 2" screw at each joint. Finish all the parts before screwing the shelves to the uprights and gently springing the bows into place. Cut the brass rod sections to length so that ¾" protrudes in front of the bow. Chamfer, sand, and lacquer (see Buyers Guide, p. 62) the rod sections before installing. Mine press fit into place, but a dab of epoxy in the shelf holes will secure a loose rod.

Back to front. Center and clamp the convex part of the drilling guide along the length of an upright.

Then use a straightedge to extend an inch-long line onto the upright, tangential to the curve of the drilling guide. Hold the bow stock in place and trace along it to mark the slot's width.



Slit the slot. Cut the slot on the uprights at the bandsaw, nibbling away the waste. The notches at the bow's ends will hide the joints and keep the bow in place laterally.



Spring the bows. After finishing all parts and assembling the shelves, gently spring the bows into place. Then insert the brass rods through the bows into the shelves. ■

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MACHINE SHARPENING

hand tools

Quickly shape and hone your edges

By Ken Burton



No matter what type of woodwork you do—furniture making, turning, carving, and so on—sharp tools are an absolute necessity for good work. And there are several motor-driven machines available that promise to help you with this critical task. I rounded up six of the more popular systems and put them through their paces to see how fast and easy they are to use, how good a job they do, and what kinds of tools they are capable of handling. I worked with bench chisels and

plane irons to shape and flatten the backs before honing the surfaces to a polished edge. For turning and carving tools, I sharpened flat chisels, skews, scrapers, gouges, and veiners. I also peeked at what accessories are available to sharpen some non-woodworking tools. I found that four of the six systems have much to offer all kinds of woodworkers, while the other two are more suited to specialized use. Read on to see which of these tools might be the machine for your shop.

Work Sharp 3000



Bevel up from below. Slide the blade, bevel up, along the adjustable ramp, and into contact with the spinning disc. Apply pressure in short pulses to avoid overheating the tool steel. Fine abrasive covers the ramp's surface for removing the burr on the back, but I preferred using the top of the plate as shown below.

The Work Sharp is a horizontal disc sharpener that utilizes glass plates faced with pressure-sensitive adhesive (PSA) abrasives. The machine comes with two plates, so you can work through four grits, flipping or switching the plates as needed. Work Sharp sells the abrasives, but any 5" PSA sanding discs will work. The plate's downward-facing side shapes and hones the bevel of chisels and plane irons up to 2" wide. An adjustable ramp guides the tool at standard preset angles, or you can determine your own. Setting a micro-bevel (a small, steeper bevel at the cutting edge) is as easy as resetting the ramp to a steeper pitch.

Flattening and honing tool backs happens on top of the plate. Topside is also where you shape and hone gouges (and wider tools). But with no jiggling other than an adjustable height tool bar, achieving the desired angle requires eyeballing the bevel's contact with the plate as the blade lies on the tool bar, and "rolling" it to sharpen. Work Sharp also includes a flexible, slotted disc with matching PSA sandpaper for sharpening other non-square tools from underneath, eyeballing their contact with the abrasive. While this sounds a bit odd, it works well. This machine was the easiest and fastest for honing bench chisels and plane irons. I was able to hone quickly and get back to work in under two minutes.



Flatten topside. The dead flat tempered glass plates faced with the right abrasive make short work of flattening the back of a new blade. A spare plate faced with the finest grit paper allows working the bevel below and the back above without stopping to flip or switch plates.



Eyeballing underneath. Swap the glass plate for the plastic slotted one with its matching abrasive paper, and you'll be able to see through the disc as it spins. This allows you to sharpen non-square tools such as skew chisels on the ramp or large lathe tools to the side by eyeballing how they contact the abrasive.

The bottom line:

Price: \$200

Weight: 16 lbs

- Excellent for inexperienced sharpeners
- Fast, consistent sharpening of standard flat bench tools up to 2" wide
- Can hone and get back to work quickly
- Easy to flatten and hone tool backs
- Can sharpen wider blades and gouges but setting the bevel angle requires finesse
- Can sharpen lathe tools but lacks jiggling for easy repeatability
- No capacity for honing the inside of gouges and veiners
- Ongoing abrasive costs

Veritas Mk.II Power Sharpening System

This horizontal disc sharpener from Veritas uses two-sided 8" diameter aluminum composite discs that are lighter and less fragile than Work Sharp's glass plates but just as flat. All the sharpening happens topside. Shaping and honing the bevel requires using a series of included jigs and gauges. First, determine the angle using the bevel gauge and then set the height of the tool bar to match. Clamp the blade in the tool holder and set the projection as shown. Clip the tool holder to the tool bar, and pivot the blade down onto the spinning disc. Adding a micro-bevel requires removing a plastic spacer from under the disc, lowering it to create a steeper angle. With practice, I found mounting a chisel in the holder, then doing a touch-up honing was a two-to-three minute affair. Flattening the back of a rusted, pitted flea market find was much faster than doing it on a stone but used up three 80-grit discs. Sharpening gouges is done freehand as shown.



Set the projection. After adjusting the height of the tool bar to the desired bevel angle, set the projection. Clip the tool holder to the bar of the projection gauge, and slide the tool through the holder until its tip touches the gauge's flange. Tighten the holder knobs to lock the tool in place.

The bottom line:

Price: \$419

Weight: 23 lbs

- Great for inexperienced sharpeners
- Works well for all standard hand tools, regardless of width
- 2-3 minute touch-up honing
- Compared to 5" discs, the 8" discs last longer, but they're harder to find
- Easy and fast to flatten and hone tool backs
- Can sharpen gouges but setting the bevel angle requires finesse
- Can sharpen lathe tools but lacks jiggling for easy repeatability
- No capacity for honing the inside of gouges and veiners
- Ongoing abrasive costs

Clip and pivot. Clip the tool-mounted holder to the tool bar, and pivot the blade down onto the spinning abrasive, applying pressure in short pulses to avoid overheating. Slide the holder on the bar from side to side for even abrasive wear.



Freehand finesse. To set the bevel when sharpening gouges, rest the tool on the bar using your finger as a stop to determine the projection, eyeballing the bevels contact with the abrasive. Gently roll the tool with your opposite hand.



Sorby ProEdge



Pivot and grind. The fingernail profiling jig comes with the machine and allows you to perfectly reproduce the standard grind on the end of a bowl gouge by pivoting the tool as you roll it against the belt.

Sorby is a leading manufacturer of woodturning tools, so it's no surprise that their belt-sander-based sharpener excels at sharpening them. It comes with three belts, the finest of which leaves a nice edge for turning. To sharpen roughing gouges, roll them in the included gouge jig with the tool rest set for the desired bevel. For the specialized grinds on spindle and bowl gouges, remove the tool rest and clamp the tool in the fingernail profiling jig which slides on the lower tool bar.

The ProEdge also handles chisel and plane irons, but you'll need to shell out an extra \$100 for finer-grit belts (600, 1200, 3000) and maybe their Square Guide. To sharpen the bevel, angle the tool rest using Sorby's clever system of holes that make this easily repeatable. Hold the blade bevel down, against the guide, and on the rest. Then advance it into the belt. Repeat this process through the grits. In use, I found it took longer to change the grits (1-2 minutes) than it did to do the actual sharpening (<30 seconds per grit). To flatten and polish the back, hold the chisel against the belt as shown. This unit didn't produce as clean a polish on flat tools as the other machines. For sharpening carving gouges and veiners, a buffing wheel is available for polishing the insides of the flutes.



Angle and abrade. The ProEdge's tool rest is similar to a high-end rest for a bench grinder with the added benefit of a precise angle setting system. The only drawback is that it doesn't accommodate chisels with short blades.



Tilt and polish. You'll need access to the backside of the machine when it's time to hone the back of your flat tools. Tilting the belt to a comfortable position requires loosening two Allen screws and then retightening to lock it in place.

The bottom line:

Price: \$634

Weight: 36 lbs

- For serious turners who also do some flat woodworking (requires additional accessories)
- Accessories available for specialized turning grinds as well as kitchen knives etc.
- Touch-up honing of both turning and flat tools in under 1 minute
- Adds a nice, small belt sander to your shop
- Hard to hone the back of flat tools to a mirror
- Ongoing expense for belts

Tormek T-8

Tormek is so confident that their machine produces scary sharp tools that they include a pack of Band-Aids, “just in case.” They’ve put a lot of thought into how to sharpen everything from woodworking tools to kitchen knives and garden implements. If it has a cutting edge, you can probably sharpen it on a Tormek with the appropriate accessory jig. Be aware, however, that the machine comes only with the holder for sharpening chisels and plane irons. The sharpener consists of a low-speed motor turning a 10" diameter waterstone on one side and a leather-rimmed honing wheel on the other, both of which are replaceable and upgradable. Flatten the back of flat tools on the side of the wheel as shown. For the bevel, mount the tool in the holder, and set the angle with the help of the included bevel gauge. Place the F-shaped tool bar in the appropriate position, and mount the tool holder. Then press the bevel against the spinning wheel. Since the wheel runs in water, there is no risk of overheating the steel. To hone, move to the leather-faced honing wheel. The T-8 takes some getting used to, but the instructions—and results—are excellent. Once I had the machine set up, it took about 20 minutes to take a new chisel from its factory grind to joinery-ready my first time out. Subsequent touch-ups took two-to-three minutes.



Side grinding. For the initial back flattening, hold the tool against the side of the waterstone, tipping into contact from the handle end towards the bevel end.

Keep your cool. Tormek’s water bath makes bluing tools impossible. Beware that the stone may crack if it freezes when wet.

The bottom line:

Price: \$775

Weight: 33 lbs

- A system to grow with
- Comes ready to sharpen long plane irons and bench chisels
- Designed to sharpen all tools well
- Jigs, holders, and honing wheels available for tools including:
 - Turning tools
 - Carving tools
 - Jointer and planer knives
 - Kitchen knives
 - Garden tools
 - Hatchets and axes
 - Scissors
 - Drill bits
 - Pizza cutters
- Includes a carry handle
- Minimal ongoing expenses



Hone to perfection. After charging the leather with the provided honing compound, reposition the tool bar and keep the tool in the holder as you hone the bevel. Polishing the back is done freehand.



Two specialized systems

The final two systems are actually add-ons for bench grinders: Razor Sharp's Edgemaking System and Oneway's Wolverine Grinding Jig. Razor Sharp's system features two paper wheels—one for shaping and the other for honing—that fit your grinder. The company recommends a high-speed grinder (3600 RPM), but I found that a slow-speed (1800 RPM) model gave me more control. The system works well, but without a means to hold tools at specific angles, sharpening bench chisels and plane irons becomes problematic. Nevertheless, it worked very well for sharpening knives and maintaining the edges on my straight carving tools gauging the bevel angles by eye.

Oneway's Wolverine Grinding Jig is designed to sharpen turning tools. It consists of two interchangeable tool rests that fit into clamps mounted beneath your grinder's wheels. One of the tool rests offers a wide, flat surface for sharpening scrapers and other flat tools. The other tool rest is an extendable arm with a v-notch at its end. By registering the handle end of your gouges in the notch and setting the rest at a consistent distance away from the grinder, it's a simple matter of rolling the tool to get a fast, consistent edge. Other jigs are available for specialized grinds on bowl and spindle gouges and skew chisels.



Paper wheels. Razor Sharp's system is based on two laminated paper wheels that provide a firm surface and hold up surprisingly well. The rim of one gets charged with abrasive grit for shaping; the rim of the other, with white diamond buffing compound.



Freehand buffing.

To avoid damaging the paper wheels, hold your tools cutting-edge down. No gauge or tool rest required; simply grind and buff the bevels by feel.



Set and roll. With the tool rest locked at a predetermined distance from the grinder, sharpening a gouge is a matter of dropping the handle in the v-notch and rolling it against the wheel as it spins. ■

The bottom line:

Razor Sharp Edgemaking System

Price: \$88

- Works with your existing grinder
- Great for knives and straight carving tools
- Incompatible with most grinder tool rests

Wolverine Grinding Jig

Price: \$90

- Works with your existing grinder
- Great for turning tools
- Additional jigs available for specialized grinds

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Parsons-inspired **TABLE**

Modified minimalism to match any décor

By Paul Anthony

Despite what many people think, a *Parsons* table has nothing to do with a parson or parsonage. Rather, the design was reportedly conceived as the result of a class challenge by French designer Jean-Michel Frank at the Parsons Paris school of art and design in the 1930s. Although the style does not have strict parameters, a Parsons table is generally defined as having legs that are square in cross-section with no tapers or other shaping, and a combined top/apron thickness that is visually the same thickness as the legs. Typically, the edges of the top are flush with the faces of the aprons and legs, keeping each side in one plane.

One ostensible benefit of a Parsons table is that its simplicity of form suits just about any décor. I appreciate this concept but find the look a bit too austere, so I took a few liberties. The first is that the top here overhangs the aprons by about 1½", which I like better aesthetically. This also allows use of a solid wood top—the edges of which would not otherwise stay flush with the apron perimeter due to seasonal movement. Secondly, I recessed the aprons ½" back from the leg faces, strictly for aesthetics. Lastly, I made the aprons a little wider than tradition might demand in order to increase joint strength. I think this final design will stand nicely in just about any room.



Simple, solid structure for a timeless table

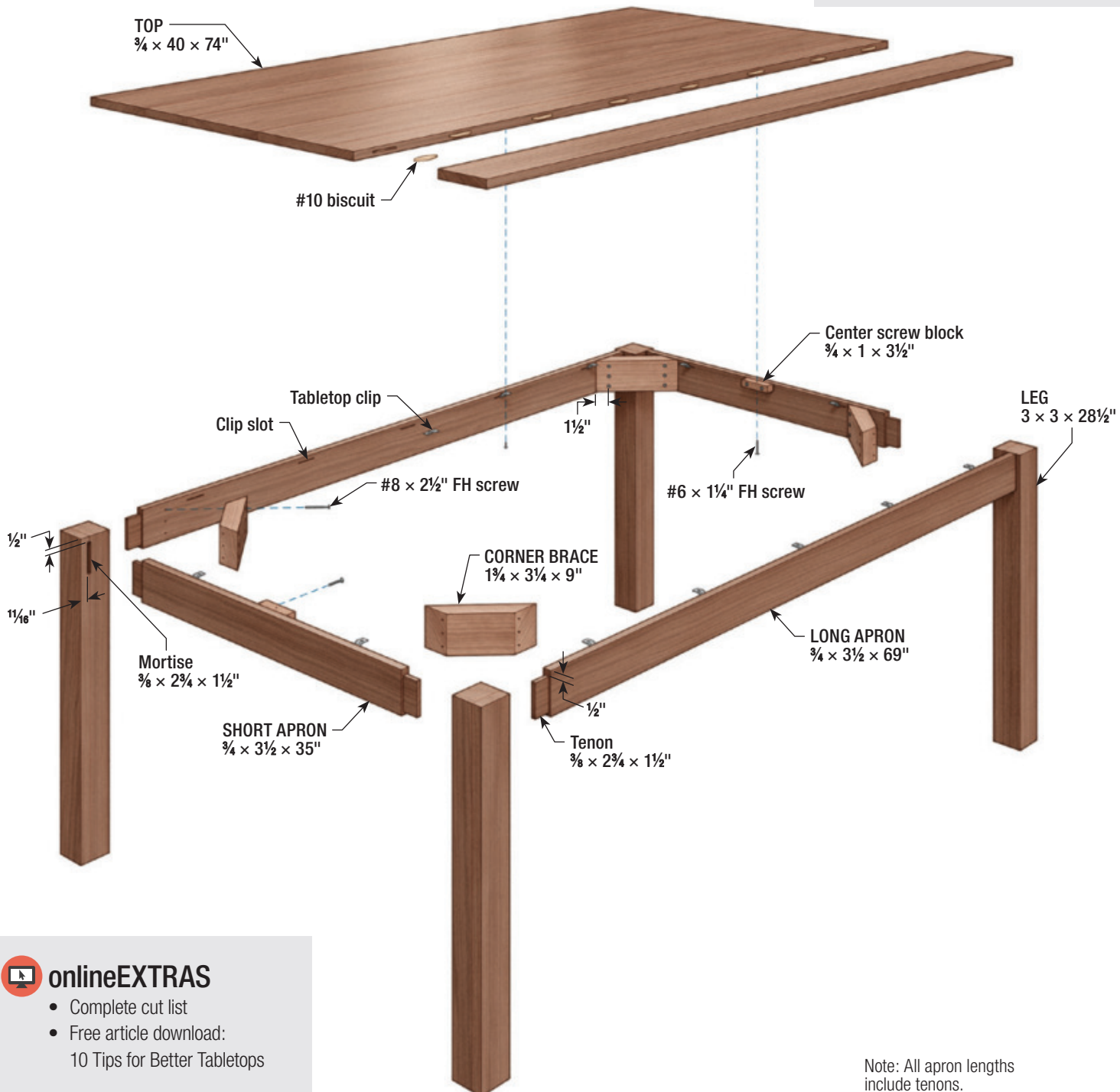
This project represents the fundamentals of rock-solid table construction. The base consists of four squared legs that connect to their aprons with beefy mortise-and-tenon joinery. Because very thick stock can be hard to come by, the 3 × 3" legs were built

up from 8/4 stock. Corner braces further stiffen the structure. The solid-wood top attaches with metal tabletop clips to slots in the aprons, allowing for seasonal expansion and contraction. A screw block in the middle at each end keeps the top centered.



Order of Work

- Make the top
- Make and mortise the legs
- Make the aprons and fit the tenons
- Glue up the base
- Finish all and attach the top



onlineEXTRAS

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10 Tips for Better Tabletops

Note: All apron lengths include tenons.

Top demands the best stock

The tabletop is your main canvas here, so begin by laying it out using your best stock. (See onlineEXTRAS) Dress boards straight and square, then switch, flip, and slip them to get the composition you want. To minimize flattening work afterward, install #10 biscuits for alignment. For ease of assembly of big boards like this, I edge-glue only two or three at a time, using a slow-setting glue such as Titebond III. Then I use my table saw sled to crosscut these larger sections to final length before edge-gluing them together to make the complete top. Afterward, I rout the ends flush as shown. Let the top sit for at least a couple of days to make sure all the glue evaporates, then flatten it. (See sidebar, p. 36.)



Switch, flip, and slip. Dress your prime stock to be oversized just a bit in thickness and width, and about 4" in length. Then orient the boards in a variety of configurations to arrive at a nice visual balance of board widths and a pleasant grain composition.



Biscuit alignment. Biscuits help keep long boards like this aligned during glue-up. When cutting the biscuit slots, make sure to press the work down firmly against the bench to ensure that the slots mate properly.

Size to suit the seasons

The overhang of this top is minimal, so any drastic seasonal shrinkage may be very apparent. To avoid visual imbalance, size the width of the top to suit the season. If you're building during the driest winter months, size the top as shown in the drawing so that it always maintains its minimum overhang. If you're building during the humid season, I suggest adding ½" to the width.



Flush-route. To flush up any slight misalignment at the ends of the assembled boards, outfit a router with a straight bit, and guide it against a straightedge clamped to the top. To support a large panel like this, screw long support beams to plywood I-beam risers that clamp to your bench (right).



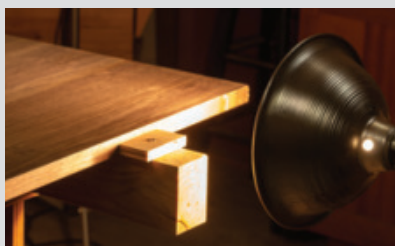
Flattening panels with a belt sander

Flattening large glued-up panels is most easily done with a stationary wide-belt sander. Many commercial shops will do this for a fee. If you don't have access to one, hand planes will do the job, but they risk tearing out unruly grain. Fortunately, a portable belt sander will do a good job if handled properly. For best results, use a large sander (mine takes a 4 × 24" belt), and

begin with the finest grit that will do the job relatively quickly. I usually begin with 80 grit. To remove stock quickly while flattening humps, begin with diagonal strokes as shown in the drawing below. After the initial coarse-grit flattening, subsequent sanding with finer grits is done only in the direction of the grain.



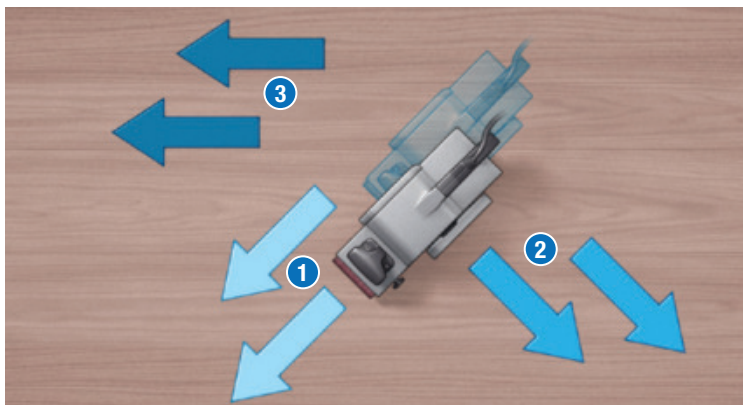
Mark and start. Mark any high spots and target them first, sanding diagonally in one direction. Slowly lower the running sander onto a ridge and immediately start moving it back and forth in increasingly longer strokes until a straightedge indicates that the high spot is level with the adjacent area. After flattening all the high spots, sand the entire top diagonally in the same direction. Then sand diagonally opposite, and then with the grain.



Scratch detector. After completing the initial “with-the-grain” pass using the coarsest grit, inspect the surface under a strong raking light in a dimmed shop. It may reveal (as here) some diagonal scratches that need further sanding with the grain.

Paths to victory

When belt-sanding large panels, practice on the underside first. Lower the running sander onto the workpiece, keep the platen level, and immediately begin moving the tool upon contact. Don't bear down; let the sander weight determine the pressure. Suspend half of the platen at a panel edge. Lap each pass slightly over the previous one, and move at a consistent pace both back and forth. Unless a panel is very flat to begin with, I generally start by sanding diagonally one direction, then diagonally in the other direction, followed by overlapping passes made with the grain.



1. Make overlapping passes diagonally in one direction.
2. Repeat diagonally opposite
3. Finish up in the direction of the grain, again making overlapping passes.

Make and mortise the legs

I built up each of these thick legs from two pieces of 8/4 stock. To ensure straight grain on all faces, lay out the parts from riftsawn sections of boards. Laminate the blanks oversized, and then mill them to final size. Select the show faces, mark all of the legs for orientation, then lay out and cut the mortises. Fully lay out one mortise for setting your tool fence, then lay out just the length extents for the others.



Save clamps and table surface by clamping two sets of legs at once.

Laminate oversized. Build up the leg blanks from thick riftsawn stock, identified by diagonal annular rings. Orient the parts to maximize flowing face grain and to understate glue lines, then mark their pairings. After laminating the blanks, mill them to final size, and mark them for orientation on the table.



Cutting mortises. A hollow chisel mortiser is a great tool for cutting deep mortises. For efficiency and accuracy, begin by fully plunging each end of the mortise, and then offset the cuts in between by less than the chisel width. Finally, plunge-cut each remaining section of waste.

Make the aprons

Mill the aprons to finished size, along with a length of extra stock for saw setups. Organize the parts to display nice grain, and then mark them for reorientation later. Lay out the tenons and saw them as shown, then trim them to thickness for a snug fit in their mortises. After fitting each individual joint, dry-fit the entire base to make sure everything pulls up tight and square.



Saw the tenons. Cut the tenons to thickness with a dado head, using the rip fence as a length stop. Saw one cheek, and then flip the workpiece over to saw the other. Aim for a tenon that's just a bit too fat to slip in its mortise. Then cut each tenon to width by feeding the stock on edge (inset).



Trim to final fit. Use a shoulder plane to trim the tenons to final thickness. When sliding into their mortises, the tenons should encounter some friction, but not so much as to require pounding with a mallet to drive them home.

Assemble the base

Smooth the aprons and legs. Rout a $\frac{1}{8}$ " roundover on the bottom edges of the aprons, the edges of the legs, and around each foot. Next, I suggest applying a coat of finish to all the parts, avoiding the joint surfaces. This “prefinishing” step prevents glue squeeze-out from contaminating raw wood. After the finish dries, glue up the base in two stages as shown. Finally, make and attach the corner braces.

End assemblies first. Glue the legs to the short aprons. Parallel jaw clamps are best for assemblies like this where the apron is not centered on the leg faces. Whatever clamps you use, make sure that the inner faces of the legs remain square to the aprons under clamp pressure.

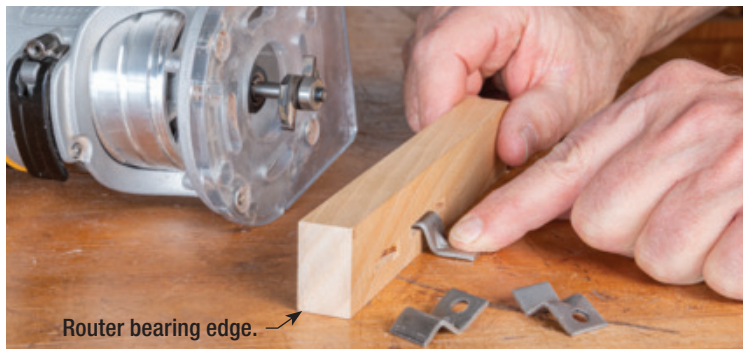


Attach the corner braces. At the bench, lay out the screw hole locations on the corner braces, and make a notched block to fit around the outside corner of the leg for easy clamping. Then drill pilot holes and clearance holes, and drive in $\#8 \times 2\frac{1}{2}$ " screws.

Connect with long aprons. It's a long reach to connect the end assemblies to the long aprons. If you don't have long enough clamps, you can daisy-chain a couple together, hooking them on the ends of stout dressed beams extending past the ends of the base.

Apply finish and attach the top

Attach this solid wood top with tabletop clips to allow it to expand and contract seasonally across its width. To keep it centered over time, I fix it with a single screw in the middle of each short apron. Make and attach the center screw blocks first, then slot for the tabletop clips as shown, using a slotting cutter. (See p. 62.) Next, complete your finish work. I applied four coats of wiping varnish to the base and underside of the top. The upper surface got six coats. Afterward, attach the top, setting the long apron clips back to suit the season of assembly.



Slotting setup. Test the extension of the slotting cutter on scrap. The slot offset should be just a hair more than the clip's offset to ensure the apron will be pulled into full contact with the tabletop.

Rout the clip slots. When routing the slots for the tabletop clips, clamp a thick board to the apron to provide router support. Mark it with router-travel stop-lines to establish the 2"-long slots.



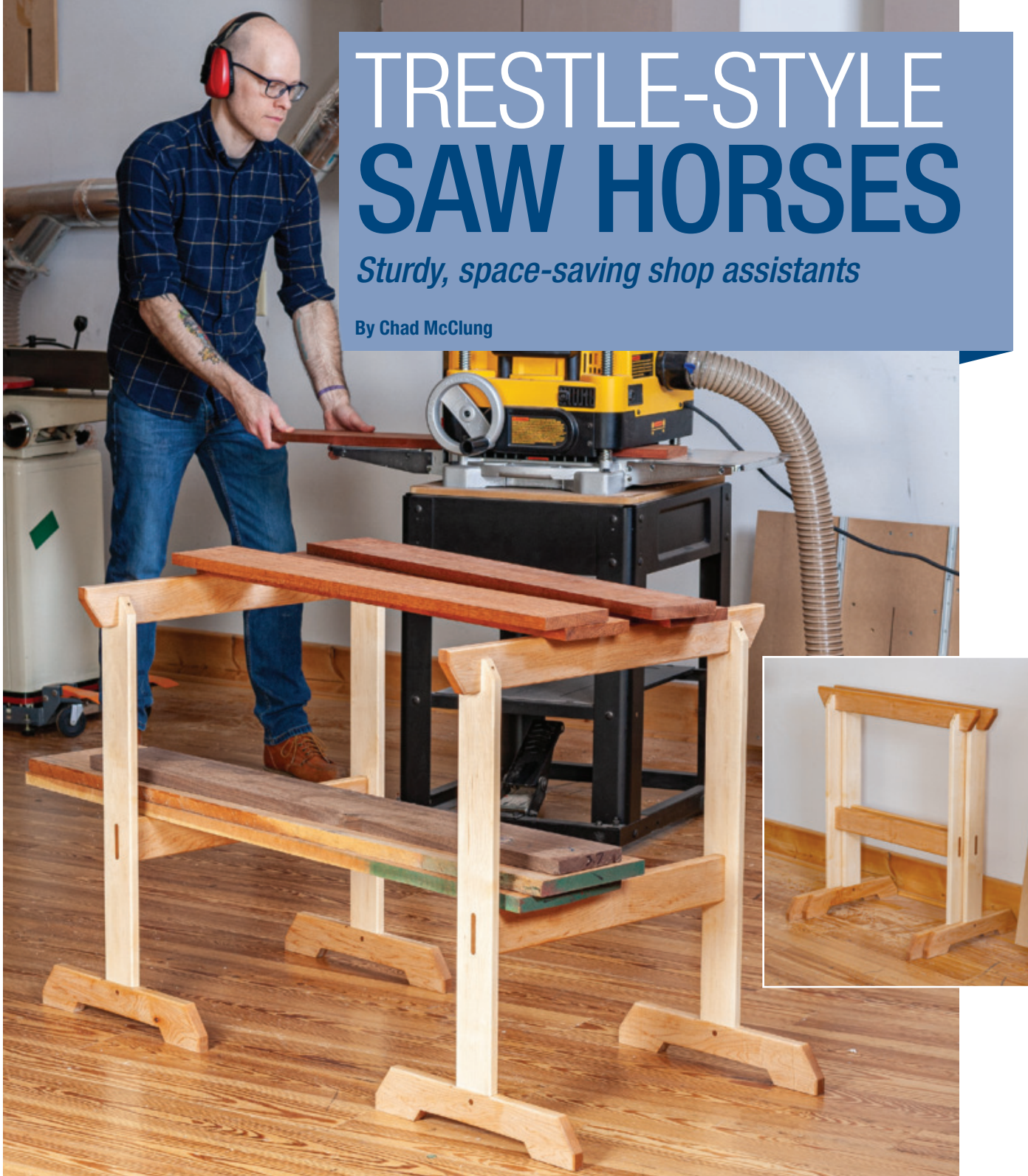
Clip it down. Snug the tabletop clips up against the short aprons. Locate the long apron clips to accommodate seasonal movement across the grain. This table was built during the dry winter months, so the clips are set back about $\frac{3}{16}$ " to allow for future expansion. ■



TRESTLE-STYLE SAW HORSES

Sturdy, space-saving shop assistants

By Chad McClung



A lot of shop accessories have to do with holding workpieces by either securing them or simply supporting them. Sawhorses fit the latter category, providing a great solution for setting up a temporary bench or portable staging during milling and other operations. My rickety commercial sawhorses and shop-made A-frame versions left a lot to be desired. I needed something stout but with a small footprint, and the strong, sleek models shown here fit the bill nicely.

Their design features durable joinery and solid construction

that'll withstand a lifetime of hard work. Plus, the top beam can be easily replaced if you happen to saw into it one too many times. You can spread the horses out for long work or nestle them together to support shorter stuff. And when the job is done, they compact together against a wall until next time.

In addition to yielding a pair of capable, enduring shop assistants, this project offers a great way to practice clever joinery techniques such as stop-guided notching, drawbore mortise-and-tenon joints, and wedged through tenons.

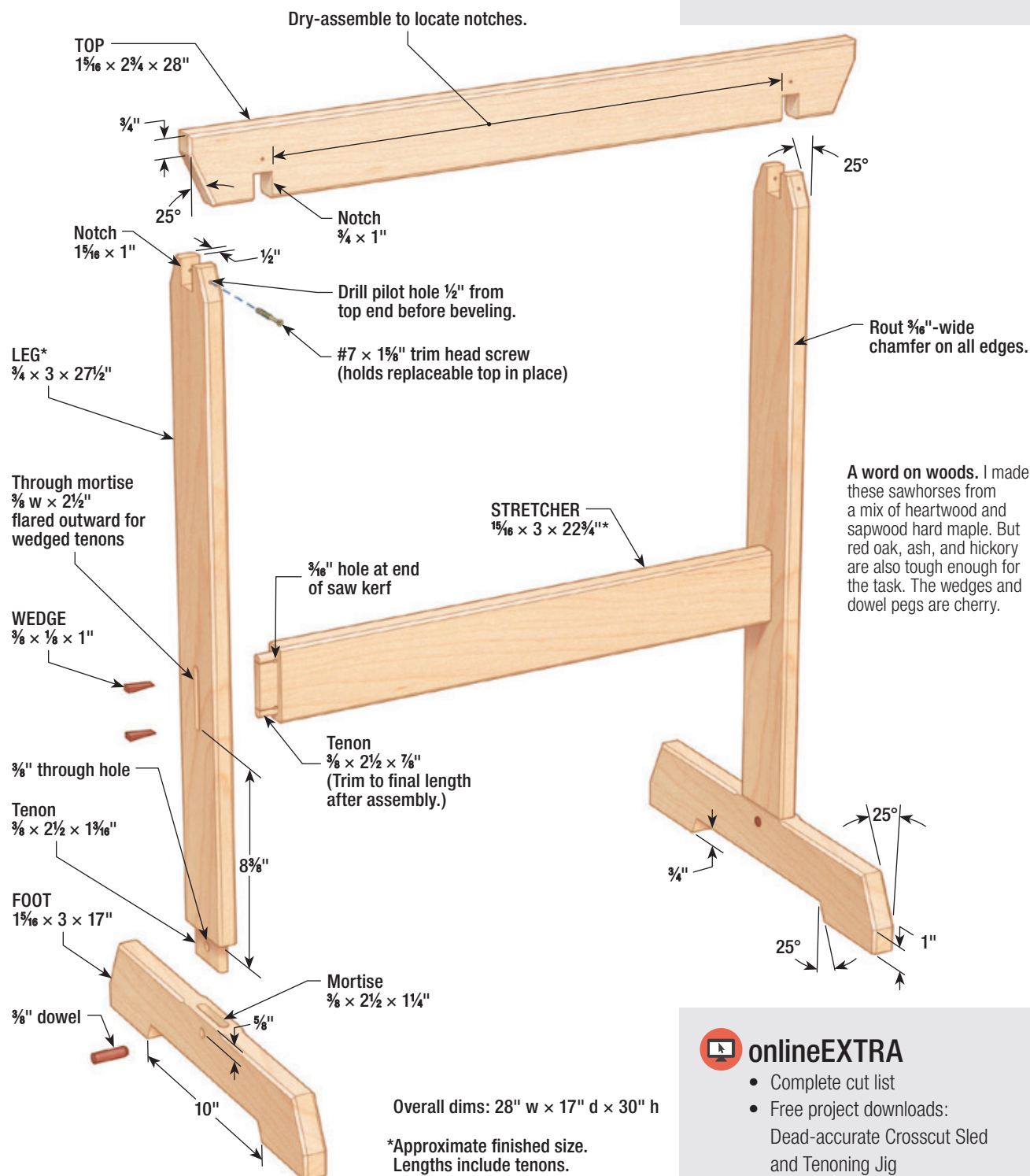
Sturdy, durable equine

Angled feet with cutouts attach to notched uprights via drawbore mortise-and-tenon joinery to form sturdy leg assemblies. These assemblies connect solidly to a stretcher with stout, handsome wedged through tenons. A replaceable notched and beveled beam is attached using trim head screws. A wide chamfer breaks the edges and lends styling to these durable work supports. Their svelte design allows nesting pairs to be tucked away until called into action.



Order of Work

- Rout mortises
- Saw tenons and notches
- Cut out feet
- Make wedges and pins
- Assemble



onlineEXTRA

- Complete cut list
- Free project downloads: Dead-accurate Crosscut Sled and Tenoning Jig

Plunge-rout the mortises



Edge guide

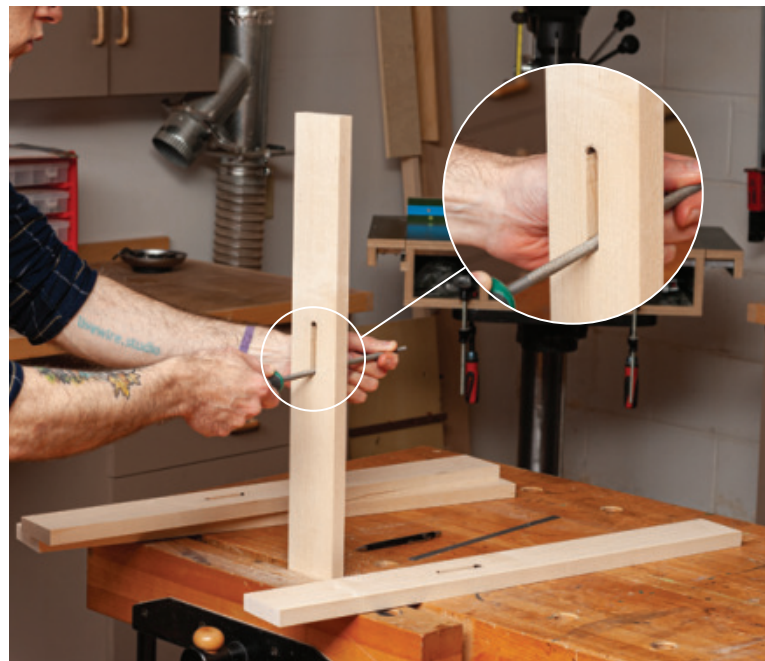
Mortise the feet. Use a plunge router equipped with an edge guide to rout the mortises in the feet. Clamping all four feet together and rotating and reorienting the pieces makes for quick, consistent work.

Mill parts to the dimensions shown in the drawing and use the triangle marking method to identify pairs. Fully lay out a mortise on one foot and mark out the mortise length extents on the remaining feet. Clamp all four feet together and to the bench, arranging the laid-out mortise on the inside of the group. Set up a plunge router with an edge guide adjusted to position the bit. Plunge the bit to the full depth at each end of the mortise, and then rout the remainder in several shallow passes. Rotate the assembly to mortise the second inside foot in the same manner. Pull apart the pieces and position the mortised feet to the outside. Repeat the process. Next, completely lay out a mortise on one leg of one pair (for router setup), and simply mark out the mortise ends on one leg of the other pair. Clamp paired legs together to the bench to rout both mortises at once. Again, plunge to full depth at the mortise ends before clearing the waste in shallow passes. Repeat for the second pair. Then flare the mortises as shown.



Backer board

Mortise the legs. Making multiple passes, rout the mortises in both legs of one sawhorse at once, using a backer board to prevent tearout. Repeat for the second pair of legs.



A flare for strength. Lengthen the mortises toward the outside faces of each leg by about $\frac{1}{16}$ " at each end using a round file. The flared opening will allow the wedged tenons to lock in place.

Saw the tenons at the table saw

Lay out a tenon on one leg where shown in the drawing (p. 41). At the table saw, set up your crosscut sled with a stop to register the tenon length. Saw kerfs to establish the shoulders and then nibble the tenon to width as shown. Use the same procedure to saw the stretcher tenons. A shop-made tenoning jig (see onlineEXTRAS) can help you quickly cut the leg and stretcher tenon cheeks. The stretcher-to-leg connections are through mortise-and-tenon joints. For mechanical strength and aesthetics, round the tenon edges using a file as shown. The stretchers' through tenons are also kerfed and wedged to increase the connection's strength. Drill two holes near the shoulders to prevent the tenons from splitting when driving the wedges that you'll make later. Use a handsaw to cut kerfs from the tenon ends to the drilled holes.

Saw the cheeks. Use a tenoning jig to saw one cheek on every tenon. Then adjust the rip fence to saw the opposite cheeks, keeping the same face as before registered against the jig. This approach ensures that all tenons are a consistent thickness regardless of any inconsistencies in stock thickness.

Round the tenons.

If necessary, use a shoulder plane to tweak the tenons' thicknesses to fit their mortises. Then chisel and file the tenon ends to match the rounded mortise ends.



Kerf the tenons.

After drilling holes near the stretcher tenon shoulders, use a handsaw to cut a kerf inward from the tenon end to accept the wedges.



Nibble to width. With a stop on a crosscut sled establishing the length of the leg tenon, saw the shoulders on the leg's faces. Then raise the blade to nibble the tenon to width as shown. The stretcher tenons are cut in the same fashion after adjusting the stop and blade height to suit.



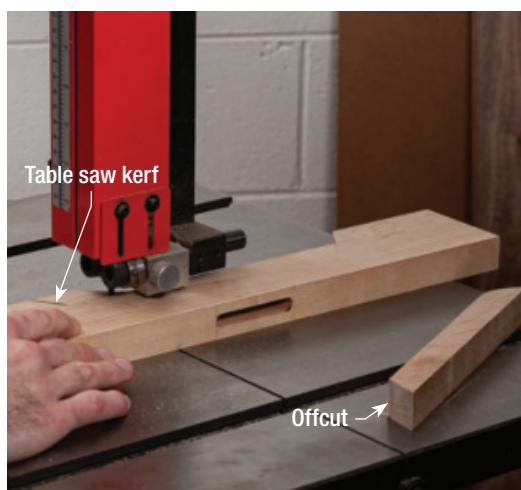
Notch the legs and shape the feet

Using the beams' thickness as a reference, lay out the notch in the top of one leg and use it to set up your table saw to cut the notches for a snug fit around the beam. Dry-assemble the sawhorses to mark the notch locations on the beams, and cut them using stops as well. Next, mark out the foot cutaways where shown in the drawing. Crosscut the ends of each cutaway using the table saw, then use the bandsaw to complete the shape. I cleaned up the bandsaw marks with a spokeshave. Dry-assemble the sawhorses once more to drill a pilot hole through the top end of each leg and into the beam. Then finish up the shaping by making the angled cuts at the ends of the feet and beam, and at the top of each leg.

Saw the leg notches. With your blade raised to the notch depth and stops clamped to your crosscut sled to regulate the width of cut, nibble away each notch by taking a series of contiguous passes.



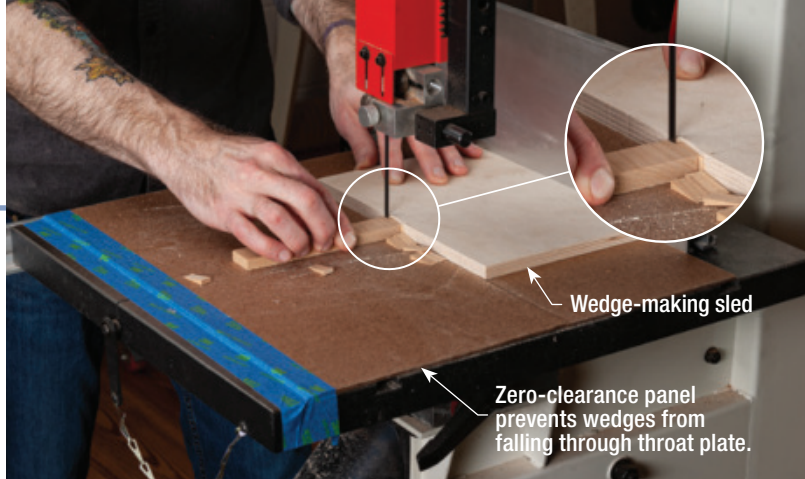
Top-notch cutting. After dry-assembling the sawhorses to mark out the notch locations on the beams, saw them using the same nibble-between-stops procedure as for the legs.



Profile the feet. After kerfing the ends of each foot cutaway at the table saw, finish up the shaping at the bandsaw.

Wedging, drawboring, and assembly

Make the tenon wedges so that the grain runs lengthwise. Begin with a $\frac{3}{8}$ "-thick piece of stock that's 1" long and wide enough for safe handling at the bandsaw. Make a plywood sled with a 1"-long wedge-shaped notch in the edge that tapers from $\frac{1}{8}$ " to nothing. Then use the sled to feed the wedge stock as shown. Also make four $\frac{3}{8}$ × 1 $\frac{1}{4}$ " dowels, chamfering one end by chucking the dowel in a drill and rotating it against a power sander running in the opposite direction. Lay out and drill the $\frac{3}{8}$ "-diameter through hole in each foot using a brad point bit at the drill press. To prevent exit tearout, fill the mortise with scrap and rest the foot on a backer board. Dry-assemble each leg-to-foot connection, insert the same bit into the hole, and tap it to mark the hole center in the tenon. Then detach the legs and mark the tenons for the drawbore hole centers as shown, and drill the drawbore holes. At the router table, chamfer all perimeter edges, skipping the bottom of the feet and all joint intersections. To assemble the horses, first glue each leg tenon into its mortise. Then tap a glue-coated dowel through the offset holes to draw the joint tight. Use clamps to pull the leg assemblies onto their stretchers and install the wedges as shown. Tap the top into its notches and drive in the screws. After trimming the dowels and tenon ends flush, sand everything through 180 grit and apply a protective finish if you want. You're ready to work.



Making wedges. To make tenon wedges, press the edge of your wedge stock into a wedge-shaped notch in a plywood sled, then push the sled past the blade. Flip the piece over to saw the next wedge, and repeat until you have enough.



Mark the drawbore hole center. Lightly tap the $\frac{3}{8}$ " drill bit into the leg tenon to make an indentation $\frac{1}{32}$ " above the center hole mark you made while the pieces were connected. Drill the $\frac{3}{8}$ "-diameter drawbore hole at this offset center hole mark. Note the mortise filler and backer board that were used to prevent exit tearout when drilling the dowel holes in the feet.



Install the wedges. Pull the glued stretcher joints together squarely with clamps, then apply glue to the wedges and tap them into the tenon kerfs.



Flush the joinery. With the glue set, saw the wedged tenons and dowels flush. Then smooth the joint surfaces with a block plane or card scraper. ■

Multi-axis BOWL

Changing center points for a contoured interior

By Ken Burton



Several issues ago, we published a photo of some small ash bowls I had made with off-center cavities embellished with a series of small beads (inset, right). As I was revisiting this design, I wondered what would happen if I hollowed a bowl using more than one off-center point. After playing with the technique, I arrived at the bowl presented here. It features a three-lobed cavity, decorative beads, and a two-color,

died finish. Overall, the piece is radially symmetric in the tradition of “regular” bowl turning, but using three different center points to turn the interior creates three intersecting ridges that give the bowl a unique look. I purposefully kept the overall diameter small so this project could be made on a midi-lathe. However, off-center turning can involve a fair amount of vibration, so be sure to have your lathe mounted securely, per-

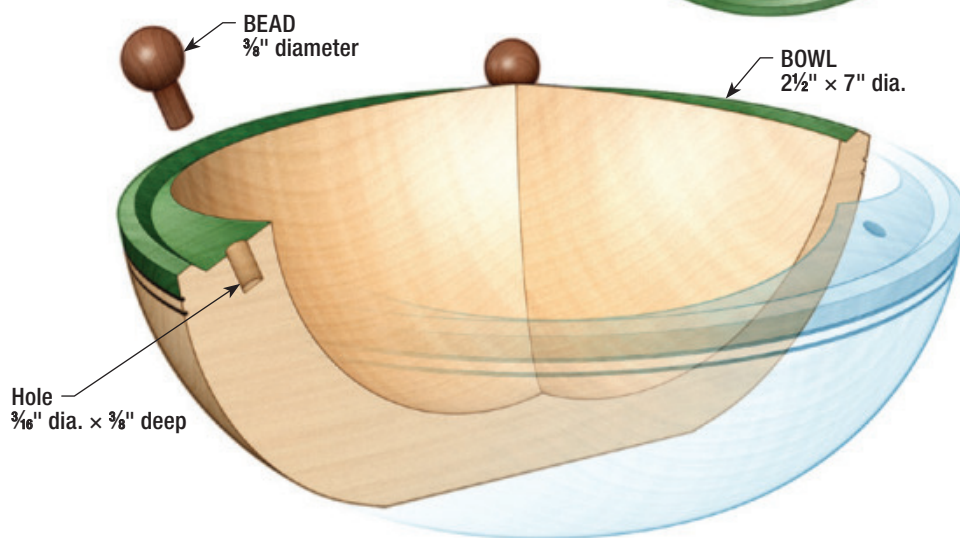
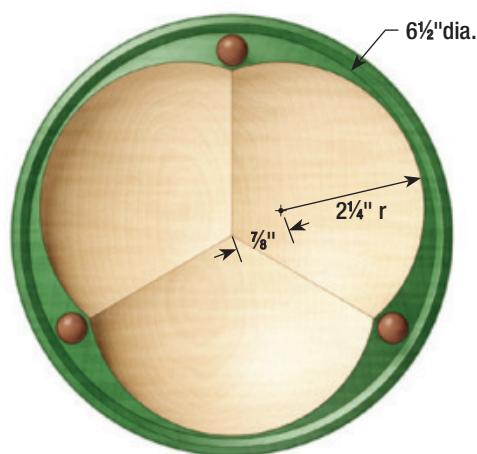
haps with added weight. The bowl here is made from kiln-dried 10/4 curly maple. Using kiln-dried material allows you to complete the bowl in a single session without it distorting and with minimal risk of checking. Feel free to substitute your favorite stock, but if you intend to use dyes for coloration, light-colored woods such as maple or ash are a better choice, as they provide more contrast.



Three center points yield three lobes

The 7"-diameter blank was cut from a dressed piece of kiln-dried, 10/4 stock. The outside profile is turned as you would a normal bowl. However, the interior cavity consists of three "lobes," each turned on a separate axis to create intersecting ridges. The profiles shown here match the piece in the photos, but you needn't follow them obsessively. As with most turning, close is usually good enough. As for the overall shape, I advise sticking to a "soup bowl" profile as the interior lobes will have concave contours which lend themselves well to easy smoothing with a bulb sander.

Top View



Singularly eccentric. The idea for the multi-axis bowl stemmed from these small ash bowls with single off-center cavities.

A center-finding faceplate

Most faceplates have a large center hole. This project requires one with a small hole. If you don't have the latter, you can adapt the former to suit. Start by adhering a disk of 1/8" plywood to any faceplate using double-faced tape. Turn it to match the plate diameter, then drill a 5/32"-diameter hole through the center with a brad point bit in a lathe-mounted drill chuck. Also drill through the workpiece-mounting holes before using the faceplate as usual.



Prep the blank and turn the outside



Attach the mounting block. Mark the mounting block's diameter on the blank and squeeze a bead of thick CA glue around the inside of the line. Spray the mounting block with CA accelerator and press it in place for a few seconds.

Lay out a 7"-diameter blank on 10/4 stock, marking the center point on each face of the blank before bandsawing it round. Cut a 1"-thick mounting block that is about $\frac{1}{4}$ " larger in diameter than your faceplate, and glue it to what will become the bowl's bottom. On the opposite face of the blank, center and attach the faceplate using $1\frac{1}{2}$ " screws, and mount to your lathe. Trim the mounting block and mark its center. Then true the outside of the bowl blank before turning it to shape. Unscrew the faceplate, reverse the bowl, and attach the faceplate to the mounting block, centering it carefully. Then turn the rim to shape. If you didn't get the blank perfectly recentered, touch up the outside before sanding through 400 grit.



Shape the outside. Trim the mounting block to match your faceplate diameter, mark its center, and shape the outside of the bowl with a bowl gouge. Rub the bevel and cut from the block towards the rim for the smoothest surface.



Shape the rim. With the bowl reversed, use a bowl gouge to shape the outer rim and about $1\frac{1}{2}$ " of the interior surface. For the rim, cut from the outside inward. For the interior surface, cut from the smaller diameter outward.

Detail and dye the outside

To finish turning the outside, cut in the two detail lines near the rim and wire-burn them as an accent. These lines serve not only as decoration, but also as a border for the dye. Apply the dye with a rag and/or cotton swab. I used TransTint green diluted in alcohol.

Cut in the lines. To create guide channels for the burning wire, use a spindle gouge to make two cuts just below the rim.



Follow up with friction. To burn in the lines, lodge a taut burning-wire in the cuts and run the lathe at 1200-1500 rpm while applying firm downward pressure.



A splash of color. Don gloves and apply dye to the bowl's rim. I used a rag for most of the application, then switched to a swab to work up to the upper burned line.

Turn the cavity

Here's where this project departs from turning as usual. Start by laying out the three off-center points on the mounting block. Screw the faceplate to the block, centering it on one of these points and remount to your lathe. Then mark and turn the first lobe. (Although you could also sand this first lobe on the lathe, it's better to smooth the entire interior at the drill press as shown to ensure similar surfaces.) Repeat the process to turn the other two lobes. Try to keep them the same shape, which will make the cavities' dividing ridges straight.



Off-center layout. Use a 60° triangle to lay out a center line and two additional, equally-spaced radial lines. Then, mark a $\frac{7}{8}$ "-diameter circle centered on the mounting block. Where the circle and radial lines meet are your off-center points for remounting the faceplate.



Reattach the face plate. Center the face plate on one of the off-center points, and screw it to the mounting block. If you don't have a faceplate with a small mounting hole as the one shown here, make your own as described on page 47.



Mark and turn the first lobe. Pencil in the perimeter of the first lobe, locating it about $\frac{1}{4}$ " in from the rim. Then shape it with a bowl gouge, cutting from the rim inward towards the center. Adjust your lathe speed to just below excessive vibration.



Turn the remaining lobes. Remount the faceplate, having targeted the next off-center point, then mark and turn the next lobe as before. This time it will be harder to read the shape, as you'll be turning air as well as wood, so stop frequently to check your progress. Repeat for the third lobe.

Make the beads and finish up

After turning the bowl, drill holes in its rim for the beads where shown, and sand the interior. The beads have integral tenons that fit the drilled holes. To make the bead stock, turn a 4" length of $\frac{3}{4}$ "-square stock to a $\frac{5}{8}$ "-diameter cylinder. Then turn a $1\frac{1}{4}$ " diameter by 2" long cylindrical jam chuck from a hard, dense wood such as maple. Grip this in your four-jaw chuck and drill a $\frac{5}{8}$ "-diameter hole

through its center. Insert the bead stock in the hole, leaving an inch or two exposed, and lock it in place with a screw driven through the side of the jam chuck. Turn your first bead, part it off, advance the stock, and turn another. Repeat for the third bead. Then glue them in place before finishing the bowl. I used aerosol lacquer on mine.



Drill the rim. Cut a wedge to hold the bowl's rim level on the drill press. Bore a $\frac{5}{8}$ "-diameter hole in the rim aligned with each of the three interior ridges.



Sand the interior. Sand all three lobes with a bulb sander chucked in the drill press. If your interior ridges are a little wonky, use the sander to help straighten them out



Turn the beads. With bead stock captured in a shop-made jam chuck, turn each bead to shape with a spindle gouge, and then part it off. Support the outer end with a live center until you're nearly done.



Install the beads. Tap the beads into their holes with a small mallet or hammer, protecting them with a bit of scrap. ■

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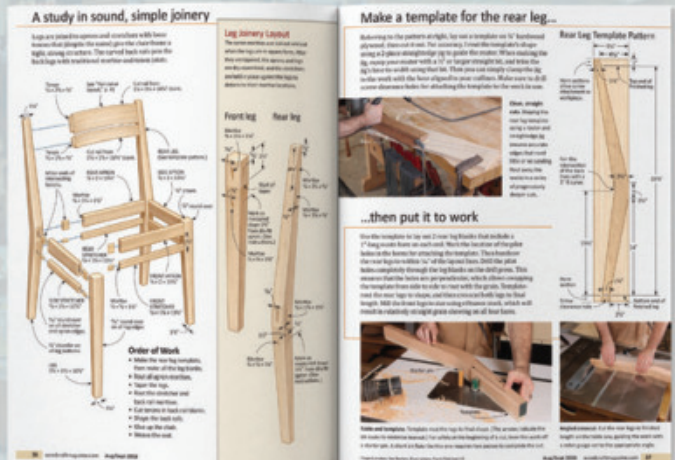
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JATOBA

Pretty, but tough and ornery

By Ken Burton

Is it pronounced “Ja”toba as in John, or “Ha”toba as in Havana? It’s hard to get a definitive answer, though you’ll find advocates on both sides of the issue. The wood was dubbed Brazilian cherry because it sort of resembles the deep red stain many cabinetmakers use to finish their “cherry” products. This isn’t to say that the wood isn’t beautiful. It runs

from a rich orangish-brown to russet. It darkens with age and finishes to a deep reddish-brown, with occasional golden highlights. In addition to its good looks, the wood is quite hard, dense, stiff, and naturally resistant to rot and insect damage. This makes it a good choice for projects where strength and durability are important.

clear lumber. Jatoba is not listed on the CITES or IUCN Red List and is considered a species of least concern.

History in woodworking

Jatoba was first imported into the U.S. about 30 years ago. Its dark good looks initially made it popular with furniture makers. Then came the building boom of the 1990s when flooring manufacturers flocked to this new exotic. Finding the name jatoba a nonstarter, they rechristened it Brazilian cherry, and sales took off. The exotic flooring became nearly as ubiquitous as red oak in many areas. The subsequent economic crash and changing tastes have seen the wood’s popularity decline, at least as a flooring choice, and with that, its availability.

Working and finishing

Jatoba is imported as solid lumber, veneer, and plywood. In solid stock, 4/4 to 12/4 thicknesses are available in addition to turning blanks. Pricing is in the \$9-12 per board foot range, with thicker and wider pieces selling at a premium. Because of its hardness and density, drying is difficult. Be sure to carefully inspect your stock, looking particularly for end checks which can hide in the dark grain. Also, allow plenty

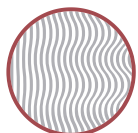
Where the wood comes from

Jatoba (*Hymenaea courbaril*) grows from southern Mexico through South America and the Caribbean. Most of the wood imported into the U.S. comes from Brazil. The trees are plentiful and can reach 125' with 6' diameter trunks. The first branches are often 50' or more up, providing straight,

Beauty and brawn. In addition to its good looks, jatoba is stiff, strong, and durable, making it a good choice for projects that push what wood can do structurally.



Flatsawn



TEXTURE
COARSE



TOXICITY
LOW



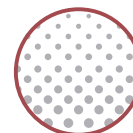
ROT/INSECT RESISTANCE
HIGH



STABILITY
MEDIUM



HARDNESS
VERY HARD



DENSITY
57 LBS./CU. FT.



Riftsawn

Quartersawn

Color over pattern. Even in a flatsawn piece (left), jatoba's figure is subdued; the cathedral pattern takes a backseat to the rich red color. That color can vary, so pay close attention when selecting boards to place next to each other.

of time for the wood to acclimate to your shop before milling. Like other hard, dense species, jatoba takes its toll on cutting tools, quickly blunting sharp edges and chipping and burning with all but freshly sharp saw blades and machine knives. Compounding these troubles is jatoba's interlocked grain, making hand planing difficult, if not impossible, due to extreme tearout. Scraping and sanding surfaces are usually the way to go. While the wood isn't known for its toxicity, some cases of skin irritation have been reported.

Jatoba has a reputation for being tough to glue and finish due to its oily resins, so test your stock before committing to a glue-up or finish. A quick wipe with acetone before applying glue can help parts bond. And a thin coat of shellac under your preferred topcoat helps finish adhesion. The wood holds fasteners well, but driving them can be challenging. Predrill for both nails and screws, then lubricate them with wax before installing. Finally, while the wood is quite stiff, it does respond well to steam bending should your project require a curve.



Jatoba

- Tool handles
- Flooring
- Furniture
- Turnings
- Veneer

A study in contrast

When I set out to make this cylindrical chest of drawers, I knew I wanted to use a white, black, and red color pallet. For white, I chose curly maple on the drawer fronts and feet. The trim and hole plugs are wenge for the black. The red, you can probably guess, is jatoba. I chose this for its rich red-brown color and muted grain lines, not wanting the figure to compete with the form of the piece and wanting something a little more exotic than cherry or walnut. Working with this hard, dense import posed certain challenges. To ensure the staves stayed straight, I milled them oversize and allowed them to sit for a couple weeks before sawing them to their final dimensions. After experiencing significant tearout when planing some of the pieces, I opted to cut them to thickness on the table saw instead. Then I went with a sharp card scraper to remove the saw marks rather than risk more tearout from a hand plane. The wood scrapes beautifully and sands to a polished luster. I did not have any trouble finishing the piece with a wiping varnish, but in retrospect, I think I should have taken the warning about glue more seriously—the edge joint in the top has started to open up a little at one end. ■

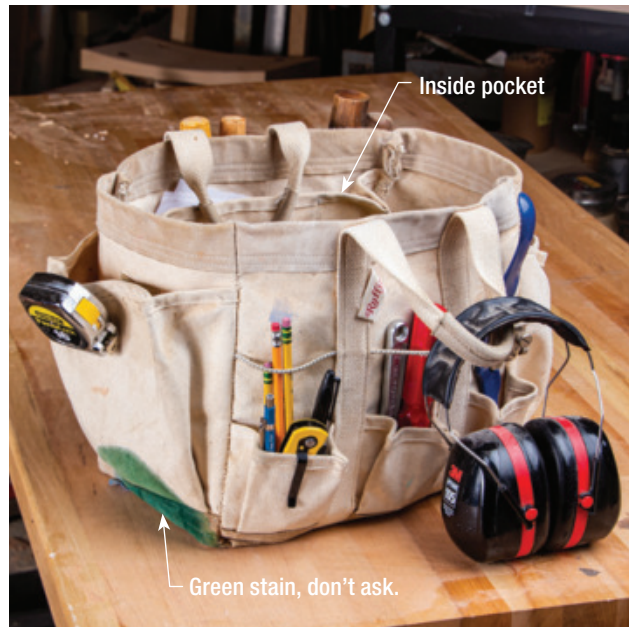
Going in circles. The case for this small chest of drawers is made from a series of jatoba slats splined together.



A tough tool tote

After nearly four decades of teaching woodworking, I've gotten pretty good at figuring out what tools I need to take from my shop for each class. I keep my leather-reinforced canvas tote packed and ready with the essentials—a tape measure, apron, machinist square, PPE (personal protective equipment), screwdriver, pencils, utility knife, and drill bits. I top it off with whatever else that night's class might require. The bag's outer pockets are great for holding small hand tools, while the interior is divided into three larger sections for bulkier items. The two end-pockets are great for stashing a water bottle and some snacks. Originally designed for maritime use, the suede-bottomed bag can be plopped down on a wet deck or parking lot without damaging the tools inside. The heavy-duty canvas wears like iron, and the leather-covered handles are comfortable and attached so well you'll make the bag heavier than you want to carry before taxing them. If you work wood away from your shop, this bag will tote the tools you need to do it.

—Ken Burton

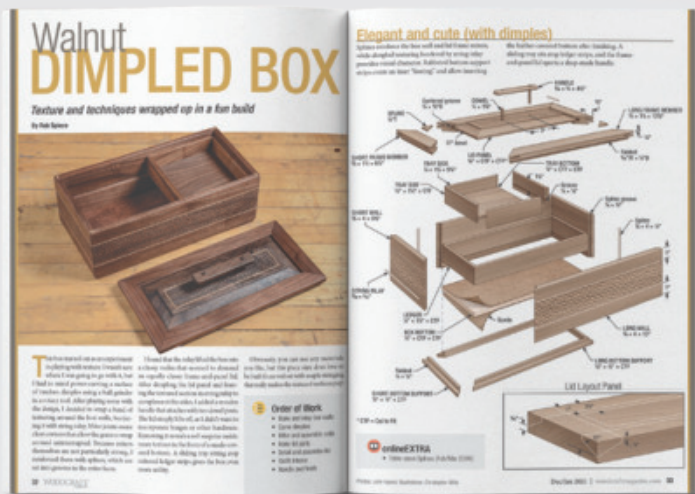


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—Chad McClung



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Read this issue closely to answer the following questions.

1. What type of wood did Derek Richmond use to make the bow-front wall shelf?
2. What type of joint connects the legs and feet of the trestle-style sawhorse?
3. How many bubinga beads appear in the photos on pages 46 & 47?

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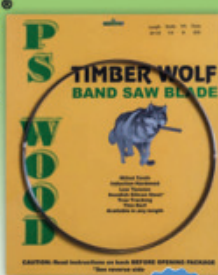
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Tool Reviews (p. 12)

1. Bosch GEX34-6N random orbit sander.....*boschtools.com*, **\$249.00**

Bow-front Wall Shelf (p. 19)

1. Mohawk Brass Lacquer Aerosol, 13 oz. #850985, **\$9.99**
2. Brass Rod Round Bar, 0.3125 dia., 24" length..... *onlinemetals.com*, #6848, **\$11.26**

Machine Sharpening Hand Tools (p. 25)

1. Work Sharp 3000 Woodworking Tool Sharpener #148124, **\$199.99**
2. Work Sharp 3000 Fine Abrasive Kit #148129, **\$16.49**
3. Work Sharp 3000 Course Abrasive Kit..... #148128, **\$16.49**
4. Work Sharp 3000 Tempered Glass Plate..... #148126, **\$22.49**
5. Veritas Mk.II Power Sharpening System *leevalley.com*, #05M3101, **\$419.00**
6. Sorby ProEdge Plus Sharpening System..... #839294, **\$633.99**
7. Sorby 2 × 30% ProEdge Belt 600 Grit..... #849670, **\$25.99**
8. Sorby 2 × 30% ProEdge Belt 1200 Grit..... #849671, **\$25.99**
9. Sorby 2 × 30% ProEdge Belt 3000 Grit..... #849672, **\$25.99**
10. Tormek T-8 Water Cooled Sharpening System..... #161407, **\$775.00**
11. Razor Sharp Edgemaking System..... #124629, **\$87.99**
12. Oneway Wolverine Grinding Jig..... #125676, **\$89.99**

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Parsons-inspired Table (p. 32)

1. Highpoint Table Top Fasteners, 8 pc. (2 required)..... #159301, **\$4.49**
2. Whiteside Slotting and Rabbeting Router Bit, 1¼" D, ¼" CL, ¼" SH #405479, **\$23.99**

Trestle-style Sawhorse (p. 40)

1. Freud Upcut Spiral Router Bit, ¾" D, 1¼" CL, ½" SH #828779, **\$53.97**
2. Highpoint Trim Head Woodworking Screws, #7 × 1½", 100 ct. #620130, **\$10.99**
3. For precise router edge guides and other fine tools, visit *microfence.com*.

Multi-axis Bowl (p. 46)

1. Titebond Instant Bond CA Adhesive, Thick, 2 oz. #149436, **\$14.99**
2. Satellite City Aerosol Accelerator, 6 oz. #144829, **\$13.99**
3. Easy Wood Tools Easy Wire Burning Kit..... #167925, **\$52.99**
4. King Arthur's Tools 2" Guinevere Inflatable Round Sander #147535, **\$49.99**
5. King Arthur's Tools Assorted Round Sanding Sleeves #147536, **\$14.99**
6. TransTint Bright Green Alcohol/Water Soluble Dye, 2 oz. #128491, **\$22.99**

Great Gear (p. 56)

1. Ruffian Heavy Canvas Tool Bag..... *ruffianspecialties.com*, **\$89.20**
2. Milescraft CounterBit Countersink Drill Bit Set, 4 pc. #153553, **\$12.99**

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A hand plane starter set

Q: *I've been a woodworker for a few years, primarily making cabinets and furniture. But I've only used power tools and would like to try hand planes. Where should I start?*

Andy Hyde
Loveland, CO



A: Having worked wood for a while now, you know the value of smooth surfaces and tight joinery. But as you may have discovered, power tools can only get you so far. It often takes hand tools such as chisels and planes to finesse surfaces and joinery. Hand planes are among woodworking's most time-honored tools for good reason. A properly sharpened and adjusted plane can precisely flatten and smooth surfaces and refine joinery, removing as little as .002" or so when necessary. You need them.

Keep in mind that any plane will work with precision only if it's precisely made itself. Steer clear of hardware store and other cheap versions; they're junk. And although a flea market classic can be rehabbed, it's not typically work for a newbie. But you don't need a \$500 boutique model either. Just buy the best versions you can afford and expect to spend some time learning to use and sharpen them. (See onlineEXTRAS.) The expense and efforts will pay off big-time.

Block plane

Begin by introducing yourself to a block plane. This small stalwart is great for lots of smoothing and trimming operations, including removing saw marks from edges, easing corners, creating chamfers, fitting moldings, leveling edging, and numerous other daily shop chores. You'll use it more than any other plane. Block planes are available in standard and low angle versions. Go with the latter, as it excels at trimming end grain. I'd expect to pay at least \$100 for something worthwhile.

Smoothing plane

In my experience, the next most useful plane is a #4 smoothing plane. True to its name, its primary purpose is removing machine marks, burns, and other imperfections from the faces and edges of workpieces. At the same time, it's useful for everything from flushing up face frames to finessing the fit of inset doors and drawers. In brief, a good smoothing plane will save you a lot of sanding, producing a cleaner, flatter surface in the process. I've found that decent versions start at about \$150.

Shoulder plane

To complete a well-rounded trio, add a shoulder plane, sometimes called a rabbet plane. The blade on this narrow, open-sided trimmer reaches into corners, making it ideal for finessing tenon shoulders and cheeks, as well as the edges of rabbets and dados. You won't use this plane as often as the others, but when you need something deft at tweaking these joints into perfection, there's nothing like it. A good 1/2" or 3/4" version will handle most jobs, starting at about \$100. ■



Craig Bentzley
master woodworker
and hand plane expert



onlineEXTRAS

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