October 2021 No. 291

TAUNTON'S

Fine WoodWorking

Teach · Inspire · Connect

- Heirloom box
- Charred finish
- Wall anchors
- Floating shelf
- Router table fence

Modern coffee table, p. 30

Introducing the South Bend® Line of Woodworking Machines

2-Year Warranty

South Bend®, with its long tradition of supplying high-precision, professional-level machinery to metal working industries, now offers an amazing line of high-end woodworking machines.

37" x 53" Downdraft Table

An economical and convenient solution for capturing dust

- Heavy-duty steel-frame construction
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- Internal V-bottom for directing air flow
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- Two 4" dust ports
- US based customer service and technical support
- Ledge allows you to sand edges of boards

⚠WARNING! †[1]

SB1090 $675.00

FREIGHT $149

2 HP Canister Dust Collector

Portability & performance meet ease of use

- 2 HP, 220V, single-phase, 9A
- Main inlet size: 6" with three 4" adapter inlets
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- Filter surface area: 80 sq. ft.
- Impeller: 12" radial fin
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⚠WARNING! †[1] SB1100 $995.00 FREIGHT $149

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An important investment for a woodworker

- 3 HP, 220V, single-phase, 13A
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- Anodized handles on miter gauge
- Two ¾" miter slots in table and rip fence
- Smooth and quiet poly V-belt drive

SB1111 $3045.00 FREIGHT $199

⚠WARNING! †[1]

16" Heavy-Duty Bandsaw

With 14" resaw capacity

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- Foot-operated brake system
- Quick-change blade release/tensioner
- Micro-adjusting rack & pinion table tilt
- Cast-iron fence with 2-position extruded aluminum resaw fence
- Storage area for extra blades and miter gauge

⚠WARNING! †[1]

SB1080 $3150.00 FREIGHT $149

15" Plander with Helical Cutterhead

- 3 HP, 230V, single-phase, 12A
- Variable feed speed dial on control pedestal
- Extra-large ball bearing return rollers
- Heavy-duty precision-ground cast-iron extension wings
- Four heavy-duty support columns
- Anti-kickback fingers
- Drive gears run in oil bath
- Triple belt drive inside housing

⚠WARNING! †[1]

SB1108 $3545.00 FREIGHT $149

21" Variable-Speed Gearhead Drill Press

- Motor: 1½ HP, 220V, single-phase, 5.5A
- Spindle travel: 5"
- Spindle taper: MT#3
- Max. distance spindle to column: 10⁷⁄₁₆"
- Max. distance spindle to table: 17⅜"
- Cross travel: 7"
- Head travel: 13⅜"
- Head tilt: 30° Right / 90° Left
- Table size: 19½" L x 21¾" W x 2¼" T
- Approx. shipping weight: 683 lbs.

⚠WARNING! †[1]

SB1115 $4250.00 FREIGHT $249

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- Heavy-duty cabinet stand
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- Heavy-duty miter gauge
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- Disc sander table tilts down 45° and up 15°
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⚠WARNING! †[1]

SB1093 $1570.00 FREIGHT $149

6" x 108" VS Oscillating Edge Sander

- 3 HP, 220V, 3-phase, 9.5A
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- Sanding surfaces tilt vertically and horizontally
- Quick-release belt lever
- Sanding belt oscillates at 52 cycles per minute
- Platen tilts 0 to 90°
- Includes 3 sanding drums: 1½" x 4½", 2" x 4½", and 3" x 4½"

⚠WARNING! †[1]

SB1097 $3145.00 FREIGHT $199

37" 15 HP Wide Belt Sander

Built for industrial-level production work

- 15 HP, 220V/440V, 3-phase motor
- Variable-speed feed with industrial-duty rubber conveyor belt
- Independent motor controls for sanding drum, table elevation, and feed conveyor
- Keypad controls for table elevation with DRO accurate to 0.005"
- Adjustable sanding belt oscillation speed
- Micro-adjustable graphite/felt platen
- Amp/load meter
- Pneumatic belt tensioning

⚠WARNING! †[1]

SB1096 $14,195.00 FREIGHT $249

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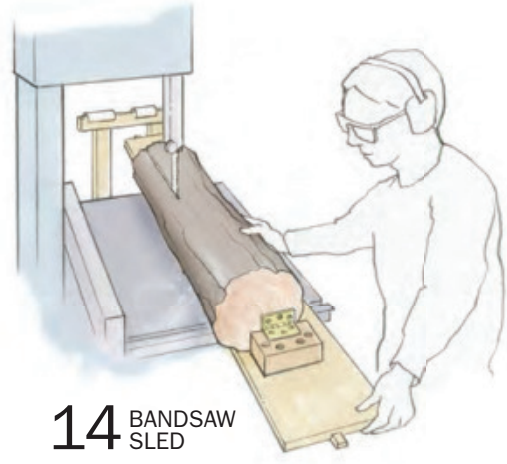

14 BANDSAW SLED

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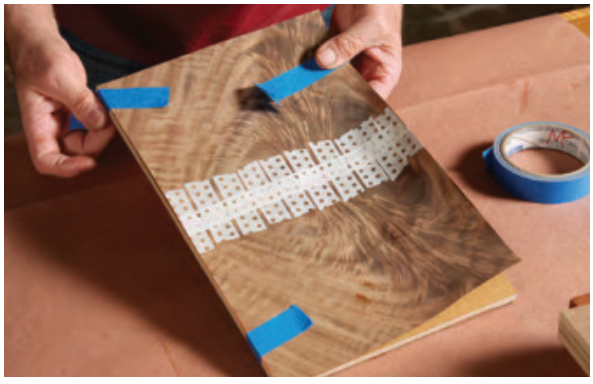
For members

VIDEO

Paper joinery

Mark Gardner (p. 62) turns his shelves four at a time and then splits the blank apart. A paper joint makes perfect splits possible. Mark demonstrates how simple and effective the process is.



VIDEO

Flat veneer, happy veneer

Many times, highly figured veneer does not come ready to use; you usually have to flatten it. Contributing editor Bob Van Dyke shows the process from start to finish.

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VIDEO WORKSHOP

Arts and Crafts Coffee Table

Watch as master furniture maker Kevin Rodel shows you how to build his elegant interpretation of a classic Limbert design. In this project series, you'll learn how to:

- use efficient building strategies
- get gap-free through-tenon joinery
- dress up your furniture with pierced panels

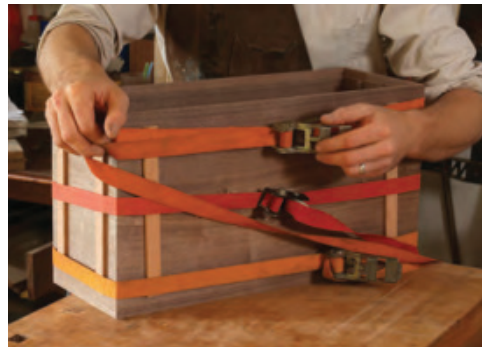
Online extras

Free content at finewoodworking.com/291

VIDEO

Turning with planes

After using gouges to take square stock close to its finished form, Mario Rodriguez (p. 30) uses a block plane to remove any bumps and achieve a smooth taper. Here, he demonstrates his outside-the-box technique.



BLOG

Clever clamping for boxes

Using ratchet straps and some scrapwood, Pete Michelinie's clever clamping trick makes sure the joints on his box (p. 46) stay closed forever.

VIDEO

Dream machines

Mark Gardner (p. 62) shows off some of his antique machinery, an 18-in. Crescent Machine Co. jointer and a Fay and Egan 24-in. bandsaw.

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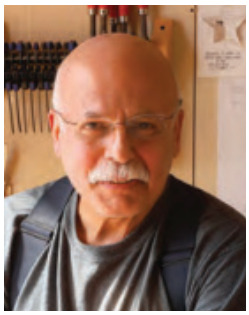
Fine Woodworking is bringing our best woodworking teachers into your home with our free webinar series. For more information, check out FineWoodworking.com/shopclass.

contributors

Tamar Hannah ("Adjustable Router Table Fence") came into woodworking years ago almost by accident. After building an outdoor storage bench because she couldn't find one she liked, she was hooked. Now she runs 3x3 Custom, a YouTube channel focused on woodworking and design. She's constantly exploring new ideas in her garage shop, from guitars to chairs to jigs, and sharing the journey with her viewers.



Mario Rodriguez ("Scandinavian Modern Coffee Table" and "Anchor Your Work to the Wall") has been working wood professionally for 50 years and teaching and writing for nearly as long. He has renovated urban buildings and restored a classic 18th-century farmhouse, and has built everything from garden gates to dining tables and spice boxes. His students have ranged from elementary school through retirees. The rowhouse he renovated in Philadelphia's leafy Mount Airy neighborhood is full of his furniture and contains a studio where Mario pursues his other passions: painting and printmaking.

Christopher Miano (Finish Line: "A charred finish") graduated from Parsons School of Design, studying at The Royal Danish Academy of Fine Arts in Copenhagen as part of his degree. After graduating he took a 9-to-5 job in somebody else's woodshop, working there after hours on his own designs. His first big project was for Legends restaurant in New York City and carried a four-week deadline. Without his own space and tools, he found a studio, bought basic tools and machines, and completed the whole collection on makeshift worktables with hours to spare. And from that, CAM Design Co. was born.

If he's not in the shop, you can probably catch **Pete Michelinie** ("Heirloom Box") on the trail. An avid hiker, he thru-hiked the Appalachian Trail, Pacific Crest Trail, and Continental Divide Trail within four years. Off the trail, the North Bennet Street School graduate shares a shop space with his father-in-law and fellow *FWW* author, Josh Metcalf. Pete and his wife, Cassidy, recently bought a house—"a real fixer-upper," he says—which he's excited to put their fingerprints on. Plus, it has some killer trails to explore right in its backyard.

We are a reader-written magazine. To learn how to propose an article, go to FineWoodworking.com/submissions.

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letters

From the Editor

Something old, something new...

Woodworking has a remarkable way of renewing and reinventing itself while staying firmly tethered to its hundreds of years of history. I could say the same for *Fine Woodworking*, though our lineage doesn't go quite that far back! Certainly the changing technologies over the past 40 years have shaped the way that we now deliver content, and how readers/viewers consume it, but the one constant has always been the authors who take the time and effort to share their knowledge. They are the reason for our craft's continued vitality.

I've been a part of making the magazine for 25 years, and have worked on articles by thousands of authors on just about every woodworking topic over that time. If anyone should be tired of the subject by now, it should probably be me. Yet the opposite is true. Every article—even the ones that tread the same territory as those in the past—gives me something new, whether it's a fresh design perspective or a novel approach to solving a challenge that the craft can throw at us.

This issue's lineup is a great example of the unique viewpoints that are driving the craft forward today. It is wonderful to see the joy and originality that longtime contributor Mario Rodriguez continues to bring to his work, as well as his nuts-and-bolts knowledge of the craft. Meanwhile, first-time authors Tamar Hannah, Christopher Miano, Pete Michelinie, Jesse Shaw, and Emmet Van Driesche share their insights on an array of topics from charred finishes, carved utensils, and steam-bent lamps to classic veneering techniques and a smart router-table solution. The future of woodworking is in great hands, and I'm happy to have the good fortune to be sitting in a front-row seat.

—Michael Pekovich

Berry good job

I've been meaning for a long time to write to thank Christian Becksvoort for his Shaker Berry Box article in the October 2019 issue (*FWW* #278). When I made several boxes for gifts at the time the article came out, I never anticipated how useful they would turn out to be in the coming months. Many thanks for the joy your magazine has brought me through the decades.

—TOM GOEDDEL, Fair Haven, N.J.

You're not alone

I recently received my issue and as is my peculiarity, started reading from the back. I immediately read Philip Morley's piece in the From the Bench column ("My gift is my craft," *FWW* #290), and it struck a nerve: I, too, suffered in school. I, too, was shamed by moral judgments by scholastic authority figures. I, too, acted out in frustration. I, too, did not thrive in college. I, too, despaired.

I was diagnosed at age 53 with ADHD, much too late to affect my educator-induced damage, but never too late to positively affect my self-image. As if a veil was lifted, many painful and troubling incidents from my youth made sense. It was literally transformative knowledge. I, too, find solace in the arts and in craftsmanship. I am a graphic designer and illustrator, and my primary making outlets are about 60% machining and fabrication, and 40% woodworking, which I deeply enjoy for the warmth and beauty not found in metalwork.

To Philip Morley: Carry on with the good work, you are not alone, and the past wasn't your fault.

—ALAN LAPP, Oakland, Calif.

Tenoning jig came in handy

I recently made and put to use the tenoning jig from Bob Van Dyke's article (*FWW* #288). I had five end-table legs and rails cut out, but didn't get going on the tenons until I had made his jig (with a couple modifications due to the clamps being a little different). The jig works wonderfully, accurate and fast. I did question the five layers of Baltic-birch plywood, but the bulk really did stabilize it. Please extend my compliments to Bob regarding the jig and the article.

—JOHN HOINES, Madison Lake, Minn.

Correction

The link given for the fretsaw in the article on marquetry by Craig Stevens (*FWW* #290) should have been https://www.highlandwoodworking.com.

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workshop tips

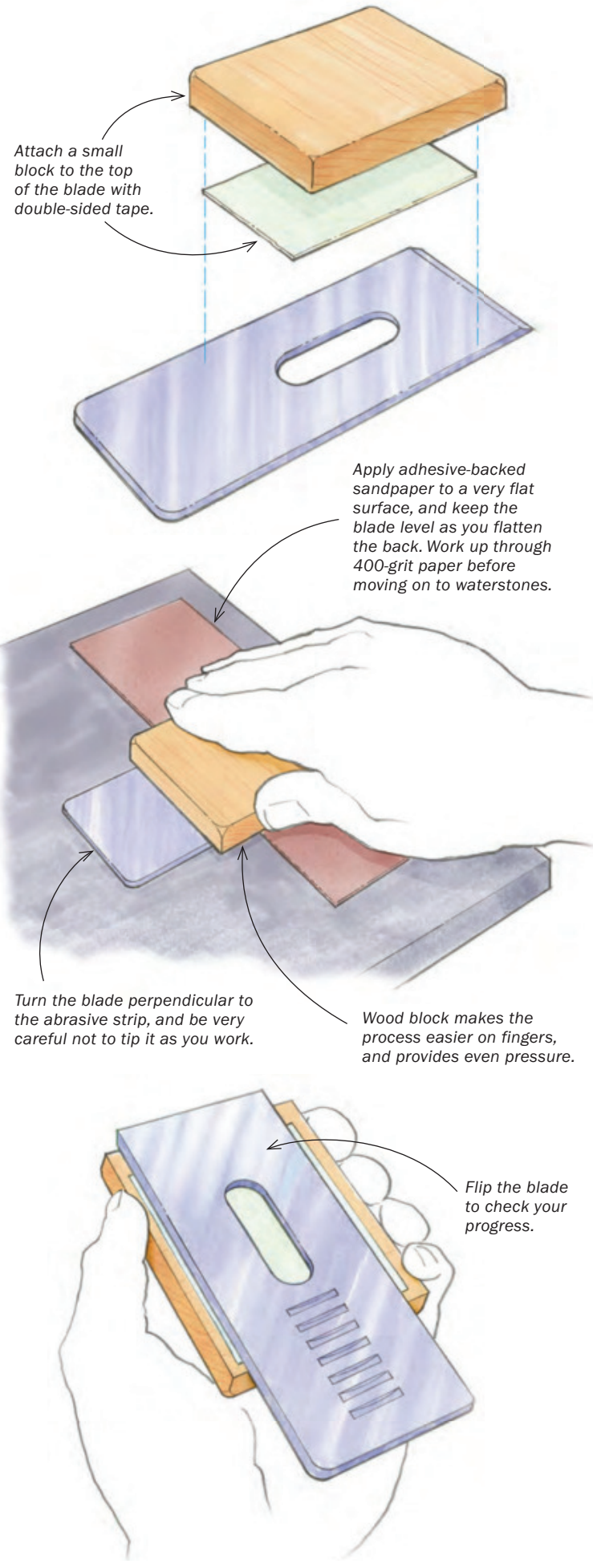
Simple wood block makes it easier to flatten backs of blades

For many years I've really enjoyed tuning up vintage tools—mainly handplanes and chisels. Recently I was flattening and polishing the back of a new blade for a low-angle jack plane I'm restoring (a Stanley No. 62). I do this on a flat granite slab, using adhesive-backed sandpaper, and following up on waterstones.

As usual during the initial flattening, which takes quite a while in some cases, my fingers got really sore. This time I even got a blister. I thought I'd better lay off the blade-lapping for a few days, and then I got the simple idea of attaching a small block of wood to the top of the blade to help me control the process. I attached the block with double-sided tape, went back to work, and the result was excellent! The blade honed much faster because I could apply even more downward pressure without a limited grip. The pressure was also more even and easier to control.

I wish I had thought of this years ago. It would have saved so much effort, and made tuning up all those chisels and plane blades far more enjoyable.

—EVAN MILLER, Sequim, Wash.



Best Tip

Evan Miller spent 21 years working for a company that outfits the interiors of mega-yachts before starting his own woodworking business, Lost Mountain Design. His work still focuses on fine veneers from around the world, often applied to curved surfaces.

A Reward for the Best Tip

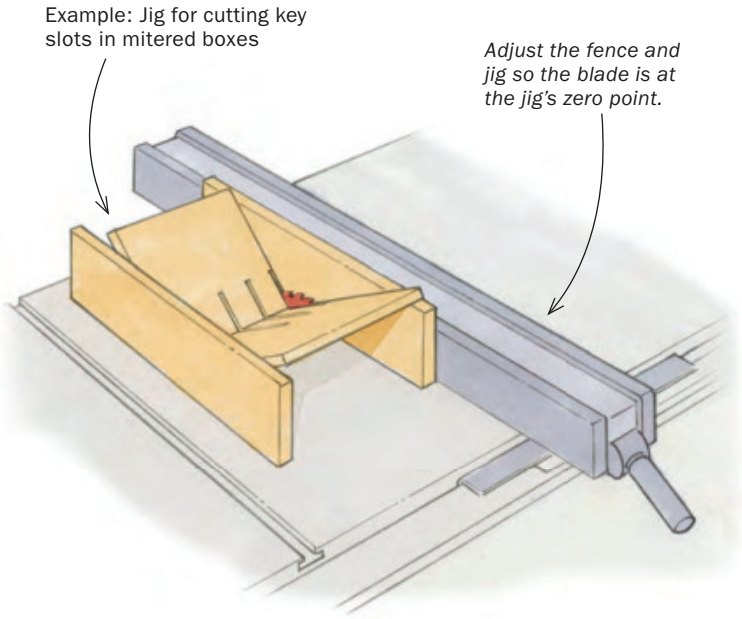
Send your original tips to fwtips@taunton.com. We pay $100 for a published tip with illustration; $50 for one without. The prize for this issue's best tip was a Blue Spruce Toolworks 4-in. Sliding Bevel Gauge.

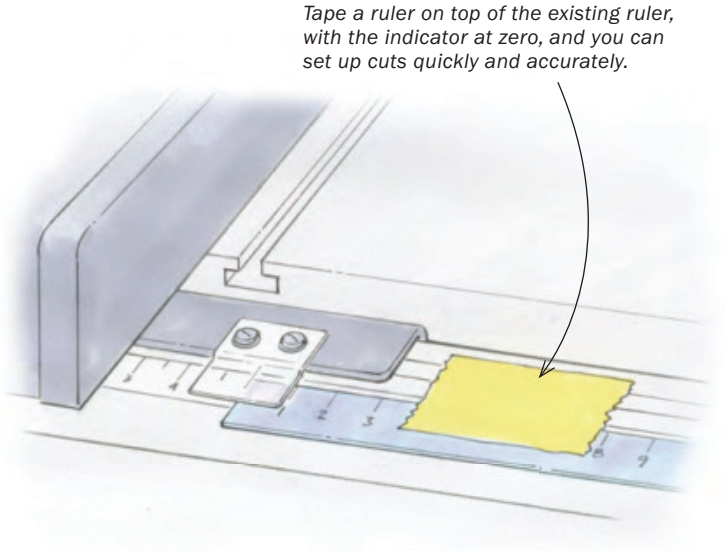
Drawings: Dan Thornton; photo: Isaac Gautchi

Dial in your tablesaw jigs by adding a ruler to the rip fence

Like all rip fences, mine comes with a handy scale on the support bar, letting me make cuts without measuring. But when I use a jig that rides against the fence, the cuts are offset and the scale no longer reads correctly, leaving me to either add the offset to the ruler reading or locate cuts by trial and error. To use tablesaw jigs with no math—speeding things up and reducing the chance for error—I set the fence and jig for a cut of zero inches, and then tape an additional ruler under the fence's indicator.

—EDDIE FROTHINGHAM, Corvallis, Ore.

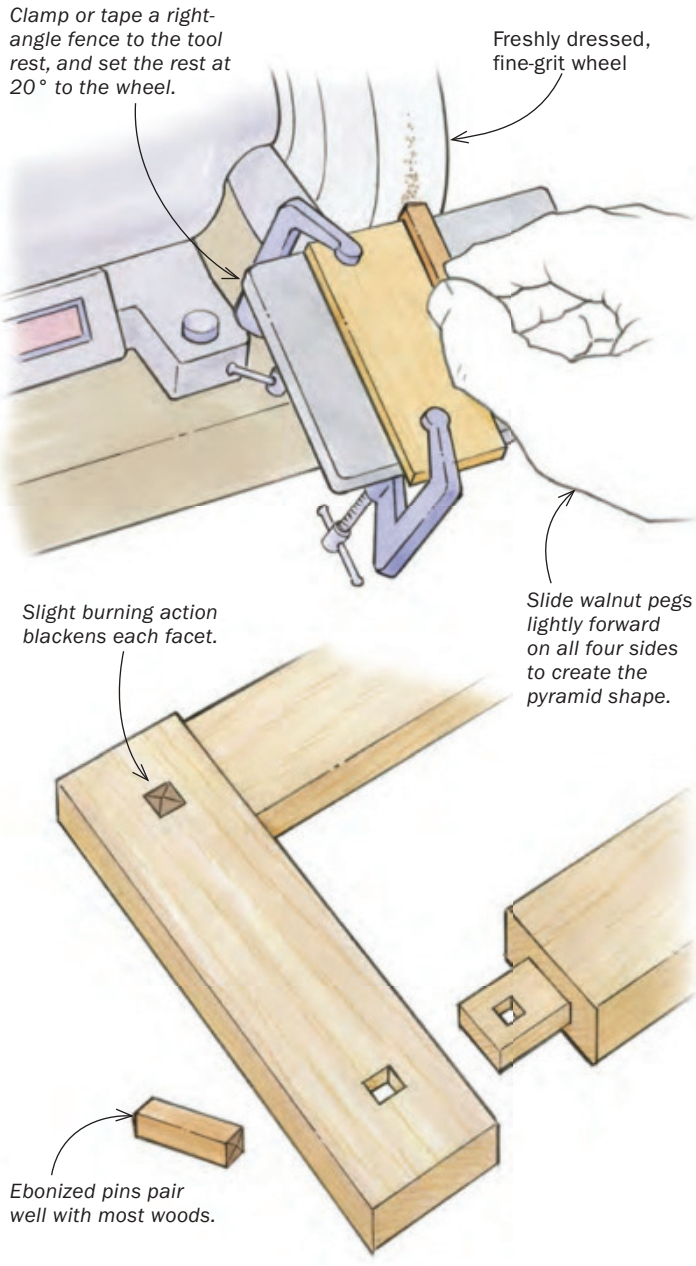


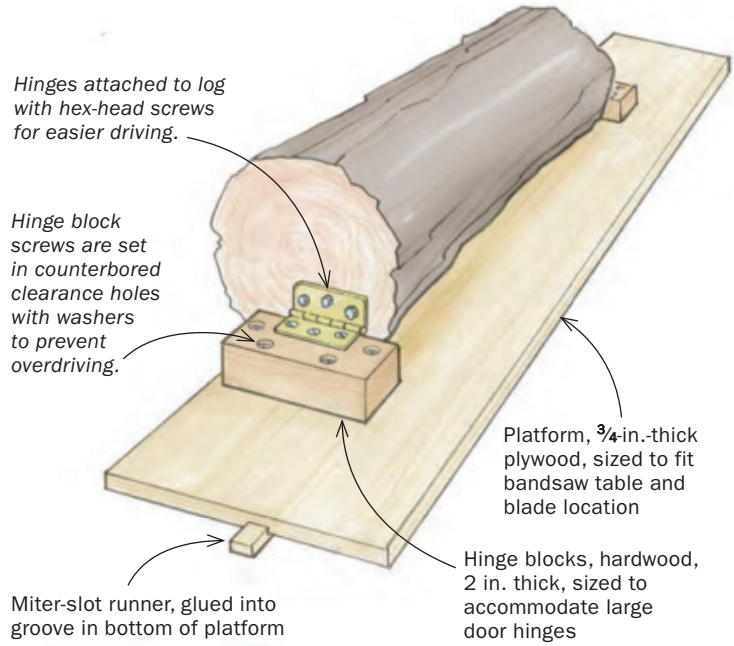


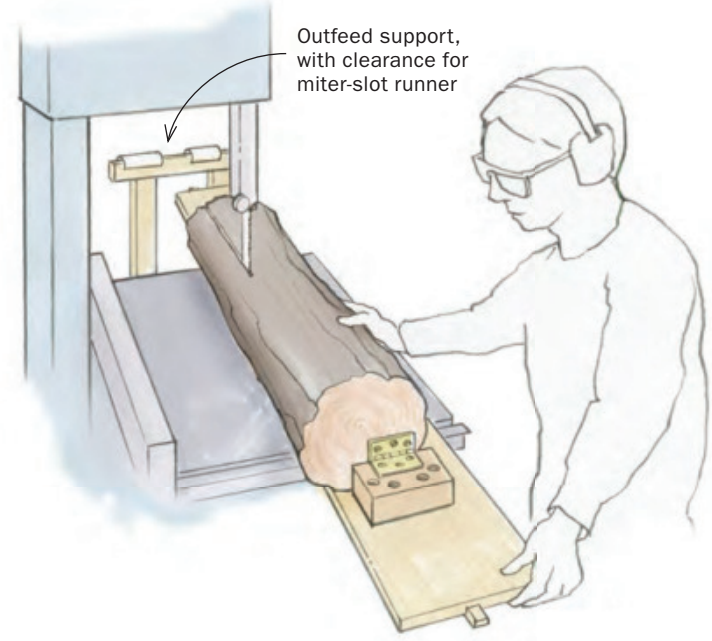
Shape and ebonize walnut pegs in a single step

Square pegs add both strength and decoration to frame joints of all kinds. While my personal favorites are ebony with a pyramid shape, ebony is pricey and can be hard to find. I recently discovered I can use my bench grinder to burn the ends of walnut plugs, darkening the wood and forming the little pyramids at the same time. Use the finest wheel on your grinder, and dress the edge flat. Then all you have to do is add a little right-angle fence to the tool rest, and set the rest at 20° to the wheel. Feed the stock carefully into the wheel on all four sides. With a little practice you'll get a consistent pyramid shape, with the slight burning action of the wheel leaving the end grain smooth and dark. To cut the pegs to length, I use a bench hook and fine saw.

—JIM COX, East Aurora, N.Y.







Door hinges are the key to this log-milling jig

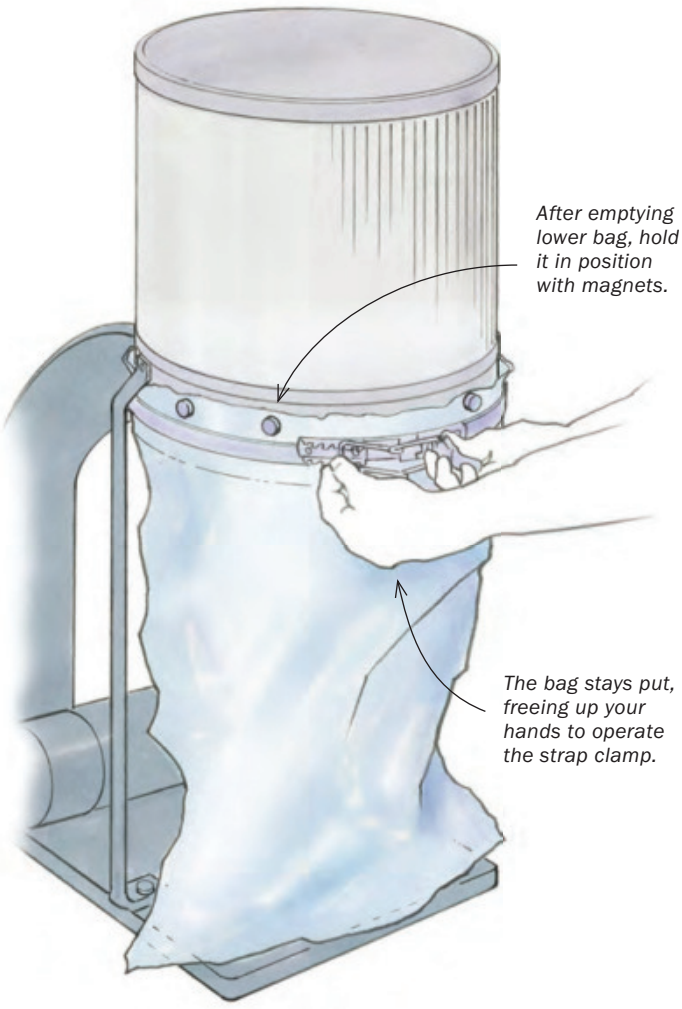
For a while now I've been using a sliding bandsaw jig to slice boards from small logs—up to 12 in. dia. and 6 ft. long. The key to the function of the jig—which is just a piece of ¾-in. plywood with a long miter-slot runner attached—is using large door hinges to attach the log to the platform. The hinges are attached to blocks, which you can screw down quickly anywhere along the length of the jig. Attaching the hinges to the log is just as fast, making it easy to change the log's position for different cuts. The setup also requires some sort of outfeed support, with a gap to accommodate the runner. I screw two pieces of irrigation hose to the tops of my work stands to accomplish this. For larger logs I reposition the log for each new cut. For smaller ones, I flatten two faces at right angles, put the jig aside, and run those faces against the fence and table from there.

—JEREMY FOATE, Christchurch, New Zealand

Magnets ease dust-collector bag changes

The lower bags on some dust collectors are a bit loose, which makes them a pain to re-install after emptying. As you attempt to operate the strap clamp that holds them in place, they keep sliding down out of position. If you hold the bag in position with magnets, you'll have both hands free to tighten the clamp. It works beautifully, and the magnets can stay attached to the dust collector when not in use.

—BOB BAGDASARIAN, Long Beach, Calif.



Quick Tip

Store a wet brush in the freezer

To avoid the hassle and time needed to clean your brush between coats of polyurethane, roll the wet brush tightly in kitchen plastic wrap, squeeze out any air, and fold over the end. Then pop it into the freezer. The brush will stay soft and ready for the next coat.

—CHUCK GAUSE, Athol, Idaho

JIGS AND FIXTURES

Mortise Master lives up to its name

Mortising jig
by Mortise Master
$210

VERSATILE, AFFORDABLE, AND EASY TO USE, Don Browning's Mortise Master makes spot-on mortises accessible to any woodworker. The jig is at its best making matching mortises for slip tenons. Layout is as simple as marking centerlines across the joint—the same way you would for a biscuit. Setup is easy, too. You start by clamping the jig's two thick wood fences onto your workpiece and lining up your pencil mark with a scribed line. A thin lip along the inner edge of each fence sits on top of the workpiece and ensures the fences are level with each other.

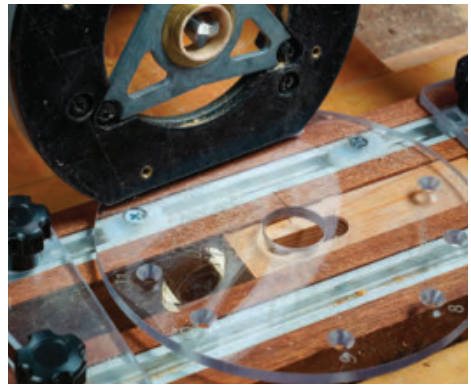
The jig comes with a 1-in. bushing that you screw into your router's baseplate. Once it's on your router, you fit the bushing into the hole in the center of the jig's ingenious polycarbonate slide plate, which is the heart of the system. With your plunge router riding on top of it, the plate slides back and forth on the jig, guided by little UHMW plastic blocks that attach to the slide plate in various positions and glide along metal T-tracks, making the mortising action smooth and precise. Those same tracks guide the two polycarbonate fences that act as stops, limiting the travel of the slide plate (and therefore the length of the mortise). The recommended upspiral carbide bit (supplied by you) should correspond to the width of the mortise. To rout a mortise, you set the depth on your router, fit the bushing into its hole in the slide plate, and hit the on-switch.

My big plunge router was very steady and easy to control on the thick fences and broad slide plate, and the upspiral bit ejected dust so well that I could rout an entire mortise without reaching for a vacuum hose to clear chips.

Once your workpieces are marked and the jig is set up, switching to a new workpiece and routing another mortise takes a few minutes at most. The jig can accommodate workpieces up to 3½ in. thick, and rout mortises in a range of sizes.

—Asa Christiana is a woodworker in Portland, Ore.

Setup is simple. *The router rides on a round polycarbonate slide plate, and two adjustable fences limit its travel. With the slide plate centered, you set the stops by inserting two small shopmade spacers.*



Fast and foolproof. *The bushing fits in the jig's slide plate with zero slop. UHMW plastic blocks attach to the plate for various mortise locations. The blocks slide nicely in the jig's T-tracks for excellent control.*

Excellent results. *Make a slip tenon to fit, and create strong joints in projects of all kinds.*

Photos: Asa Christiana

ACCESSORIES

Trio of tablesaw blades

USING DEDICATED TABLESAW BLADES leads to better work. Three new 10-in. models from Luxite make this point excellently. To test the carbide-tipped blades, I used various hard- and softwoods. For each blade I noted ease and quality of cut, tearout, noise level, vibration, and visible sawmarks.

The 50-tooth combo blade is a good all-arounder. The rip gullets on this blade are deep, and it ripped with little resistance, although it left visible sawmarks in some species. It excelled at crosscutting. The harder woods had smooth end grain, while the softer woods were a little fuzzy.

The crosscut blade, with 60 teeth and an alternate top bevel (ATB) grind, was excellent. The softer woods had very few visible sawmarks, and the harder species were smooth. The blade left perfect, glue-up-ready miters too.

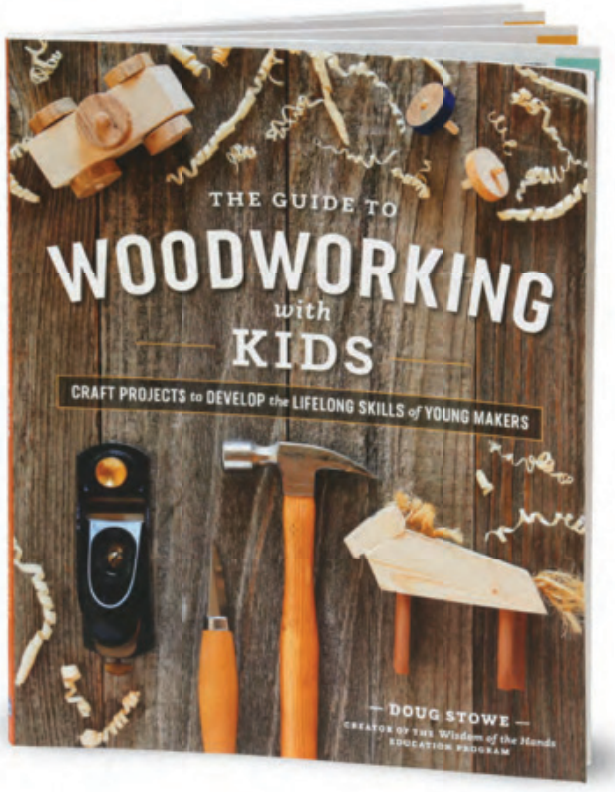
The rip blade, also an ATB, with 30 teeth and graduated gullets, excelled on various thicknesses without needing much force. The blade left very few sawmarks overall, and the softer woods were smooth. This blade was thinner than others, at 3/16 in. None of the blades made a high-pitched sound or vibrated.

—Ellen Kaspern teaches tablesaw setup and techniques around the U.S.

10-in. tablesaw blades by Luxite
luxitesaw.com
Combination, Model 2510505VPD
Crosscut, Model 1510603VPD
Rip, Model 3510303VPD
$80–100

BOOK REVIEW

Woodworking with kids



The Guide to Woodworking with Kids
by Doug Stowe
Blue Hills Press
$24.95

WOODWORKER AND TEACHER Doug Stowe brings 40 years of experience and thought to his wonderful *The Guide to Woodworking with Kids*, a book for those who recognize that young brains learn best through hands-on activities. Valuable to both experienced and prospective instructors, Stowe's book provides the foundation on which to build a whole program or a single project. It includes basic knowledge about hands-on instruction, as well as valuable teaching methods, effective project types, and critical tools. Built on historical examples, personal experience, and contemporary pedagogy, the book revolves around tools: workbenches, planes, toolboxes, and, maybe surprisingly, knives. At a basic level, tools teach safety and trust. At a higher level, correct tool use enhances the growth of children's brains. Stowe hasn't written a step-by-step recipe book. He's provided examples and expects the instructor will pick what works for them to create a lesson plan. He also expects that the object of the instructor's craft will become the student, not the project.

—Joe Youcha founded and directs Building To Teach, a teacher-trainer program that reintroduces the building process as a context for math instruction.

Small toolbox, big ideas. *For Stowe, a toolbox can teach organization and trust, as it conveys these tools are the child's.*

Let the kids play. *Some projects are intentionally simple so they can be a blank canvas for kids' imaginations.*

Photos: Barry NM Dima

NEW TOOLS

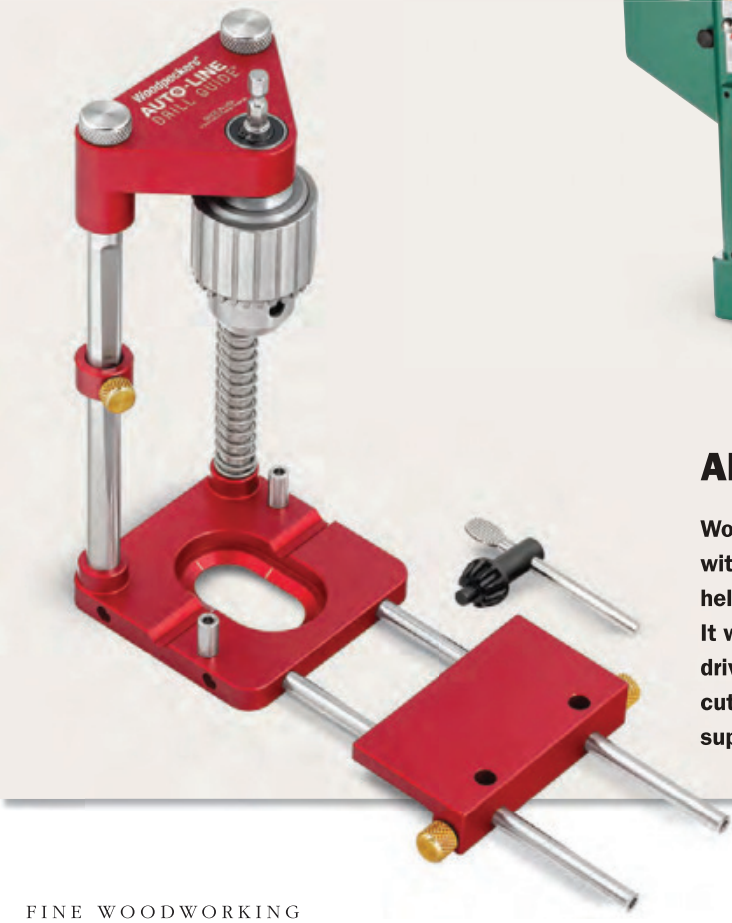
Tools to look out for

Cordless plunge router

Metabo HPT's new cordless plunge router has a 2-hp brushless motor with variable speed that ranges from 11,000 rpm to 25,000 rpm. The on switch is on the handle, and it includes an LED light to illuminate the work surface. An AC adapter, for when you want to plug in, is sold separately. The router weighs 6.6 lb.

Cabinet saw with digital readout

This new 3-hp saw from Grizzly comes with an onboard digital gauge for setting blade angles. Its saw table is cast iron, and its rip capacity is 36 in. to the right of the blade and 18 in. to the left. The saw's maximum cutting depth is 3 3/16 in. The dust port is 4 in. The stand is a single piece of steel. The unit runs on 220-volt power.



Alignable drill guide

Woodpeckers' drill guide lets you drill perpendicular holes with a handheld drill. A fence, rods, and alignment lines help you register the guide on both narrow and wide stock. It will fit any cordless or corded drill, including impact drivers. There is a stop collar, so you can fix your depth of cut. Thanks to the V-groove in the base, the jig can also support round stock.

Photos: courtesy of the manufacturers

A charred finish

BY CHRISTOPHER MIANO

In my studio I focus on traditional craft and techniques. Japanese joinery and construction have always inspired me, and through a process of trial and error I stumbled upon this method for my adaptation of *shou sugi ban*.

Shou sugi ban is an ancient Japanese technique to preserve wood by charring the surface, creating a thin layer of carbon that protects the wood underneath in the same way that finish does. It was traditionally done on Japanese cedar, but I've used it with great success on oak, cherry, and walnut. My process involves charring the wood, cooling it, and finishing with a stain and then an oil.

Construction considerations and surface prep

For my stool I used solid red oak, because it is strong, affordable, and easily available. For the top of the stool I alternated end-grain orientation of the two parts that will be joined to avoid cupping over time and ensure a flat seat. Although the stool top is thick and has plenty of surface area for gluing, I prefer to shore up my glue-up with a few 10 x 50

Charred to perfection

Proper, prior surface prep. *Sanding through to a very high grit isn't necessary if you are charring, but beginning with a surface that is consistent and has no glue residue is.*

Start right side down. *Miano starts charring on the legs and underside of the stool. It gives him a chance to get the flame adjusted and get into a rhythm before he chars the focal point of the piece, the top. The first pass is a light surface charring of the entire stool.*

Cool and char again, repeat. *After the stool is completely cool, torch it again. That gets you to a deeper level of charring. Cool the piece overnight in a safe place, and char a third time. You can stop at the level of charring you like, but Miano works to a deep alligator crackle appearance. He uses a SeeSii 500,000 BTU torch connected to a propane tank. He keeps a small Bernzomatic propane torch nearby to relight it in case it goes out.*

Photo, opposite page (bottom): Christopher Miano

To stain or not to stain

Dust it off. *After charring, use your air compressor to gently blow off any remaining soot and residue from the flaming process.*

Even out the color and focus on the texture. *Adding black stain is an optional part of Miano's process. He applies it prior to a clear finish. The stain mixes with the charred top layer of the wood and creates a slurry, evening out the variations of the black color left by the flames. Gently apply the stain with a synthetic brush.*

Domino tenons to ensure that when I superheat the glue joint the boards won't split apart. I add a bronze butterfly key to the joint to make it stronger and provide a design detail, gluing it in with Gorilla 5-minute, two-part epoxy.

Charring the surface

I always do the charring outside. Make sure you keep in mind the surface under the work you're charring. Even if it is concrete or metal, for example, the charring will leave marks on it. And obviously you don't want the surface you are charring on to be a flammable material. Be sure to keep a fire extinguisher handy just in case. As the son of a FDNY firefighter, I always take safety seriously.

My torch of choice is the SeeSii 500,000 BTU weed torch, connected to a propane tank. It was designed as a landscaping tool to remove weeds and can be picked up online or at a hardware store. I dial mine in to produce a constant flame and begin the three-step shou sugi ban process. Because the first step is a light surface charring, cooling time between the first two passes can be just a few hours, but after the second and third charring I wait overnight before I char again or apply finish.

Holding the torch 6 in. to 8 in. away from the stool, I start at the legs, charring the surface black and working my way up to the stool's top. I'm searching for an alligator-scale look, but not on the first pass. The flame will heat up and begin to melt any glue, so try to work the areas around glue joints with caution. Keep the torch moving, particularly at glue joints. The Dominos in the top and butterfly will help with this process.

After the third charring, once the desired look has been reached, allow the stool to cool completely before moving on

Photos, except where noted: Anissa Kapsales

Apply the finish

Apply Osmo, buff, repeat. *After the black stain is dry, use a Scotch-Brite pad to gently buff the surface. Apply a first coat of Osmo Polyx 3540. Allow it to dry for 24 hours, and then buff that out with the pad and repeat the process two more times. At this point you shouldn't see any new black residue on the pad.*

Butterfly detail

Add a patina to the butterfly key. *The final step is to tend to the bronze butterfly key. Miano carefully sands the key and uses a rag to apply Sculpt Nouveau Slate Black patina to the key.*

to applying finish. It's important to leave the stool in a safe spot and keep an eye on it in case of a spontaneous flare-up, as the wood can reignite. I haven't seen this happen, but it is a possibility you should not dismiss. I leave the stool outdoors as long as possible, set on metal or concrete and away from anything flammable. Once the stool has cooled overnight, I take my air compressor and lightly blow off any soot and residue.

Applying stain and finish

My finish of choice for this stool is General Finishes water-based wood stain in black, followed by Osmo Polyx-Oil 3054. As I apply the stain, the char on the surface mixes in to create a slurry for an even black surface color. Generously apply the finish, working in small areas until the whole stool is uniform in color. I like this step because it evens out the black of the charring, but you can skip it if you prefer.

When the stain is dry to the touch, begin applying the Osmo Polyx. Using a synthetic brush, work the first coat into any voids of the scaling. This will solidify and strengthen those spots. After letting it dry for 24 hours, use a Scotch-Brite pad to knock down any parts that have a high sheen. I repeat the Osmo two more times, allowing 24 hours between coats, lightly knocking back the surface each time with the Scotch-Brite pad to produce some tooth for the next application to bond to.

My final step is to carefully sand the surface of my solid bronze butterfly and wipe on a black patina. Occasionally, if I like what the heat did to the bronze, I will skip the patina. □

Christopher Miano, CAM Design Co., makes furniture in Union City, N.J.

Utensil design

BY EMMET VAN DRIESCHE

Sooner or later in everyone's woodworking journey, they feel drawn to try carving a utensil of some sort. The initial focus is on tools and technique. As you begin to have some control over the process, your mind naturally turns to design.

Form, function, and feasibility

Spoon design is likely a big part of why the craft has experienced such a surge of interest recently. Spoons are intimate objects, interacting with our hands and mouths, with dishes and pots and pans, and with food. Even a poorly executed spoon can be used. A well-designed, well-made spoon is a joy to use.

I break the design of my utensils into three categories: form, function, and feasibility. I want the shape to excite me aesthetically, I want the item to work well, and I want to be able to carve it relatively easily. The best designs come when all three aspects are intertwined, where the detail that makes a piece interesting is the same one that makes it work well and is also created by an organic part of the carving process.

Fine-tuning the design

I started out carving one-off spoons. Each was different from the previous one, and I would rack my brain each time to come up with something new. Eventually I settled on designs I felt good about for different types of spoons, and my work started to diversify, with established designs slowly evolving and new ones springing up as people asked for them. Now I carve more than 30 spoon designs, and each year I explore a dozen more. The same sequence has held true for all the different utensils I carve.

As this process has matured, I've come to some understandings about utensil design. For one thing, most eating and cooking spoons exist in the middle zone of size, and designs for especially large or small spoons come with specific challenges. With small work, there is less room for adjustment, making it more difficult to get exactly the shape you want before you run out of wood to remove. A teaspoon or baby spoon has very little wiggle room. With big designs, the challenge is to get a clean line on a bigger circumference where there are more opportunities for the knife to wobble. With wide spoons, it's especially difficult to line up the handle symmetrically in the middle. With narrow designs, it's harder to get the bowl and the handle lined up with each other.

The more geometric the shape (like a round bowl), the harder it is to achieve, because your eye will pick out the irregularities. On the other hand, irregular shapes and curves live and die based on extremely subtle differences that you must train your eye to recognize. A slightly squashed round bowl shape, for instance, is more forgiving to carve than a true circle,

Photo: Michael Pekovich

but it's also more difficult to find the sweet spot where all the elements come together. This chase—whether you're working on a spoon, spatula, ladle, knife, or other piece—is a big part of what makes utensil carving addictive.

Finally, you need to take into consideration how you'll actually carve the design. Sometimes certain design choices make sense because they are very forgiving to carve, allowing you to adjust all of the other details as needed. Other times, you choose to pursue a certain form despite the fact that it is harder to pull off. This part of the process relies on a wealth of experience: knowing exactly what you can get your tools to do, and also what you can expect the wood to do. Particularly large and small designs often push the tools right to their limits, so you need to know where those limits are and how to approach them without going too far.

Beyond the spoon

A number of the forms I carve push all three of these elements to the limits of my ability. Take my ladle design, for instance. It is a huge piece, so I need a great deal of power and stamina to pull off some of the cuts, and I need to know in what order to remove the wood so that the whole thing resolves into delicacy at the same time. Getting the form symmetrical and clean is made difficult by both its size and its width. Achieving the right geometry is a dance balancing what my tools can handle, what physically works for a ladle, and what the wood is willing to do. Finally, making the bowl thin enough is a target that moves as I carve more of this form and I become more familiar with how far I can push it.

Carving something as small as my bubble scoop presents different challenges. Visualizing two overlapping circles, one perfectly round and one slightly squished, is tricky. Trying to hold something that small is tricky too, and the size means that I have fewer opportunities to tune up the shape.

What I hope this all conveys is that utensil design isn't just the part at the beginning where you doodle ideas on paper. Design choices are made throughout the carving process. Quite often I will adjust my plan to the reality of the particular piece of wood I'm carving, adapting my vision to what is actually possible. Rarely do things go completely as planned.

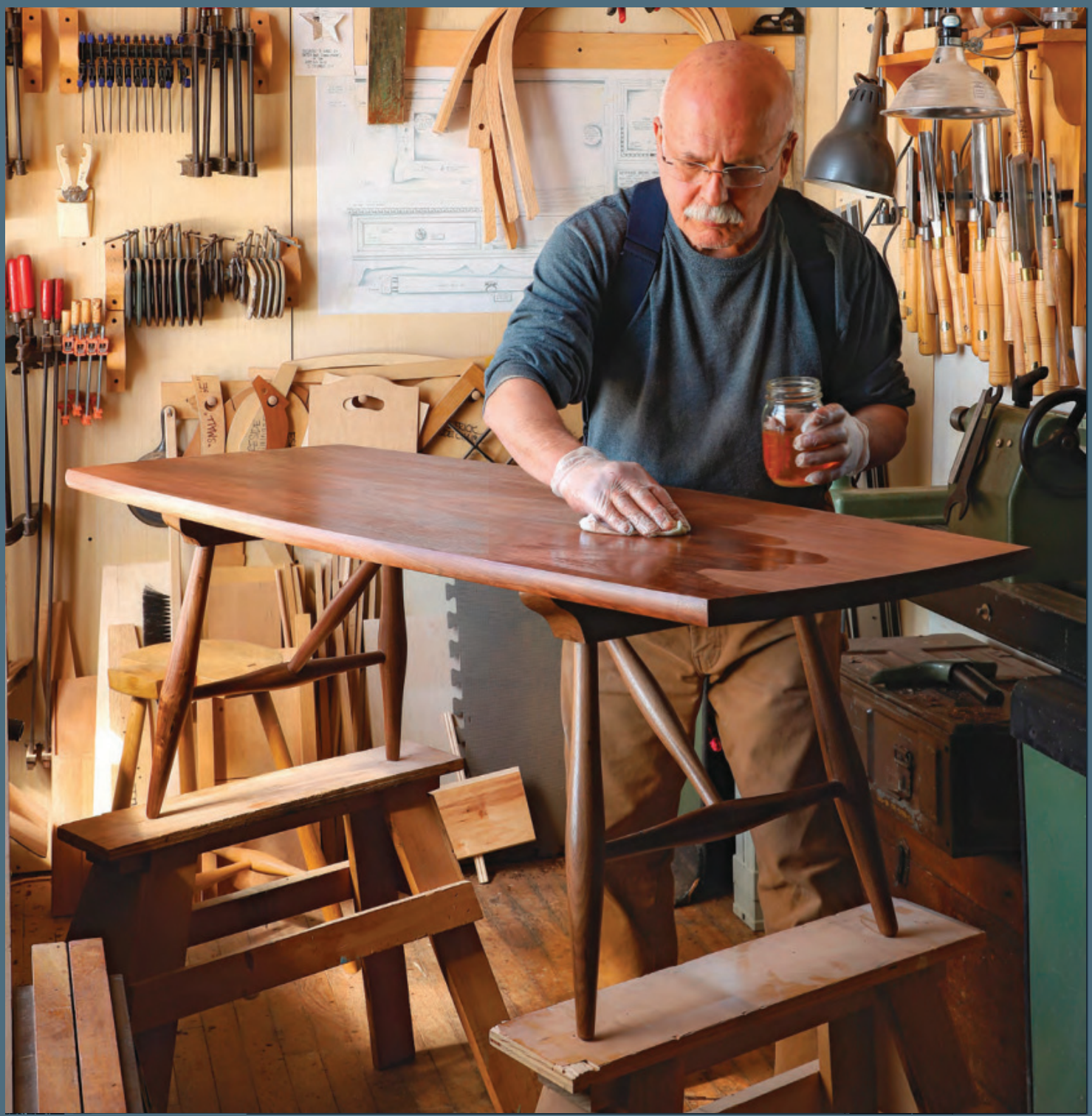
A great utensil design is electric, playful, yet seems somehow inevitable. The balance of weight is spot on, in all three dimensions. The proportions and curves are just right, and the tool finish is confident and fluid. Achieving this in a number of different forms takes experience and practice, absolute control of your tools, and a knowledge of how far you can push both tool and material. The good news is that the pursuit of this never ends, and is just as fun for spoon No. 2 as it is for spoon No. 2,000. No matter where we are in this journey, we are all chasing the same feelings. We will never quite get there, but then again, that is rather the point. □

Emmet Van Driesche is a professional spoon carver, publisher of Spoonesaurus Magazine, *and the author of* Carving Out a Living on the Land *(Chelsea Green Publishing, 2019).*

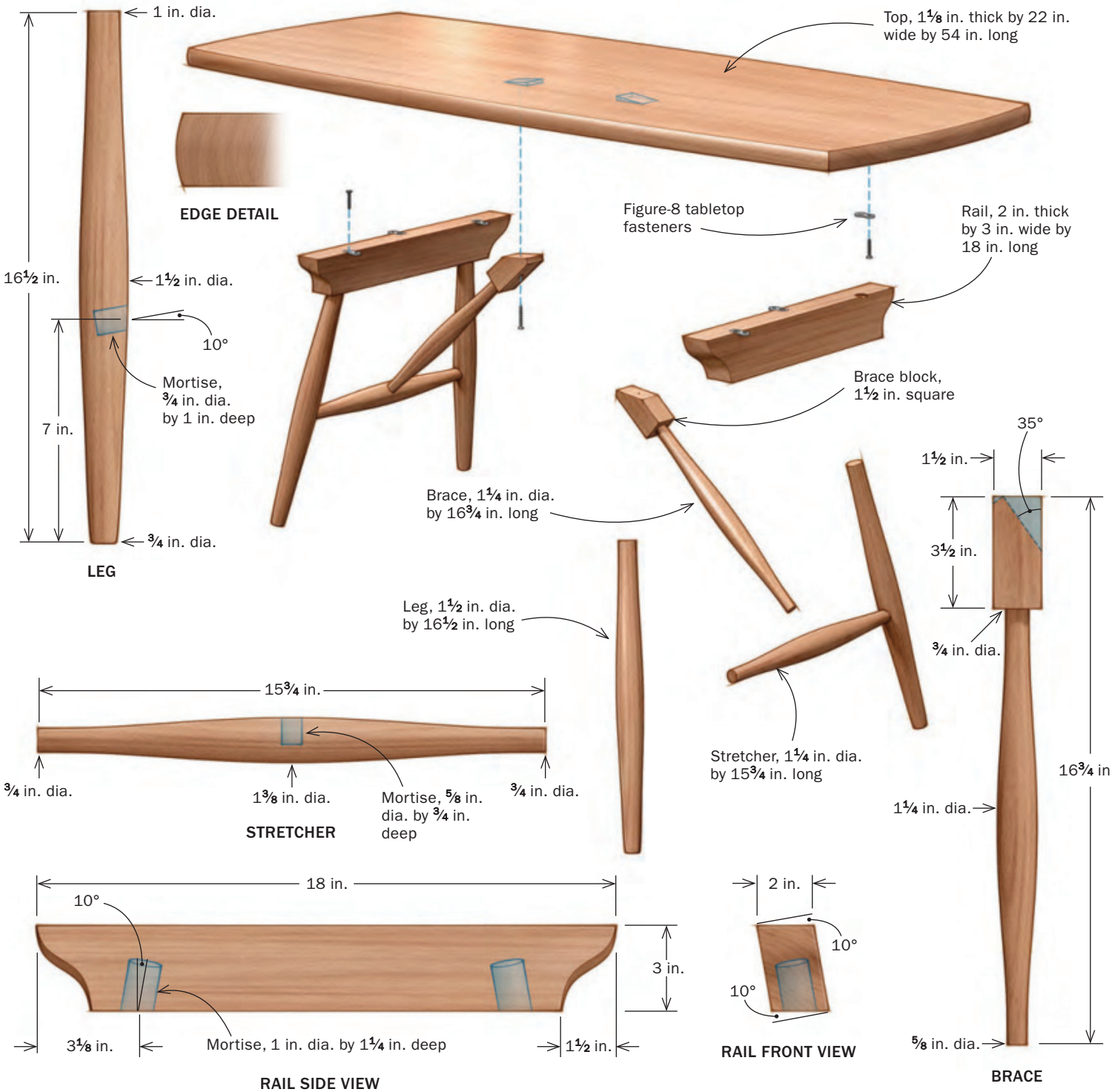
Scandinavian Modern Table

It's inviting, versatile, and built to last

BY MARIO RODRIGUEZ



Photos: Jonathan Binzen



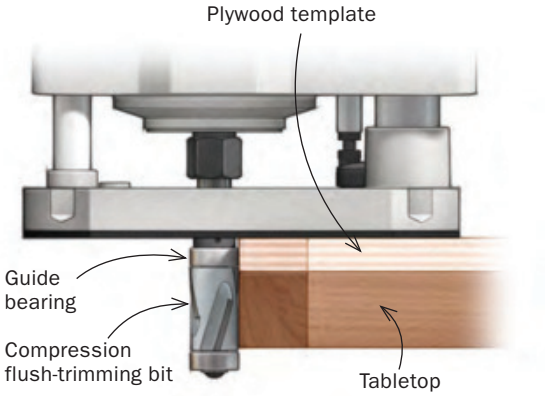
I originally designed this piece as a low worktable for my wife, Nicole, who teaches fiber crafts, and her students, who sit around it while they work. Having built the first one, I could see that with its ample, rounded top and unobtrusive undercarriage, it could work beautifully as a coffee table as well, and I decided to make another for that purpose. For the new table, I chose walnut for its deep warmth and rich color. The top is a single walnut board cut from a big plank I'd been dragging around for over 25 years, just waiting for the perfect project. At 22 in. by 54 in., the tabletop provides a generous surface. But the curves along its ends and sides make it friendlier, more approachable, and better suited to its purpose.

The undercarriage is composed of two turned leg assemblies. Canting the slender legs let me provide stability along with a large cantilever at the ends. To stabilize and strengthen the leg assemblies, I added an angled brace that engages the stretcher and has a square block at the top end that sockets into the underside of the tabletop. The brace creates a rock-solid structural triangle and eliminates the need for a medial stretcher running the length of the table, helping keep the undercarriage uncluttered.

Drawings: Christopher Mills

A TOP WITH SUBTLE CURVES

TEMPLATE-ROUT THE CURVED TOP



Creating the curves. *Rodriguez routs the curved sides and ends of the tabletop using a plywood template and a straight flush-trimming bit with a top bearing. He screws the template to the underside of the top.*

Seeking an elegant profile. *Wanting neither a squared-off edge nor a common bullnose, Rodriguez gave the table's edge a thumbnail profile. Using a Queen Anne bit with a guide bearing (right), he routed in two passes, first with the router riding on the underside of the tabletop, then on the top.*

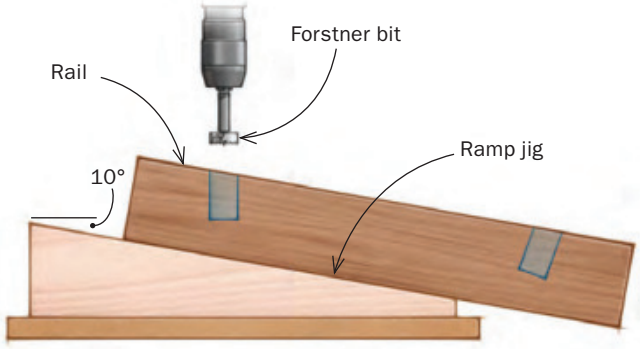
Making a boat-shaped top

I used templates to help shape the broad, shallow curves along the sides and ends of the tabletop. To make the template for the long side curves, I bent a thin strip of wood until I arrived at a pleasing arc and traced it onto a piece of ½-in. plywood. Then I cut the arc with a bandsaw and sanded to the line. I used the same springing technique to make the router template for the ends of the tabletop with its shorter arc.

Once the templates were completed, I traced them to lay out the boat shape of the top. With a jigsaw, I rough cut to within ⅛ in. of the outlines. Then I screwed a template to the underside of the tabletop and used an Infinity flush-trimming bit (item no. 06-692; infinitytools.com) to create a clean, smooth edge. Any tiny blips left after routing were faired with a block plane and then sanded.

Custom curve. *To clean up the slight offset in the thumbnail profile where the two passes of the router met at the middle, Rodriguez made a concave sanding block that matched the thumbnail.*

ANGLED DRILLING JIG



Rail blank on the ramp. *To give the legs their outward splay, the mortises for them are drilled at 10° using a shopmade ramp jig on the drill-press table.*

Thumbnail profile softens the edge

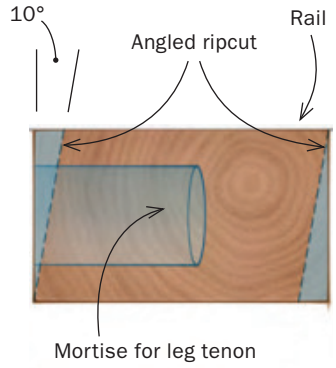
I didn't want a standard-issue bullnose profile for this table. I wanted something tighter, more deliberate; a thumbnail profile would work nicely. This detail softens the edge slightly by forming a gentle arc yet still leaves a crisp shadow line that clearly distinguishes the surface of the top from that of the edge.

I created the thumbnail profile using a Queen Anne bit (Infinity no. 10-500) with a guide bearing. Because I made the cuts in two passes, first with the router riding on the bottom of the table, then the top, I made a sanding block to fair out the slight flat at the middle of the profile's arc. To make the block I coved a long scrap at the tablesaw, creating a concave curve that matched the convex arc of the table's thumbnailed edge. Then I cut off a section of the scrap and added a fence.

Mill and drill the undercarriage

For the undercarriage parts I selected the cleanest walnut I could find with a deep uniform color and

ANGLE RAIL AFTER MORTISING



Adding another angle. *The legs are canted as well as splayed, and to create that outward angle, Rodriguez rips the top and bottom edges of the rail with the tablesaw blade tilted to 10°.*

Scrollwork. *The ends of the rails get a scrolled treatment. You can cut it on the bandsaw, then clean it up with a stationary sander or hand tools.*

Drill the rail for hardware. *The rail will be attached with figure-8 fasteners, which permit the top to move with the seasons. Rodriguez mortises for them by cutting a circle with a Forstner bit in a hand drill and then making a flared opening to the mortise with a chisel.*

SHAPE THE LEGS

DRILL THE MORTISES FIRST

Because the legs will be splayed, the mortises for the stretchers must be angled, too. Rodriguez uses the same 10° ramp jig to cut them (right). Remove the ramp jig before drilling the mortise in the stretcher that will accept the brace (far right).

Establish important diameters. *When the turning begins, Rodriguez hangs his drawing right next to the lathe so he can easily transfer dimensions to the workpiece with calipers. He turns these simple shapes largely by eye, but a few key diameters, sized with a parting tool and calipers, guide the way.*

straight grain. I milled the legs to 1¾ in. square and the stretchers to 1½ in. square. I milled the rails to final thickness but left them a little over width.

I drilled the mortises in the legs, stretchers, and rails while the stock was still square. This ensured that the alignment and registration of the parts would be precise regardless of their final shapes. I made a ramped jig for the drill press so the mortises in the legs and rails would be angled 10°. When it came time to cut the mortise in the stretcher that receives the brace, I removed the ramp jig.

Next I ripped the top and bottom edges of the rails at the tablesaw with the blade angled 10°. Then I used the bandsaw to saw out the scrolled end details on the rails and sanded them smooth.

A furniture maker's turning tool. *Rodriguez, who turns only when he needs parts for furniture, relies on a familiar bench tool to smooth tapers on the spinning lathe.*

Online Extra

To see video of Rodriguez using a block plane on the lathe, go to **FineWoodworking.com/291.**

TURN THE TENONS

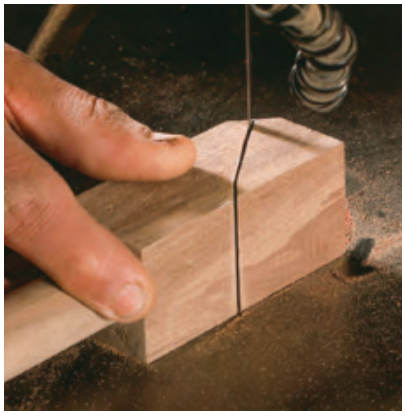
Sizing wrench. *You can use an open-end wrench to simplify sizing tenons.*

Test and tweak the tenon's fit. *If the fit of the tenon is tight, remount the part on the lathe and use a fine file to make a slight adjustment.*

Turning the legs, stretchers, and braces

I turned the legs to a mild, Mid-Century taper with a gentle swell where they receive the stretchers. It's a simple pattern. My aim was to have the top end taper to a 1-in. tenon, and the other to a fine, light foot, while maintaining a thickness in the middle sufficient to secure the stretcher.

I don't consider myself a turner, more like a furniture maker who turns when necessary. So after using gouges to take square stock close to its finished form, I often rely on a block plane (used on the spinning workpiece) to remove any bumps and achieve a smooth taper. There's no danger of ruining the work or damaging your plane. Set the blade for a light cut



Angle cut the brace block. *Rodriguez saws the block end of the brace at 35°, then smooths the sawn surface with a disk sander.*

Make way for the screw. *Drill a clearance hole and countersink for the screw that you'll drive through the brace and into the tabletop.*

Mortise layout. *Locating the mortise for the brace block requires first assembling the leg unit. With the unit together, position the rail on a crossline and trace around the brace block.*

and press the plane against the spinning workpiece. This technique sometimes leaves very light spirals, but they are easily removed by sanding.

I often size round tenons with an open wrench. It gives me a slightly oversize tenon that is easily tweaked for a tight fit. I turned all the parts here to die smoothly, shoulderless, into their mortises. I think it's a cleaner, more attractive look. Before removing each part from the lathe, I took the opportunity to sand to 220 grit.

Stages of assembly

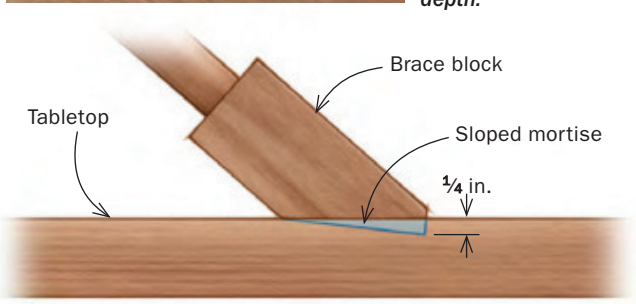
Even with all the parts turned and prepared, I had one more bit of mortising to do. For maximum strength, the block end of the brace gets screwed into a shallow ramped mortise in the underside of the top, and I needed to lay that out and cut it. To establish the location of the brace mortise, I dry-fitted the leg assembly and set it in place on the underside of the top. After tracing the brace block, I hand-chopped the ramped mortise. Then I inserted the brace and drove a screw through it into the top.

Finding the exact position of the leg assembly and the brace can require a bit of back and forth. I didn't finalize the position of the rail, by drilling for and screwing down the figure-8 fasteners, until the brace was mortised into the underside of the top. When all the screws were driven, I removed them and took everything apart for the glue-up.

Since the table would receive fairly heavy use, I decided on a rub-on poly finish. This user-friendly finish will allow occasional repairs to be made in place. □

Mario Rodriguez makes furniture and teaches woodworking in Philadelphia.

Chopping and checking. *Rodriguez cuts the ramped mortise by first chopping across the end, next chopping the sides, and then paring the angled bottom face. The process involves multiple fittings to get to the right depth.*



Locate the rotation. *With the base dry-assembled and screwed in place, make matching marks on the leg and stretcher so it's easy to align them properly during glue-up.*

First step in the glue-up. *Apply glue to the leg and stretcher tenons and push the legs partway home, keeping an eye on the rotation alignment marks.*

Driving home. *Tip the leg tenons into the rail, pull the legs tighter to the stretcher, and then use a mallet to drive the legs home in the rail.*

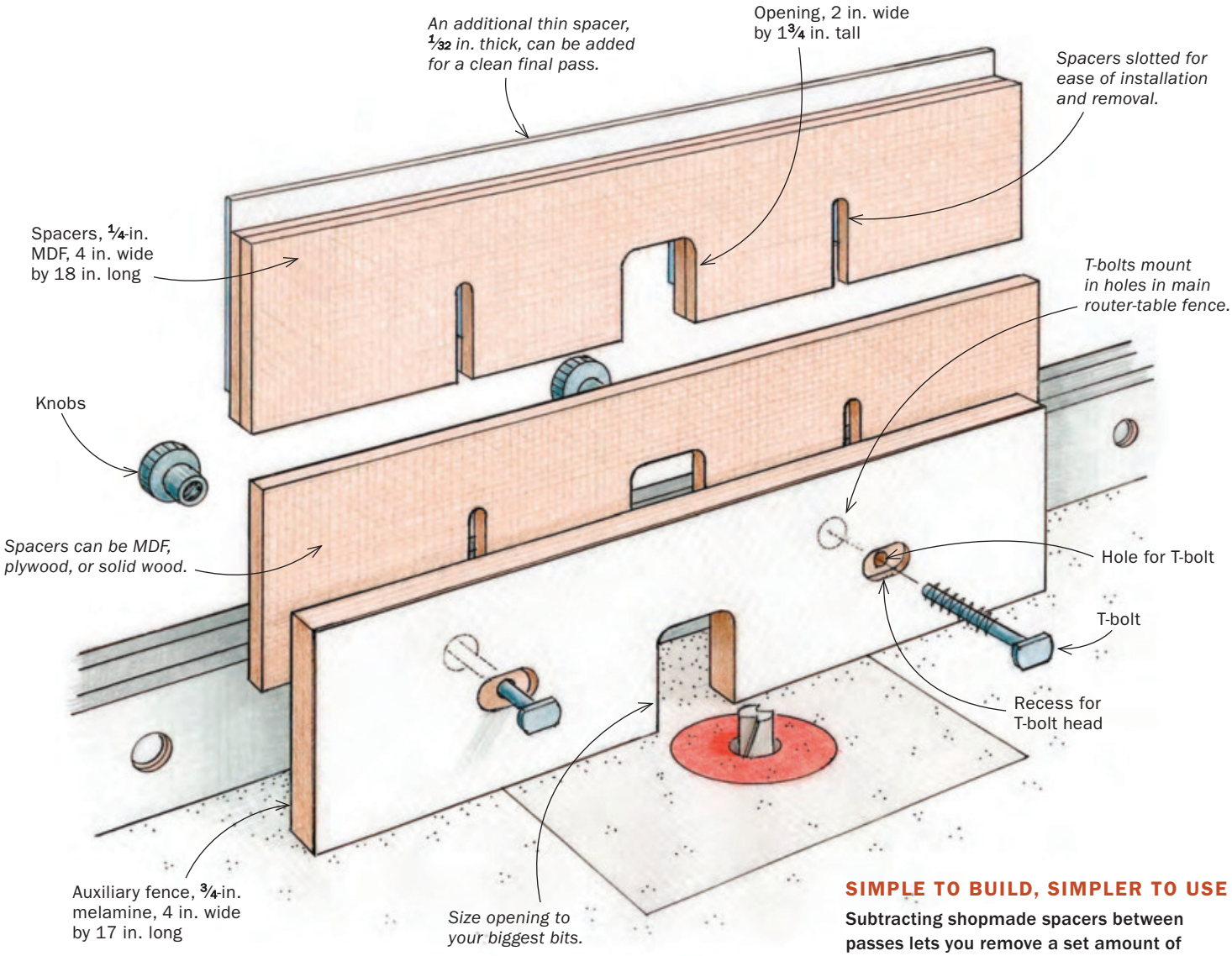
Attach the rail. *After inserting the brace tenon into the stretcher, fit the brace block into its mortise in the tabletop, and then drive screws through the figure-8 fasteners.*

The final fixing. *Drive a screw through the brace block and into the tabletop, locking the whole assembly tight.*

Adjustable Router Table Fence

Removable spacers guarantee accuracy and repeatability

BY TAMAR HANNAH



SIMPLE TO BUILD, SIMPLER TO USE

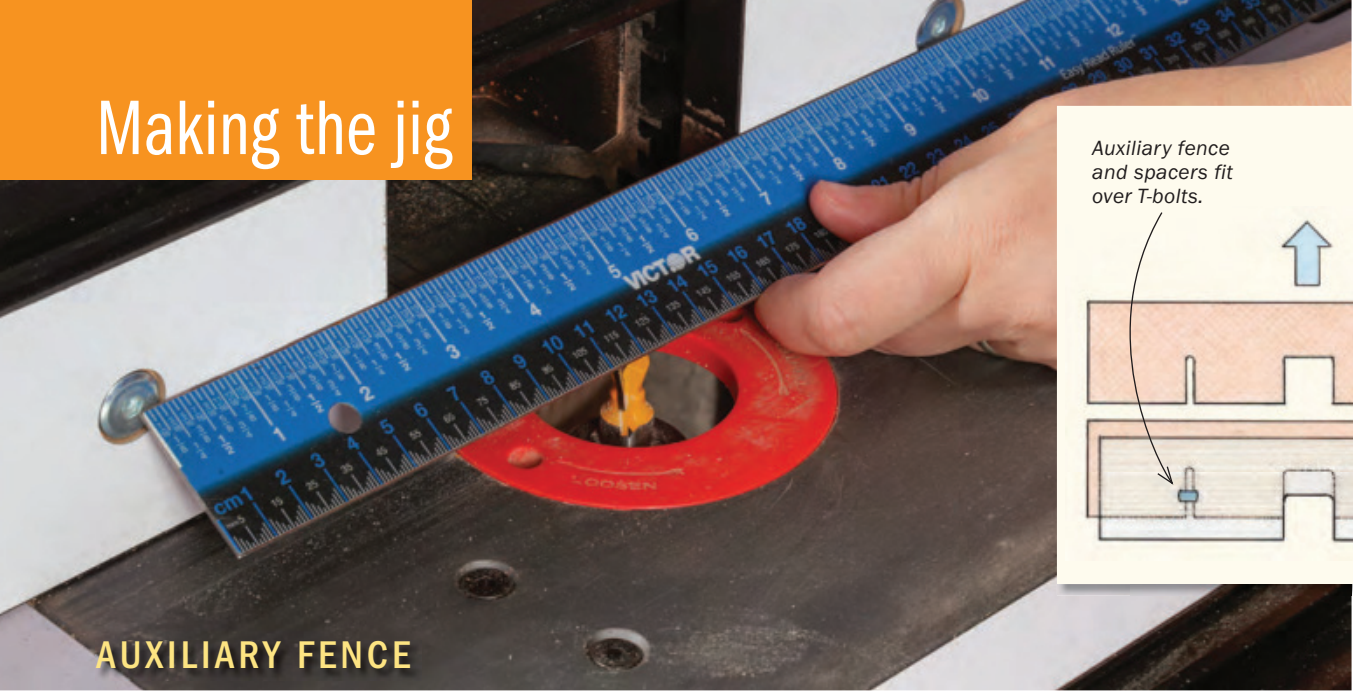
Subtracting shopmade spacers between passes lets you remove a set amount of material with just one setup. Size all parts to your specific router table.

From joinery to shaping, I use my router table a bunch. I've come to expect a lot from it, but I've also learned how to work efficiently within its limitations. For example, removing a lot of material in one pass with a router is a bad idea. Not only is it unsafe, but it can also damage your router, bits, and workpiece. To avoid these heavy cuts, it's typical to keep adjusting the fence away from the bit between passes. This often means making small and deliberate changes slowly to make sure you don't blow past your desired dimension. Plus, if you're measuring each time you move the fence, the routine can disrupt your workflow even more.

This is where an auxiliary fence with spacers comes in handy, allowing you to measure the distance between the fence and your bit just once. After that, all you need to do is remove a spacer between passes. The setup also guarantees safe, clean cuts. As a result, this jig, which is a breeze to make, will save plenty of time. It can also help in a pinch when you need to make a rabbet, groove, or dado bigger than your available bits.

Photos: Barry NM Dima; drawings: Vince Babak

Making the jig



Plunge cuts let you recess the T-bolt heads. *Measure the recess spacing from your fence (above), and make two short, shallow plunge cuts, using start and stop lines penciled on the fence to guide the cuts. The recesses need to be deep enough to allow the T-bolts to be inset from the surface (below).*

A breeze to build

The jig comprises a few simple elements. First, there's the auxiliary fence. This is what the stock rides against, so I make it from melamine. Second are the spacers. You don't want these thicker than half the diameter of the bit's shank. I typically use ½-in.-shank bits, so ¼-in.-thick MDF works great. Having some ⅛-in. spacers is nice for smaller bits, as well as for overall versatility. I also like to resaw extrathin spacers, about 1/32 in. thick or so, for when I want to use lighter cuts for a superior finish.

Finally, there are the T-bolts and knobs, which secure the auxiliary fence and

Drill for the T-bolts. *Eyeball this hole so it's roughly centered in the recess. Size the bit to your bolt.*

The opening should fit your biggest bits. *You will most likely use this auxiliary fence with large router bits, so use your largest bits, both in width and height, as a guide for laying out this opening.*

Cut out the opening after drilling at the corners. *Freehand cuts at the bandsaw make quick work of the opening. Drilling at the corners lets you navigate the turn with the bandsaw blade much more easily.*

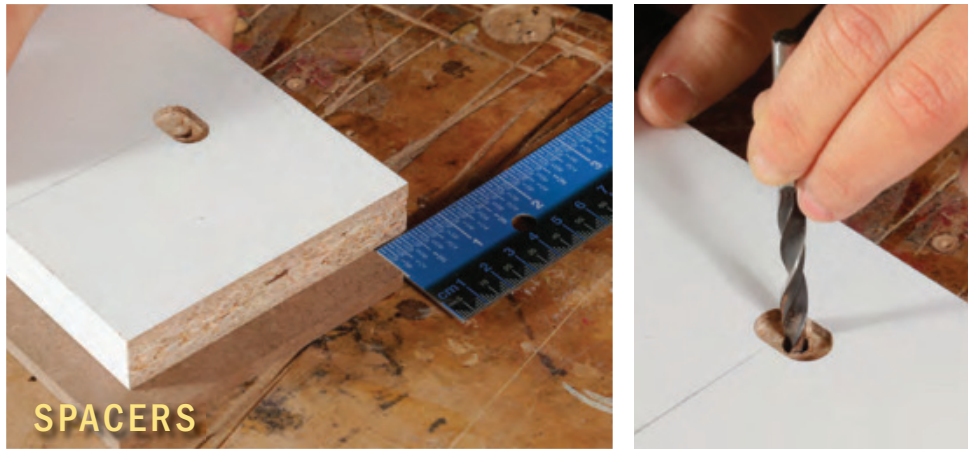
spacers to the main fence. These should be long enough to extend through both fences and the spacers while still having enough length left over for the knobs to engage the threads.

The auxiliary fence and spacers should be built to fit your particular router table. When sizing the auxiliary fence, simply rip the melamine to the height of your main fence. The length of the auxiliary fence involves a little more thought. I mount it (and the spacers) using only two T-bolts, one on either side of the cutter, and I don't want it so long that it will bow if it is not supported by more bolts. So, to determine the length, I open the main fence all the way and line up the melamine so that it extends past the bolts by about 3½ in. on either side. Then I cut it to that length.

Rip the spacers to the same width as the auxiliary fence, but crosscut them slightly longer. This will make them easier to install and remove when you use the jig.

Next, locate the holes for the T-bolts. Measure the center-to-center dimension between the two bolts on the main fence and transfer that to the auxiliary fence and the spacers. Since the spacers are longer than the auxiliary fence, mark your pieces based on a centerline. For example, if the bolts are 10 in. apart center-to-center, make your marks 5 in. on either side of the centerline. Also use the main fence to determine the height of these holes on the auxiliary fence.

The T-bolts' heads need to be recessed in the auxiliary fence so they don't interfere with feeding the stock. So, before I



Drill bolt holes on spacers lower than on the auxiliary fence. *Making the holes lower will leave a slight gap underneath a spacer when it is installed, so it's easier to remove. Use the drill bit you used on the auxiliary fence to mark the spacer (right).*

Finish the spacers at the bandsaw. *After drilling the bolt holes, turn them into slots at the bandsaw. The slots will allow you to slide the spacer over the bolts to insert or remove it. Having drilled out the corners of the bit opening, Hannah bandsaws it to final shape too.*

Using the jig

Remove the fence's existing bolts nearest the bit. *The auxiliary fence and spacers will mount to these holes, and the existing bolts are likely too short.*

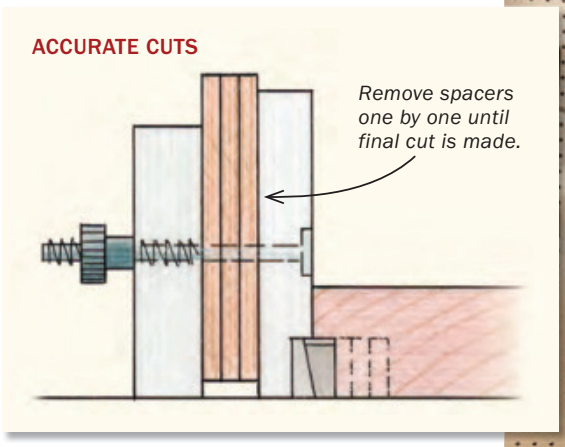
Install the auxiliary fence and long T-bolts. *Don't tighten the knobs yet. Rather, leave space so you can install spacers later before cinching down the bolts.*

Move the fence to the width of the joint without spacers in place. *Spin the bit by hand to make sure the cutter just grazes the square's head. Lock the fence in place. Here, Hannah is setting up for a 1-in.-wide cut.*

drill for the T-bolts, I plunge-cut short, shallow grooves on the router table to fit the heads. After that, drill through-holes for the bolts.

You can take a few steps to make the spacers easy to add to and remove from the auxiliary fence. First, drill the bolt hole about ½ in. lower, which will leave a slight gap underneath the spacers when they're installed. This gap will make them easier to lift up and remove. Second, for a bit of wiggle room, the spacers' hole should be larger than the diameter of the T-bolt. After drilling these holes, remove the waste

Add the spacers. *For safe cutting, it's important to install the spacers first and remove them between passes. If you do the reverse, you greatly risk a dangerous climb cut.*



below them at the bandsaw, creating a slot that will slide over the T-bolts.

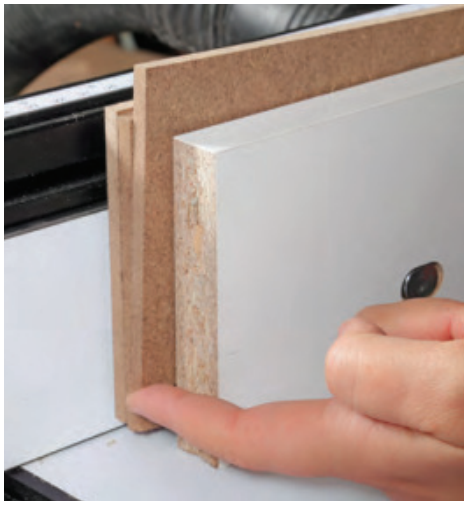
Now that the auxiliary fence and spacers can be attached, you need to make room for the router bit. You will most likely be using this jig with large router bits, so use your biggest ones to lay out this opening in the auxiliary fence and spacers. To easily cut out the opening, drill out the corners at the drill press, then clear out the waste at the bandsaw.

As a last step, I put a very slight roundover on the opening's outfeed side to prevent workpieces from getting caught on it.

Tips for use

Using the jig may be easier than building it. You simply install the auxiliary fence, lock the main fence to the final width of the joint, and add the necessary spacers. Then, just remove them between passes.

Take the first pass. *It's OK if this pass is lighter than the rest, since it's better to add too many spacers than use too few. A push pad helps Hannah apply pressure and keep her fingers away from the cutter as the wood passes over the bit.*



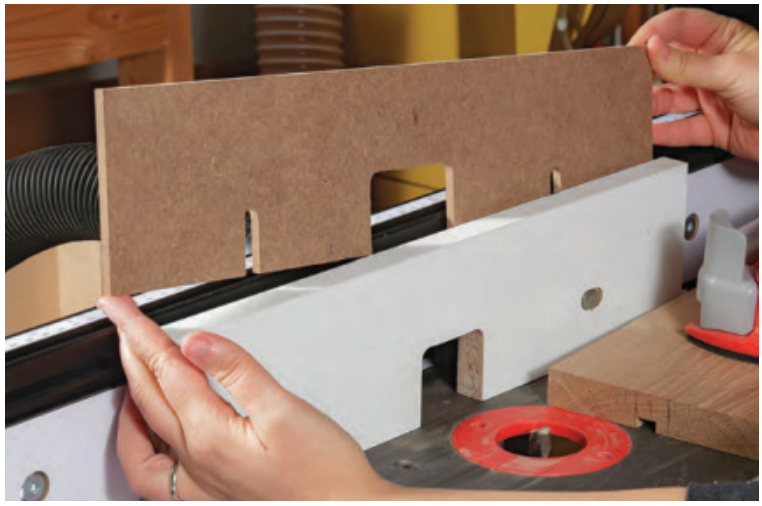
Remove a spacer after each pass. *Here you see why Hannah makes the spacers longer and mounts them higher than the auxiliary fence: There's plenty of room to lever them out.*

Finish the rabbet with no spacers. *Because a lot of stock has been removed, it's vital to keep the workpiece tight to the fence and apply more pressure over the table than the bit to avoid tipping the stock into the cutter. The result should be a flat, square, even rabbet.*

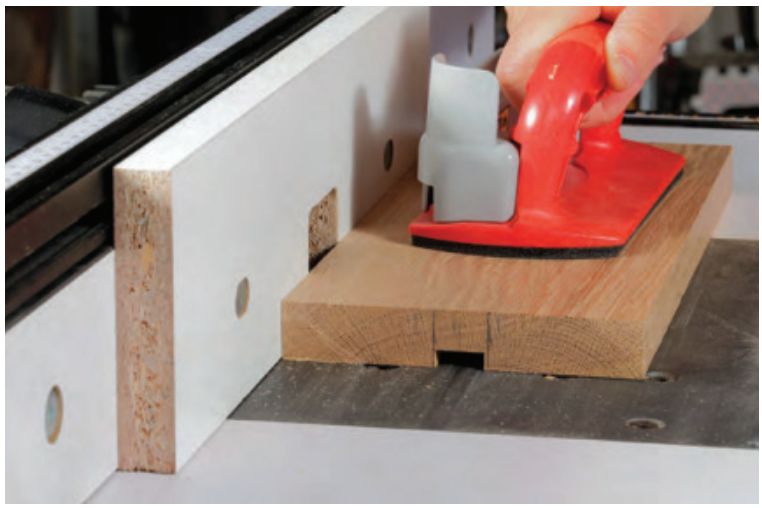
Using the jig continued

GROOVES AND DADOES

Add the spacers and make the first cut. *Dialing in the fence and spacers is the same as with the rabbet: Move the fence to the near shoulder of the cut, and add spacers until you're at the far shoulder.*



Remove a spacer before the next cut. *The spacers should not be thicker than half the diameter of your router bit's shank. Because she's using a bit with a ½-in. shank, Hannah is using ¼-in.-thick spacers.*



Keep pressure over the cut during the last pass. *Because there's wood supporting both sides of the joint, Hannah can maintain pressure right over the cutter, ensuring a flat bottom.*

Before getting into the nitty-gritty, it's worth noting that you add all the spacers before cutting, and then remove them as you go. This is for safety purposes, since it guarantees you're feeding against the rotation of the bit every time. If you add spacers between passes, you risk a dangerous climb cut, which can yank the workpiece out of your hands and your fingers toward the spinning bit.

To use the jig, start by installing the auxiliary fence. You'll need to remove the two existing screws in the fence in order to exchange them with the T-bolts. Push the auxiliary fence tight to the main fence, but don't cinch down the T-bolts yet, since you'll add the spacers soon.

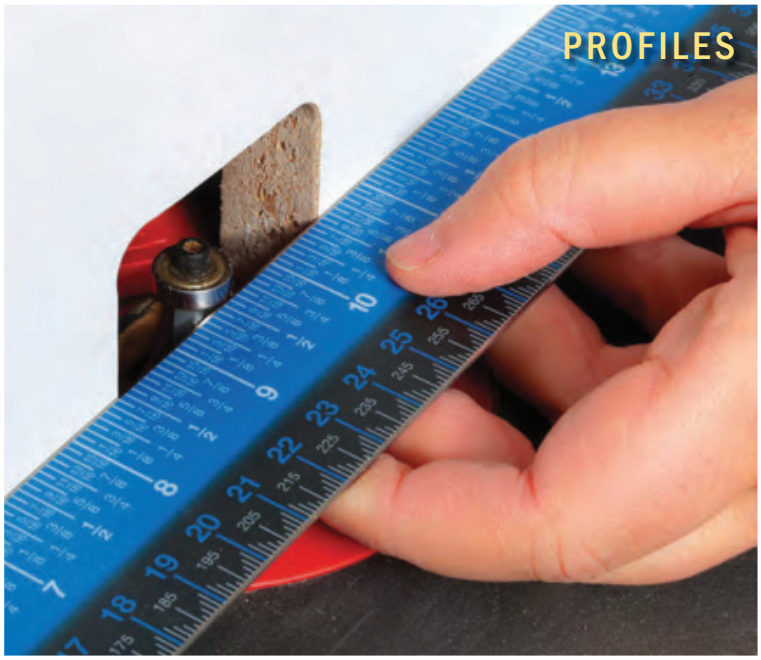
Lock down the main fence with the auxiliary fence positioned to take the last pass of your cut. This is easy to do with a combination square set to the width of the joint. For accuracy, spin the bit to make sure only the tip of the cutter is touching the square's body before locking the main fence where the square's ruler just touches the auxiliary fence. Now you can add the spacers you need and tighten the T-bolts on the auxiliary fence.

That's it for setup and measuring. Routing is easy. Make your first cut, and then keep removing spacers one by one between cuts until there are no more spacers

left. The accuracy and efficiency is guaranteed.

With large profiling bits, which are typically used to create show surfaces, it is preferable to take a very light final pass, since it will yield the cleanest result. To do this, make sure the last spacer is thin, like ⅛-in. plywood, or, for even thinner options and more versatility, something you've resawed yourself. I aim for 1/32 in. thick. It's not worth risking large tearout on a final surface, which can happen with heavy cuts. If the stock demands lighter cuts throughout, I won't hesitate to use thin spacers for more than just the final cut, too. □

Tamar Hannah runs 3x3 Custom, a YouTube-based woodworking business.



Align the auxiliary fence with the bearing. *This ensures your final pass will be in line with the bearing, which aids both safety and accuracy.*

Make your own spacers. *While MDF is a convenient option, sometimes it's wise to take the time to make thin wooden spacers. This is particularly true with profiles, where the routed surface is a show surface. In these instances, Hannah resaws a 1/32-in.-thick hardwood.*

The last spacer should be thin when routing profiles. *No matter how many spacers you start with, be sure to use a thin one for the final pass. You want to leave very little material for the last, spacer-less pass.*

The final pass is a light, clean cut. *Because only 1/32 in. of wood was left, Hannah can easily produce burn-free, chatter-free profiles.*

Heirloom Box

Make drawers with uninterrupted burl and banding

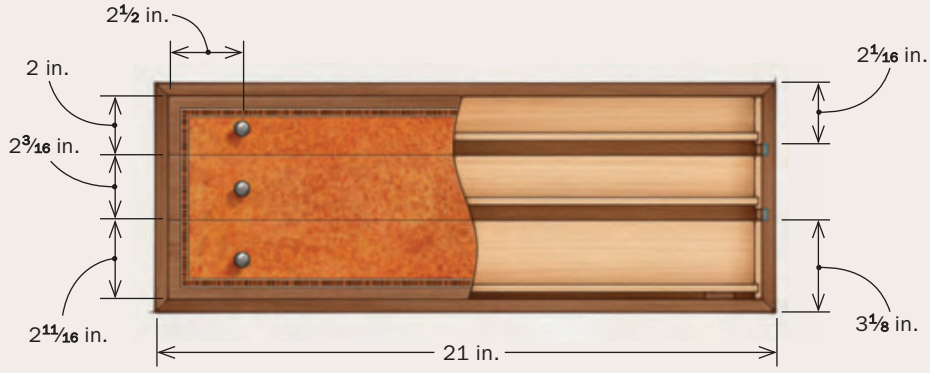
BY PETE MICHELINIE

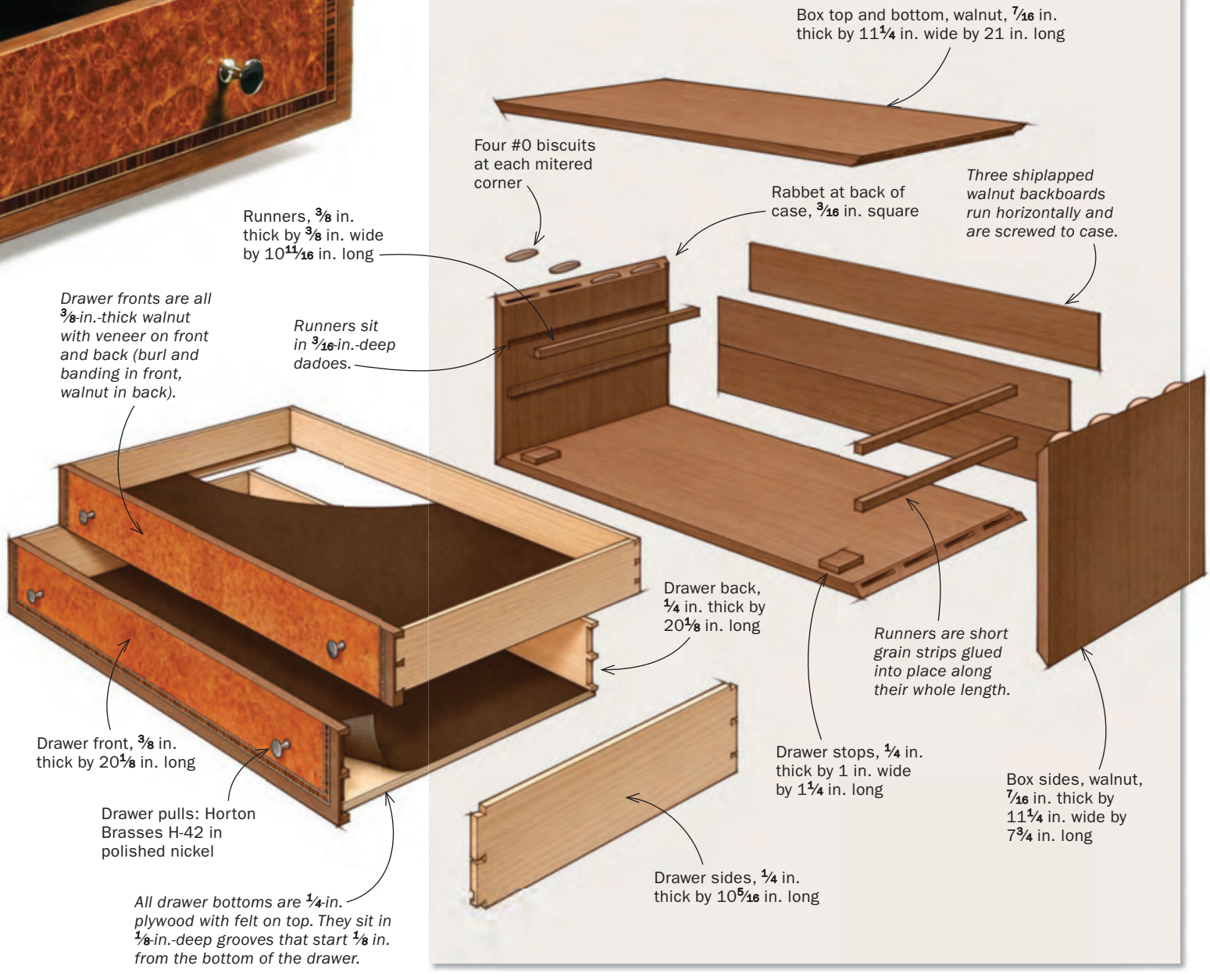
This piece began with an itch to make a small case of drawers whose fronts would be the focal point. A field of amboyna burl veneer (my nod to the French Art Deco designer Émile-Jacques Ruhlmann) surrounded by kingwood crossbanding and a perimeter frame of walnut veneer do the job wonderfully. To simplify making the drawer fronts, I veneered and banded one large solid walnut panel and ripped the fronts from that. Drawer dividers would have interrupted the fronts' flow, so I dispensed with them. Instead I designed the top two drawer fronts to extend below the drawer sides. That filled the space created by the runners and allowed the

Photo, this page: Michael Pekovich; drawings: Christopher Mills

LIPPED DRAWERS MAINTAIN THE GRAIN MATCH

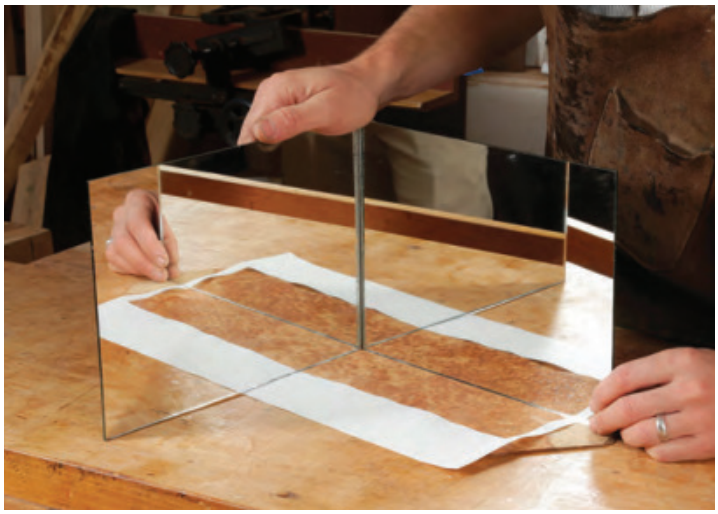
To keep the veneer pattern of the drawer fronts uninterrupted, the design dispenses with drawer dividers. The fronts of the top two drawers extend below their sides and the runners double as stops.





Veneer the panel

To create continuous grain across the drawer fronts, veneer them as one panel.



Hinged mirrors help you find the best pattern. *Michelinie uses a four-way book-match on this panel. To locate where to cut the veneer sheets, he uses two mirrors hinged together with tape, along with a sheet of paper with a cutout a quarter the size of the full panel.*

runners to act as drawer stops. The bottom drawer rides on the case bottom.

The box itself is fairly simple to build, so I will focus on making the panel that forms the drawer fronts. To learn more about the box construction, check out FineWoodworking.com/291.

3 drawer fronts, 1 panel

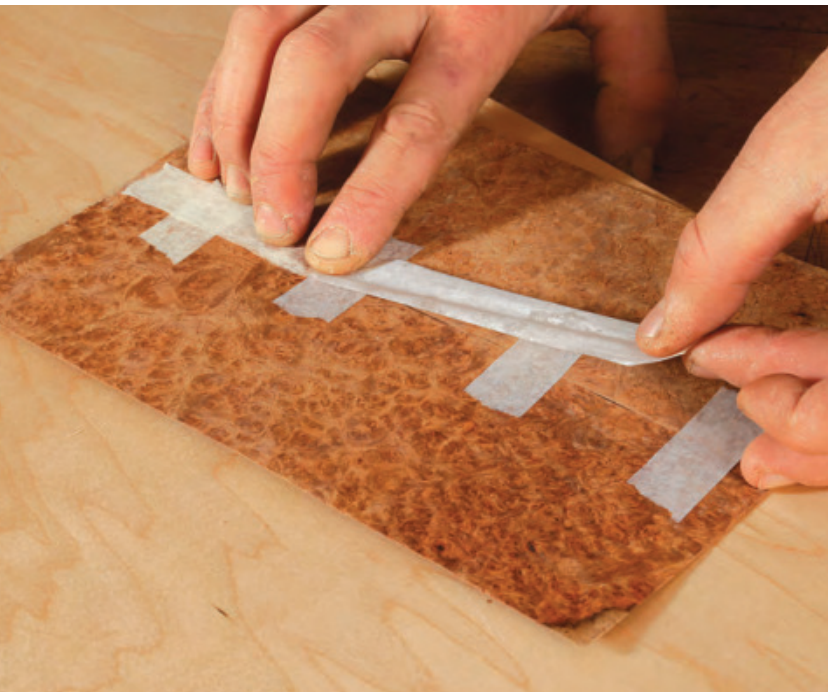
Making the drawer fronts as one panel and then ripping them free allows for a really clean, dynamic design, but it also requires some forethought. Because the fronts are veneered and inlaid as one piece, then ripped into three separate boards, it's crucial when sizing the panel to include enough width for two extra kerfs. You'll also want to add ⅛ in. extra all around so you can fit the panel to the carcase before ripping it apart.

For the field I prefer a veneer pattern with visual outward movement. Using four successive sheets from a flitch of veneer, you can make a four-way book-match that will suit this shape well.

Once you've marked your desired book-match, gang up

Saw out the burl pieces with a veneer saw and a jointed batten. *With four sequentially cut sheets stacked together, saw just outside of your lines. The batten both guides the saw and helps stabilize the veneer.*

Joint two mating edges with a sanding block. *Do this with all four pieces of veneer clamped near their edges and between cauls. Check your work with a straightedge to ensure you have a good glue surface.*



Arrange the panel using veneer tape. *To hold the veneer in place during the glue-up later, tape the parts in place. First tape across and along the right and left halves, pulling the tape taut as you go (left). After that, joint their ends using cauls and a sanding block. Finish the panel by joining the two matching ends (above).*

Photos, except where noted: Barry NM Dima

Trace and cut out the walnut border. *The amboyna burl is surrounded by walnut veneer. Cut a window in the walnut so the taped-up burl fits inside.*

Glue up the burl and window. *The joint between the walnut and the burl doesn't need to be neat since the inlaid cross-banding will fill that space. After taping in the burl, cut the walnut to the size of the substrate.*

Substrate needs a backer. *Because Michelinie wants to even the stresses on both faces of the substrate, he veneers it front and back. The backer veneer is simply a sheet of walnut (left). Be careful to align your front veneer with the edges of the substrate so the book-match remains centered and straight (above).*

all four pieces on the bench. Then hold a heavy caul on top and use a sharp veneer saw to slice through all four veneers. Be careful not to chip out the corners as you finish the cut. You may need to clamp the veneers between two cauls and sand mating edges straight to get a good glue joint.

Next create a wide border around the burl by taping it inside a window of walnut veneer. You'll inlay the cross-banding later.

The sheet's now ready to be glued to the solid walnut substrate. I use Unibond 1 and a vacuum bag for this glue-up. I also glue a sheet of walnut veneer to the back of the core to keep it balanced and free from cup and warp.

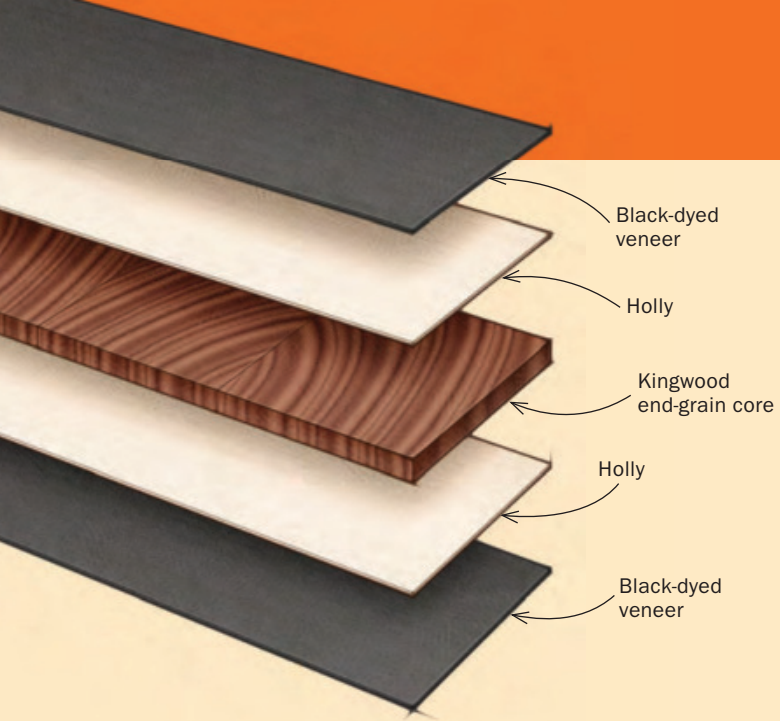
Once the glue has dried, plane one long edge clean. Then trim the panel to length and width, being sure to keep the book-match centered. The panel's length should allow it to fit snugly in the carcase, but its width should be over by two tablesaw kerfs.

Cross-banding

While the burl is the star of the show, the inlaid cross-banding helps set the stage by creating an attractive border around it.

The first step is to create the cross-banding. For that, check out "How to make banding," on p. 50.

Leave it in the vacuum bag overnight. *Michelinie uses a vacuum bag to glue up the panel. He uses blue tape to hold the veneer to the substrate, preventing either from sliding around.*



How to make banding

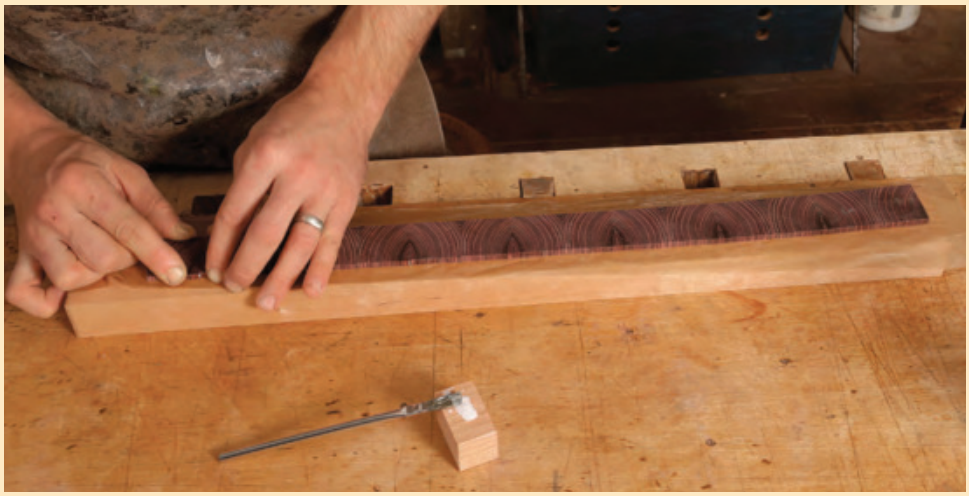
If you've never made banding before, this is a great pattern to start with. For one, the design is versatile. It also incorporates skills used in other patterns, such as working with end-grain parts to yield a balanced pattern, effectively gluing up a laminated brick, and safely ripping the brick into thin strips at the tablesaw. This pattern uses kingwood for its central strip, and holly and black-dyed veneers for the thinner outer strips. The white and black highlight the kingwood nicely.

Start by milling the cross-banding's central strip. I went with kingwood, of the rosewood family, because of its variegated color. I milled up a stick of kingwood 1¼ in. sq. by 12 in. long, and then I crosscut slices from it. The thickness of the slices determines the width of the cross-banding's core. For this banding, that's 3/16 in. Use a clean and sharp sawblade for best results.

Lay these end-grain squares side to side, being sure to keep them oriented and in order. Flip every other piece edge for edge,

GLUE UP BEFORE RIPPING APART

Just a little glue on the core's end-grain squares. *After slicing squares from a long piece of kingwood, Michelinie glues them together. A thin, translucent layer is perfect.*



Assemble the squares edge to edge using rub joints. *Glue up the squares sequentially, flipping every other piece to balance the grain visually. A rub joint will suffice for now. The real strength comes from the outer layers of veneer in the next step.*

Glue on the white and black veneer strips using waxed paper and thick cauls. *After applying glue to the strips of light and dark veneer, place them onto the end-grain core.*

Glue up the brick using thick cauls. *The cauls ensure the clamps apply pressure across the whole surface. Waxed paper on both sides of the brick keeps glue from sticking to the cauls.*

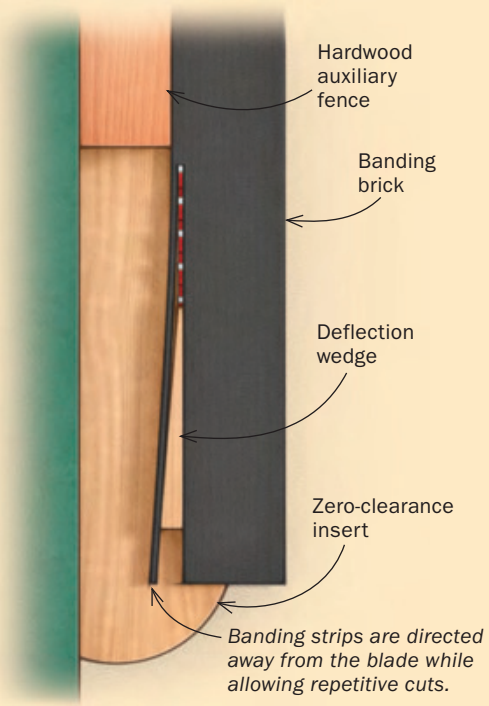
Joint an edge. *This will be your reference edge at the tablesaw, so be sure to plane a flat, square edge. Because the layers of veneer are essentially thin boards, you still need to be mindful of grain direction.*

like a book-match. This will help balance it visually. On a strip of waxed paper, glue these squares to each other, edge to edge, using a little yellow glue and a rub joint. Stop once you have a length slightly greater than the longest single run of banding.

Now comes the intermediary step: laminating the brick. Carefully sandwich this delicate length of end-grain squares between two pieces of holly and black-dyed poplar veneers. I prefer to have the holly touching the kingwood and the black poplar on the outside. Glue up this brick using yellow glue and make sure to clamp well using cauls. You don't want variation in its thickness. Once it has dried, handplane the edges flat and admire the first view of your handmade cross-banding.

Head over to the tablesaw and, using an auxiliary fence and an insert plate with a deflection wedge, cut the banding. This setup directs the thin strips away from the blade while also allowing you to make repetitive cuts. Use a thin-kerf blade to minimize waste, and set your fence to give you banding that is between 1/32 in. and 1/16 in. thick.

—P. M.



Use an auxiliary fence and deflection wedge to rip the banding. *This setup directs the newly cut banding safely away from the blade while providing consistent thin cuts. The auxiliary fence is simply a piece of hardwood clamped to the rip fence (top left). Position it just ahead of the blade, and aim for a thickness of two sheets of veneer (top). The deflection wedge is a triangular piece glued to a zero-clearance insert.*

Let 'em rip. *To minimize waste, Michelinie uses a thin-kerf blade when cutting the banding strips, specifically a 60-tooth, 7¼-in. Skilsaw blade.*

Set the depth of the cutting gauge blade just beyond the thickness of the banding. *To ensure he scribes a deep-enough line, Michelinie adjusts the blade on his cutting gauge so its tip projects slightly past the thickness of the banding.*

Scribe the outer wall of the dadoes and grooves. *Keep the cutting gauge fence tight to the workpiece, and take several light passes instead of trying to cut to depth on the first shot. These are stopped cuts; be careful not to cut past the point where the scribe lines meet.*

Use the banding to set the cutting gauge to scribe the inner wall. *This allows you to get the exact setting without measuring. Michelinie lines up the banding with the outer wall, knifes a short line against its other edge (left), and uses that knife line to reset his cutting gauge fence. From there, he scores the inner walls.*

To install the banding, I rely on simple, sharp hand tools, namely my cutting gauge, a small router plane, and a chisel.

The first step is to score the walls of the grooves that will house the banding. My gauge has a removable cutter, which I flip around for each wall to keep the bevel on the waste side, ensuring crisp side walls.

Remove the waste very carefully with a small router plane set to cut just shallower than the banding's thickness.

Miter the banding strips where they meet at the corners. To cut the 45° ends, I use a chisel and a guide block. The block has a rabbet underneath to secure the banding, and one end of it is cut to 45°.

To install the banding, glue it in place using thick cauls and plenty of clamps. Once the glue has dried, clean up the surface. Start with a scraper, and be cautious around the easily damaged burl. Finish with sandpaper.

Rip the fronts free

Once surface prep is done, take a deep breath, head on

Small router plane plows out the waste. *With a router plane set to just shy of the thickness of the banding, take light, controlled cuts, tipping into the cut to start. Michelinie begins by planing a section at the far end of the groove and works backward.*

Miter the banding in a rabbeted block. *The banding meets at 45° corners. Michelinie cuts these using a guide block that has a rabbet for the banding, letting him hold the thin, narrow strip in place. He starts with a heavy chop, and finishes with a light one.*

Set the banding in place to mark its length. *Don't miter all of the pieces at once. Instead, work your way around the panel, using the workpiece itself to mark your lengths.*

Clamps, cauls, and waxed paper. *Beefy cauls and plenty of clamps help guarantee the thin banding adheres to the panel. Michelinie uses waxed paper to protect the cauls from glue squeeze-out. Once the glue has dried, clean up the surface. A light touch with a sharp scraper works well for the banding, but don't be too aggressive with the burl.*

over to the tablesaw, and rip the panel into three pieces. Because the box's runners act as hidden stops, the widths of your drawer fronts will be based on where you placed the runners. The top two drawer fronts overhang their runners; the lowest drawer just rides on the bottom of the case.

With the fronts in hand, clean up their edges and build three drawers for them. If all goes well and the fitting is done with care, you'll end up with a clean view of your book-matched work of art. □

Pete Michelinie is a furniture maker in South Pomfret, Vt.

Rip the drawer fronts free. *The width of each cut depends on where the runners are. To make sure he nails his measurements, Michelinie keeps the box carcase on the side feed table, where he can quickly verify dimensions. Use the thinnest blade your saw can handle to maintain the grain's continuity as much as possible.*

Anchor Your Work to the Wall

Choosing the right fasteners for drywall, plaster, and masonry

BY MARIO RODRIGUEZ

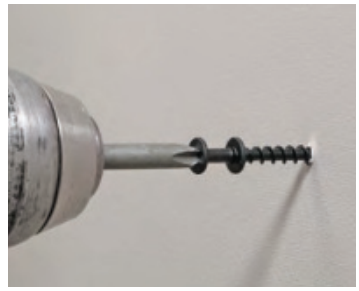
You've finished building your cabinet, mirror, picture frame, or shelf. Now you just need to hang it. If you can hit studs with every screw, you're in good shape. But if not, you'll need wall anchors, those little devices you set into the wall to receive screws or bolts. There's a plethora of anchors out there. Which type is best in your case? That will depend on the size and weight of the piece you're hanging and the composition of the wall you're hanging it on. I've gathered a wide range of anchors, and I'll describe how they work, what situations and wall types they're suited for, and how to install them.

One note before you get to the point of selecting anchors: Be sure to build in some means to easily install or hang your piece. For a cabinet that will carry a lot of weight or see heavy use, you might consider using a thicker back panel, or you could incorporate an inset top rail to keep the piece square and to better support your fasteners. Using a French cleat (see the photo on this page) adds some time to your build but provides solid attachment, makes the cabinet easily removable, and keeps you from having to drive screws through the cabinet from inside. If you're hanging a stock cabinet (obtained from a box store or cabinet wholesaler), inspect its construction and, if need be, add any cleats, rails, or corner blocks that will strengthen the piece and ensure an easier installation.

Mario Rodriguez makes furniture and teaches woodworking in Philadelphia.

SOMETIMES JUST A SCREW WILL DO

For some light-duty applications, like smaller picture frames or a light display shelf, you can actually use coarse-threaded screws designed to be driven into drywall without an anchor or a pilot hole. They're rated to hold as much weight as plastic sleeve anchors, and they have the advantage of leaving a relatively small hole when you extract them. Lee Valley sells Wall Dog Screws (1), which have very nice bite in drywall and are rated at 60 lb.; they can also be used in masonry (or wood) if you drill a pilot hole. Bear Claw Screws (2), also available from Lee Valley, have a flange below the head, making them well-suited for frames or light mirrors that you are hanging with picture wire. They're rated at 30 lb. in drywall.



SELF-DRILLING ANCHORS

You drive these clever anchors into drywall with a screwdriver, no predrilling required. I like their speed and ease of use. Their coarse threads really bite into the wallboard, but they are easily removed and leave little damage. Some have a solid shank so that after a screw is driven into them they simply expand somewhat; others are scored along the shank so the tip splits open behind the drywall for greater holding power.

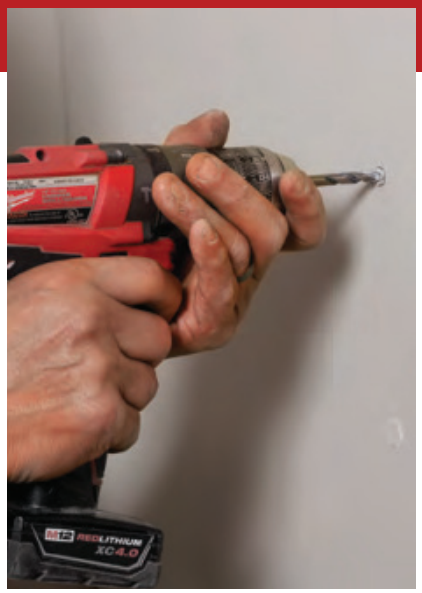
The EZ Ancor Drywall Anchor (1), rated for 50 lb., has a solid shank that expands as the screw is driven; Toggler Self-Drilling Drywall Anchors (2), rated for 65 lb., scissor open when the screw is driven; EZ Ancor zinc drywall anchors (3), rated for 50 lb., can self-drill even if you happen to hit wood behind the drywall; EZ Ancor Drywall and Stud Anchors (4), rated for 50 lb., have a coarsely threaded shank for drywall and a finely threaded tip that enables it to grip a stud behind the drywall.

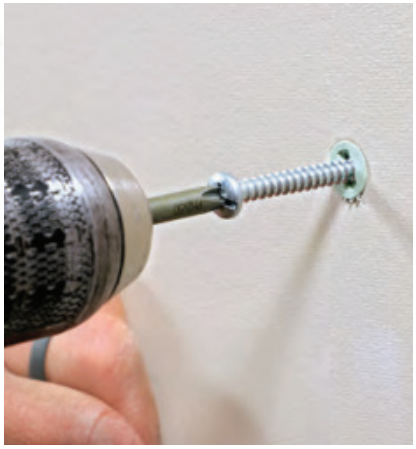
Expanding anchors

PLASTIC SLEEVE ANCHORS

These anchors are suitable for light-duty tasks like hanging pictures, curtain rods, small shelves, towel rods, and paper holders. You predrill for them, and they work in plaster-and-lath walls and masonry as well as in drywall. Some merely expand when the screw is driven in; others, like the Cobra Triple Grip, have wings that will flip out behind the drywall. Some of the smaller ones require only a small predrilled hole and therefore very little repair when they're removed. Removing the ones with wings can be a chore, and sometimes I just drive them farther into the wall and spackle over the hole.

The Cobra Triple Grip (1), intended for all wall types, is rated for 46–61 lb. in drywall, 200–225 lb. in masonry; Everbilt Ribbed Plastic Anchors (2 and 3), which come in kits of assorted sizes, are rated for 20–25 lb. in drywall, 155–435 lb. in concrete; Duo Power plastic anchors (4) elbow open and are rated for 45 lb.



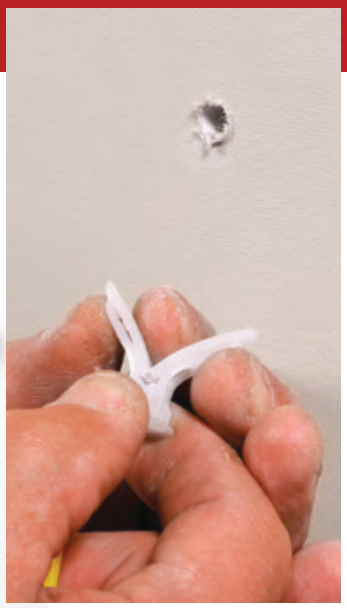


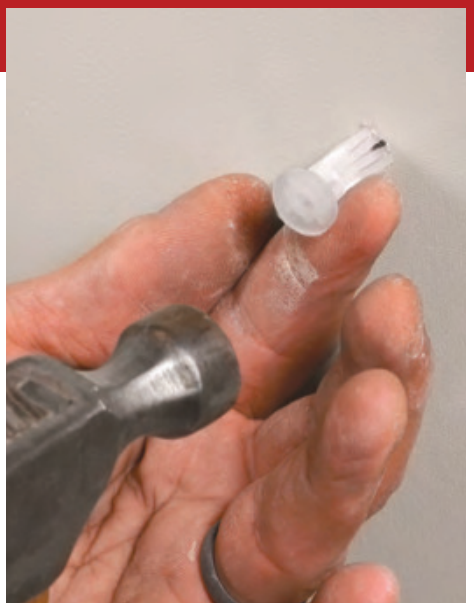
MOLLY BOLTS

Molly bolts have a slotted sleeve that will spread open behind a hollow wall when you tighten the machine-threaded screw, creating powerful purchase. They work best with drywall but can also be used in a plaster-and-lath wall. After you predrill and insert the anchor, tapping the sleeve's flange tight to the wall, you begin driving the screw. Small spurs beneath the flange prevent the anchor from spinning in the hole before the sleeve expands. These Midwest Hollow Wall Anchors are rated for 100 lb.

Photos: Jonathan Binzen (action), Michael Pekovich (fasteners)

BUTTERFLY ANCHORS





Butterfly anchors have wings that spread open behind a sheetrock wall. They come in different sizes to suit drywall of various thicknesses. The standard type, like the Hillman Pop Toggle (1), rated for 80 lb., is only suitable with drywall. It requires a large predrilled hole and won't hold well if the wings don't deploy behind the wall. But the Toggler Alligator Concrete and Drywall Anchor (2), while it has wings that will open behind drywall, has a slimmer shank that will expand or scissor open in a predrilled hole, making it suitable for use in masonry walls as well. They are rated for 70 lb. in drywall and 675 lb. in concrete.

Setting tool for molly bolts. *The old-style molly has a newfangled partner. Slip the bolt into the gun's tip and the anchor into the clearance hole. Pull the trigger and the anchor's legs expand, locking it tight. Very handy for setting a lot of mollys.*

Squeeze the wings and hammer the anchor home. *After predrilling, fold the anchor's wings together and push it into the hole, then tap it home with a hammer until the flange is flush with the wall surface. With the anchor in place, use the supplied plastic pusher to pop open the wings. Then drive the screw.*

Toggle anchors

TOGGLE BOLTS

When I need to secure larger cabinets or other wooden pieces to a drywall or plaster wall and there is no stud accessible, **toggle bolts** are the anchors I most often turn to. Composed of a bolt and a threaded, spring-loaded toggle, they're simple and dependable. They need a hollow space behind the wall, so they won't work in brick, but they do fine with concrete block. Their long screws make them very adjustable, so they're great for plaster-and-lath walls where wall thickness can be inconsistent and hard to determine, often varying significantly on the same wall.

After you've drilled through the wall, the inserted toggle must clear the wall material far enough to spring open; they won't work otherwise, so make sure to use a long enough screw to get the toggle clear of the wall. Properly installed, these anchors have a very positive feel. Once the screws are tightened, there is little doubt that the cabinet they are holding is secure and strong. The Everbilt toggle bolt above is rated for 95 lb. in drywall, 90 lb. in hollow block.

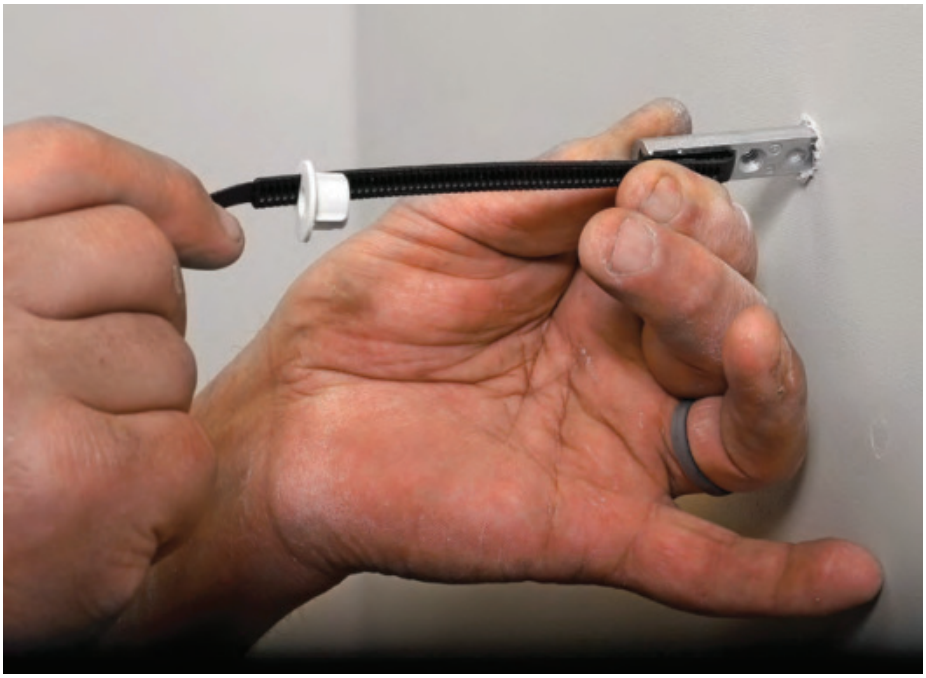
SELF-DRILLING TOGGLE

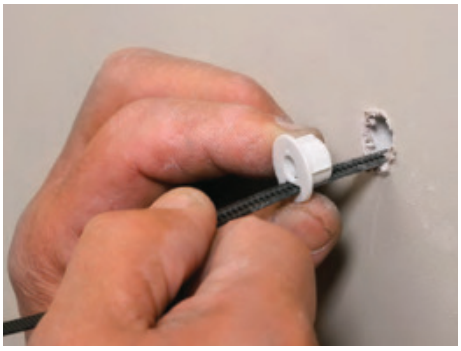
The Cobra Driller Toggle is a very clever hybrid anchor, marrying self-drilling capability with toggle action. The metal toggle, which is hinged to a split plastic shaft, is threaded at the tip. Using a screwdriver, you drive this anchor in without predrilling; when the head nears the wall, two short wings on the plastic shaft pull it flush to the surface. Next you insert the machine screw. As you do, the screw pushes the toggle sideways until the threads on the screw engage the threads on the toggle. Then you tighten the screw until the toggle is firmly drawn to the back of the drywall. This anchor is rated for 100 lb. in drywall.

The Hillman Pull Toggle (1), with a spiked, solid metal toggle and a single pull strip, is rated for 120 lb. in drywall and 620 lb. in concrete block; the Cobra Flip Toggle (2), with a formed sheet metal toggle, is rated for 105 lb. in drywall and 435 lb. in block; the Toggler Snaptoggle (3) has two pull strips, both hinged to the toggle, and once you have inserted it you can use the strips to swivel the toggle so it is parallel to the back of the wall; it is rated 240 lb. in drywall and 800 lb. in concrete block.

PULL TOGGLES

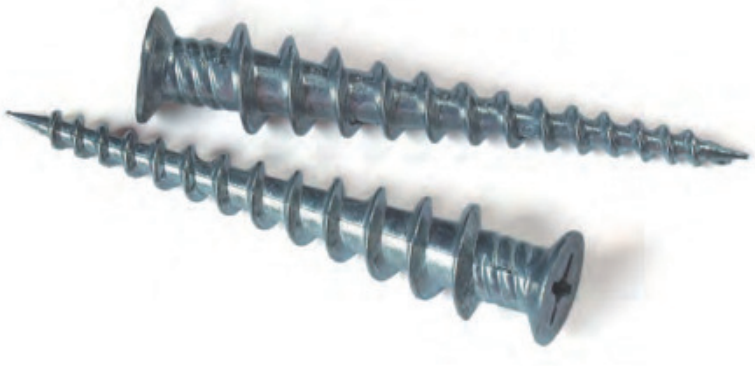
These are a new breed of toggle anchors that link a metal toggle with one or two ribbed plastic pull strips. After drilling a hole in a hollow wall, you insert the toggle and push it all the way through until it clears the hole. Next you pull on the strips until the toggle is crosswise and tight to the inside of the wall. Then, to keep the toggle in place, you slide a threaded plastic nut along the pull strip until it plugs into the hole you drilled. With the strips pulled tight, you bend them back and forth until they snap off flush with the nut. Now you can insert the machine screw; as the screw is tightened the toggle is pulled ever more firmly to the inside of the wall. These toggles will work with any hollow wall, from drywall and plaster to cinderblock.





Beyond drywall

SCREWS FOR METAL STUDS



Attaching woodwork to a sheetrock wall that has metal studs is not much different than doing so on a wall with wood studs. Any of the drywall anchors mentioned here will work between the studs. And if the stud is in the right place, you can drive a long, heavy screw directly into it. But if you want to create a particularly strong anchor point right on the steel studs themselves, you could try 1Shot steel stud anchors, which are rated for 300 lb. when driven into a steel stud. You can use them like a giant screw to attach a workpiece to the wall, or you can use them like an anchor, driving them flush to the drywall and hanging the workpiece using a #8 screw driven into the hollow shank of the 1Shot.

SCREWS FOR MASONRY

Tapcon screws, or blue screws, have become a dependable favorite of mine for installing woodwork on a concrete or masonry wall. They let you skip masonry anchors and the big holes they require. These screws need only a small pilot hole (made with a masonry bit and a hammer drill) before being driven into place. With their unique double-threading, they possess the ability to tap their own threads in concrete or brick, so they hold fast. I live in an old house that still has brick behind plaster-on-lath party walls. In the correct length, Tapcon screws allow me to go right past the plaster and lath and into solid brick. I've never had a blue screw strip or had its head snap off.

You can buy Buildex Tapcon Concrete Anchors in star drive or Phillips-head versions and they're available as a kit that comes with the correctly sized masonry bit.

EXPANDING MASONRY ANCHORS

Red Head Sleeve Anchors (1) have a threaded bolt in a metal sleeve. One end of the bolt is flared, so that when a nut is tightened on the other end the wedge expands the sleeve, locking it in the hole. Wedge anchors require a hole drilled slightly deeper than the length of the anchor. After you drill the hole with a masonry bit and hammer drill, be sure to vacuum out the brick or cinder dust. Then slide the anchor into the hole. Once it's seated, the threaded portion of the anchor, extending from the wall, receives a washer and nut to secure the woodwork to the wall. They're a little unsightly, but very strong. Once the anchor is fixed into the masonry, the woodwork can be easily attached, adjusted, or removed without compromising the seated anchor.

When you want to attach with screws or lag screws, use lead sleeve anchors. These old-style Everbilt soft lead lag sleeves (2) are studded with projections and built in two loosely connected halves, allowing them to expand and shift in shape to conform to a predrilled hole when the screw is driven home.

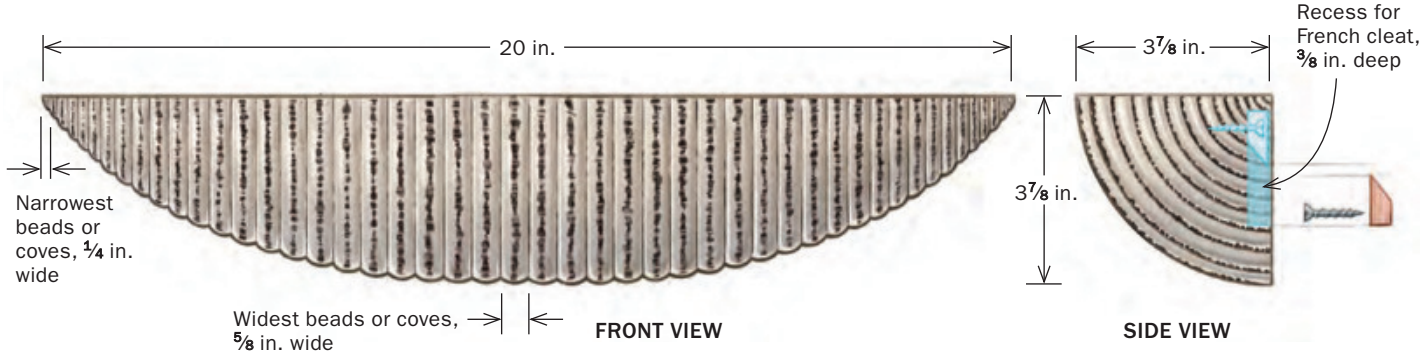
Floating Wall Shelf

Split turning techniques make a fun and functional shelf

BY MARK GARDNER

COVED OR BEADED SHELF

Gardner makes four of these display shelves at once on the lathe, gluing up a blank from four square pieces, turning it, and splitting it apart. He decorates them with coves, like the shelf above, or beads, like the shelves he turns in the article.



Photos: Jonathan Binzen; drawings: Derek Lavoie

A lathe might not be the first machine that comes to mind when you think about making a shelf. But the technique of gluing multiple pieces of wood into a blank with paper in the joints, turning the blank to shape, and then splitting it apart at the glue joints to create quarter-columns or half-section elements has been used for centuries for furniture and architectural details. I use the same technique to make my floating wall shelves. I often make these shelves of poplar, because it's inexpensive, turns easily, takes paint well, and is available in thick planks. But I've also made them from cherry and mahogany, and you could use pretty much any wood you want.

Mill and assemble the turning blanks

To make the big turning blank, I glue up four pieces of 16/4 poplar with ¾-in.-thick pieces of pine as filler; this creates a blank that yields four shelves. The lathe's drive center and live center leave their marks in the filler pieces instead of in the shelf wood. And when I split the forms apart, the soft pine filler protects the poplar shelf wood from damage.

Make the blank 2 in. longer than the finished shelf will be. Start by cutting the poplar pieces to length, and jointing two adjacent faces square to each other; these will be the glue faces. Next mill three pine filler pieces—two narrow ones and one wide one. And cut a strip of brown kraft paper to go in each glue joint.

The blank gets glued up in stages. Before you begin, assemble the blank dry and mark the layout.

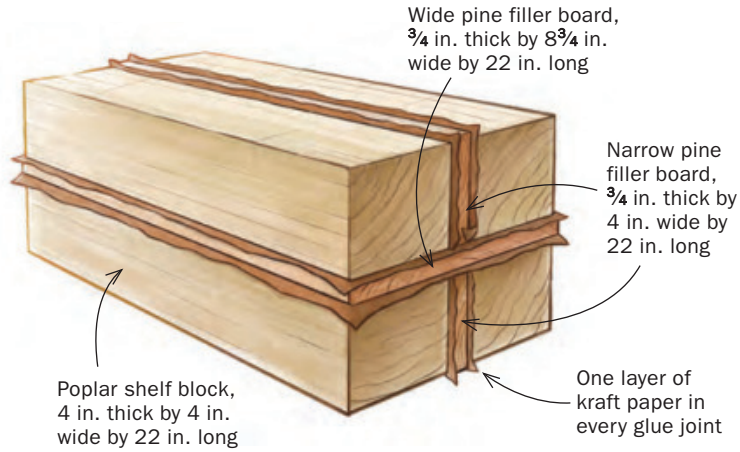
I use a brush or roller to evenly distribute the glue and I am not stingy with it. Coat one face of two poplar pieces, place a layer of kraft paper on each glued surface, and apply glue to the paper. Put the narrow pine board in between and clamp it all together. Do your best to keep the exposed jointed surfaces of the poplar and the edge of the pine filler piece in the same plane so it's easier to flatten that surface later. Glue up both halves of the blank and leave the assemblies in their clamps overnight, regardless of what it says on the glue bottle regarding cure time. You don't want the joints letting go while the blank is spinning on the lathe.

Next, remove the halves from their clamps and run them over the jointer to bring all three pieces into one plane. Then glue up the two halves with the wide pine filler board and kraft paper between them. Again, leave the assembly in the clamps overnight.

Bandsaw the blank, then turn it

When you get to the lathe, you'll start by turning the blank to a cylinder. To speed that process, first cut the

Glued-up turning blank



Glue up the big blank. *Gardner's turning blank, which yields four shelves, is assembled from 16/4 poplar and ¾-in.-thick pine. Each glue joint has a layer of kraft paper, which will enable him to knock the pieces apart after turning.*

Cutting corners. *To speed up the turning process, rip off the corners of the blank at the bandsaw with the table set at 45°.*

Online Extra

To see how Gardner makes a different shelf using the techniques outlined in this article, go to **FineWoodworking.com/291.**

Find the overall form

Start with a cylinder. *After turning the blank round with a large spindle-roughing gouge, mark its center point and the final length of the shelf. Then, with a ½-in. bowl gouge, turn the waste at the ends of the blank down to about 1½ in. dia.*

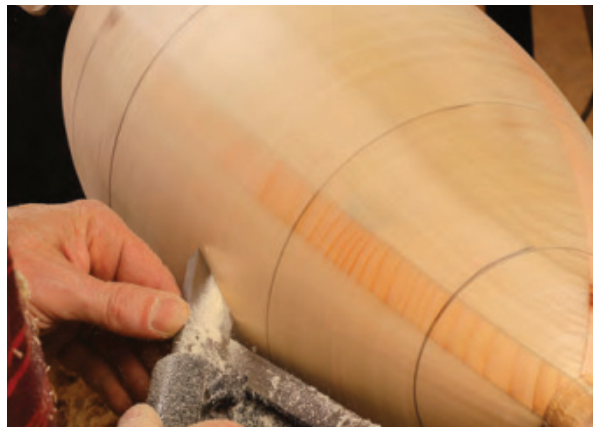
corners off the blank at the bandsaw with its table tilted 45°. Use a compass to lay out the largest circle you can on each end of the blank. Then use a combination square to lay out an octagon around the circle. Connect the points of the two octagons with lines along the length of the blank; they'll guide the bandsawing.

After bandsawing the blank, mount it on the lathe and use a spindle-roughing gouge to work it down from octagonal to cylindrical. Once the blank is round, mark a centerline and both end lines with a pencil. I use a ½-in. bowl gouge to turn the waste at either end down to roughly 1½ in. dia.

To create the overall football or pod shape, start with a roughing gouge and finish with a ½-in. spindle gouge. As you approach the final shape, pencil lines on either side of the centerline every 3 in. Using calipers, check the diameter at corresponding pairs of ref-

Approaching the pod. *Turn the cylinder to a pod, or football, shape, with a roughing gouge followed by a ½-in. spindle gouge.*

Mark and measure. *When the pod nears its final shape, pencil reference lines at the center point and at 3-in. intervals on either side of it. Then use turning calipers to compare the blank's diameter at corresponding pairs of reference lines.*



Fine-tune the surface. *Gardner achieves the steady sweep of the overall form using a shear scraper.*

Bring on the beads

Graduated layout. *Following marks on a plywood template, Gardner lays out the bead spacing. The beads graduate in size from the largest at the center to the smallest at the ends.*

Each bead starts with two grooves. *To turn a bead, first make V-cuts centered on the lines on each side of the bead. Gardner uses a ⅜-in. spindle gouge for the larger beads, and a ¼-in. gouge for the smallest ones.*

erence lines to determine that the form is symmetrical. Now reduce the 1½-in.-dia. waste ends to about ¾ in. dia., so they are just the pine filler.

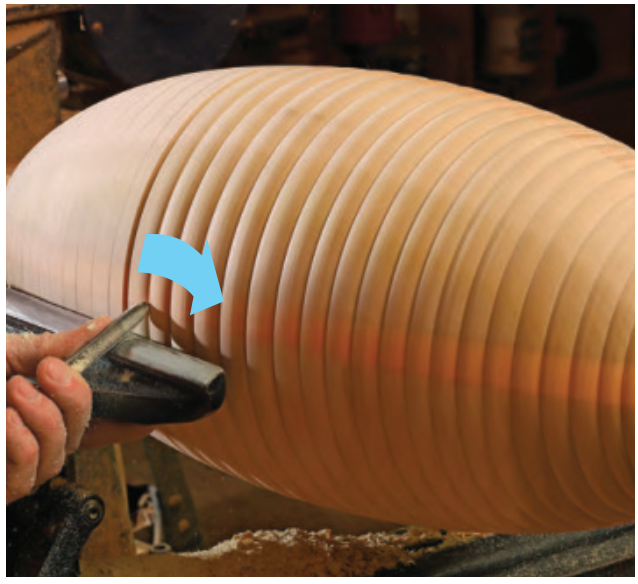
I fine-tune the pod shape with a shear scraper. Then I lay out lines to turn either beads or coves. Here I've chosen beads, and I used ⅜-in. and ¼-in. spindle gouges to turn them. I graduate the size of the beads or coves: They're larger at the center of the form and get smaller toward the ends. When the beads are finished, I sand out any tool marks.

Splitting up

To split the blank, remove it from the lathe and rest it on a couple of sandbags on the workbench (I made some from the legs of old blue jeans, an idea I got from a mentor of mine, Stoney Lamar). After cutting off the waste bits at either end of the blank with a handsaw, split the blank with a wide, heavy paint scraper (not a putty knife). It is thin enough to enter the joint easily but stiff enough to pry the pieces apart. I've found that using a chisel for this task can damage the pieces, especially if a filler piece isn't used. Place the beveled side of the scraper toward the pine filler. Give the handle several good knocks with a mallet and the piece should split on the paper in the joint. I usually have a wooden wedge or two on hand in case the joint needs extra persuasion.

First split the joints on both sides of the wide filler piece, then the narrower filler pieces. Now you have your four shelves. Run their two flat faces over the jointer to remove the glue and paper residue and to ensure you have a square corner between the back and the top of the shelf.

I hang the shelves with a French cleat. To make a recess for it in the back of the shelf, I use a template and a router with a guide bushing.



Roll to the right. *With the V-grooves cut, place the gouge flute up at the center point between them, and roll right to create half the dome shape of the bead.*

And roll to the left. *Repeat the rolling cut, now from the center to the other V-groove, to complete the bead. When all the beads are turned, you can sand out any tool marks.*

Time to split

Online Extra

To watch Gardner turn and split shelves from a blank, go to **FineWoodworking.com/291.**

Pry four shelves from one blank. *Find the seam of each glue joint with a stiff-bladed paint scraper. Knock it in with a mallet, then pry the blank apart. To keep from damaging the shelf, insert the scraper with its bevel toward the pine filler piece.*

Clean and square. *Lightly joint the two flat faces of each shelf to remove glue and paper residue and to leave them square to each other.*

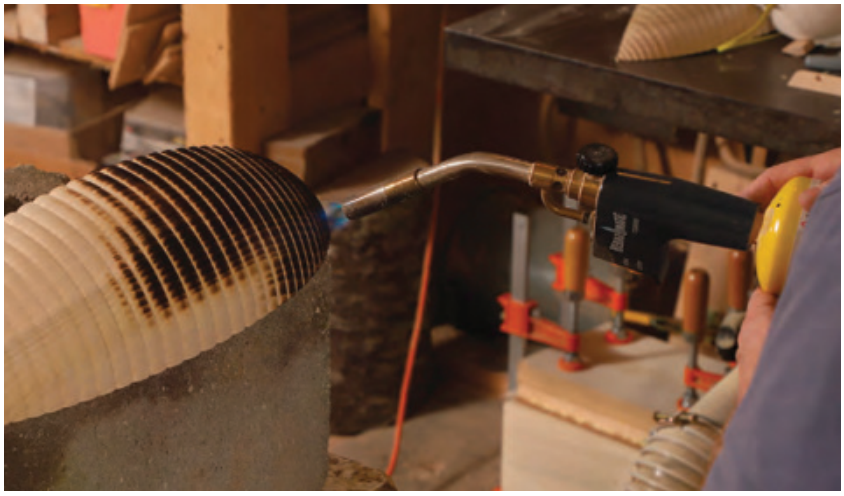
Add a French cleat

Clamped in a corner. *To rout a recess that will house the French cleat, Gardner makes an open-sided box with a two toggle clamps inside. One presses upward, the other, tucked under the top, presses toward the front.*

Template-rout the recess. *The top board of Gardner's plywood clamping box has a slot sized to the French cleat recess. Using a spiral upcut bit with a guide bushing, he follows the slot and cuts the recess.*

Fix the shelf cleat. *One of the two cleats gets screwed into the recess; the other will be screwed to the wall. Make the recess slightly deeper than the cleat's thickness.*

Unusual finish



Scorch the surface. *Gardner uses a plumber's torch to burn the beaded surface of the shelf. Then he scrubs with a soft wire brush to remove the ash.*

Paint and paper. *After cleaning with compressed air, apply three coats of milk paint. When it dries, sand the paint, taking lengthwise strokes and abrading through the paint in the high spots to expose the charring.*

How to finish a floating shelf

My finish for the shelves combines burning and painting. I scorch the raw wood with a plumber's torch and follow that with a soft wire brush to remove the loose soot from the burned surfaces. After blowing the shelf clean with compressed air, I apply three coats of white milk paint.

Once the paint is dry, I sand the beaded surface, taking strokes along the length of the shelf, first with 150-grit paper and then 220. This leaves the paint in the valleys between the beads but sands it away on the high spots, revealing the charred wood and creating a nice graphic effect. After blowing the shelf clean again, I spray on three or four coats of a clear matte acrylic lacquer. □

Mark Gardner is a turner and sculptor in Saluda, N.C.

Clear coat at the end. *The final step is to spray on a couple of coats of clear lacquer.*

gallery

DEVIN REAM
Holliston, Mass.

An admirer of the late 18th and early 19th century work of Boston furniture makers John and Thomas Seymour, Devin modeled this sideboard after one of theirs, changing the design slightly to include a serpentine front, and working on it over the course of many years in between paying jobs. "The attention to detail they had in designing the original sideboard was unmatched," he said.

MAHOGANY, PINE, MAPLE, AND HOLLY
24D X 72W X 42H

MICHAEL BOSSIN
Sharon, Mass.

The work of influential Victorian book designer Talwin Morris, contemporary of C.R. Mackintosh, inspired this clock. "My vision was to convert his book cover designs for a flat surface into three dimensions, translating his color scheme into a contrasting palette of cherry and maple," Michael said. He did the work without drawings, assembling the elements of the clock by eye on a purpose-built easel.

CHERRY AND CURLY MAPLE, 3D X 24W X 36H

Photo: Glenn Turner

BRENDAN GAFFNEY
Covington, Ky.

Brendan says he can fit his entire wardrobe (except hanging collared shirts) into this dressing chest. Inspired by classic English tool chests, he focused on simplicity of form for this one. "I decided to pare down the shaping and ornament to a minimum, relying on the exposed joinery and book-matched grain as the main visual focus," he said.

CURLY WHITE OAK, NORTHERN WHITE CEDAR, WHITE PINE
19D X 31W X 26H

PAUL LITCHY
Franklin, Tenn.

The carving challenges of making this tilt-top tea table were what attracted Paul to the piece. "It was my first attempt at architectural carving," he said. But as he progressed, he said, he enjoyed making templates to build the top and the bird cage below it. "The top is one piece. Initially, I was thinking book-matched but I found a great source for a solid board."

HONDURAN MAHOGANY, 32 DIA X 31H

Photo: Skip Jackson

MICHAEL JAVIDI
Greenport, N.Y.

Michael's time spent as a wooden sailboat builder served him well when it came time to design this hanging chair. "I'm proud of achieving a very delicate look that is super strong," he said. In addition to the hickory, the chair incorporates copper and bronze hardware and a sheepskin seat.

HICKORY, 40W X 72H

JUSTIN MRAZIK
San Francisco

A floating shoji wall cabinet by Canadian designers Mjolk and Studio Junction gave Justin the jumping-off point for his key box cabinet design. "The vertical pickets are reminiscent of the latticework found in traditional Japanese sliding doors and window shades," he said.

TEAK, 3D X 16W X 7H

PHIL GAUDIO
West Simsbury, Conn.

This piece was based on Garrett Hack's huntboard from *FWW* #187, with a few changes. "I modified the design slightly to give it more of a Shaker look. The pulls are made from viola tuning pegs, something that is becoming a signature feature of many of my pieces," he said.

CHERRY WITH BLOODWOOD AND EBONY ACCENTS
18¼D X 56W X 40H

PETER MARCUCCI
Wasaga Beach, Ont., Canada

"I am on a journey to reproduce a number of Charles Rohlfs's works," says Peter, whose goal is to understand and make faithful reproductions of this Arts and Crafts furniture maker's designs. This particular chair, with its large, interlocking curves and swirls, is one that Peter finds particularly beautiful. He traveled to Princeton University to see and photograph an original of the chair before reproducing it.

WALNUT, 18½D X 17W X 54H

CHARLES S. ARING
Saratoga, Calif.

Intrigued by the stunning bowls made by glass artist Toots Zynsky of Providence, R.I., Charles made this facsimile from the wood of an apricot tree that had died in his orchard.

APRICOT WOOD, 7 DIA X 11H

CHARLES JAMES
Williston Park, N.Y.

Charlie made this lap desk to sit on the Civil War campaign table, which he made years ago. The desk is modeled after the Jefferson lap desk but he made it his own, with many secret drawers and compartments. The inlaid quill pens use wood from a purple beech planted by Teddy Roosevelt at Sagamore hill. The inkwells are bogwood from Ireland, and walnut from a friend's farm. With all its intricate workings and handcrafted details, this desk took Charlie about two years to make, working as time allowed.

SAPELE, CHERRY, AND WALNUT, WITH SAPELE, CURLY MAPLE, AND CHERRY VENEERS AND HOLLY, WALNUT, AND MAPLE INLAY
17D X 24W X 7½H (REAR)

DON MEANS
Danville, Calif.

If you're looking for a complex and challenging project, a bombé chest will get you there. Don set out to make one, and his first challenge was finding plans. Thwarted there, he worked up his own design. Along the way, he found all the challenges he wanted. "Even the smallest features, such as the beading detail on the case sides and drawer dividers and how these elements intersected each other, presented their own challenge," he said.

MAHOGANY, MAPLE, BIRCH, JARRAH, 20D X 38W X 32H

MICHAEL BURT
Muncie, Ind.

Michael, who likes to explore curves and learn new techniques, combined simple bent-laminated curved forms to make the flowing base on this table. He refined the design in a class at the Florida School of Woodworking with Kelly Parker and Michael Cullen. He says he plans to explore the design further with the addition of a wall mirror to hang behind it.

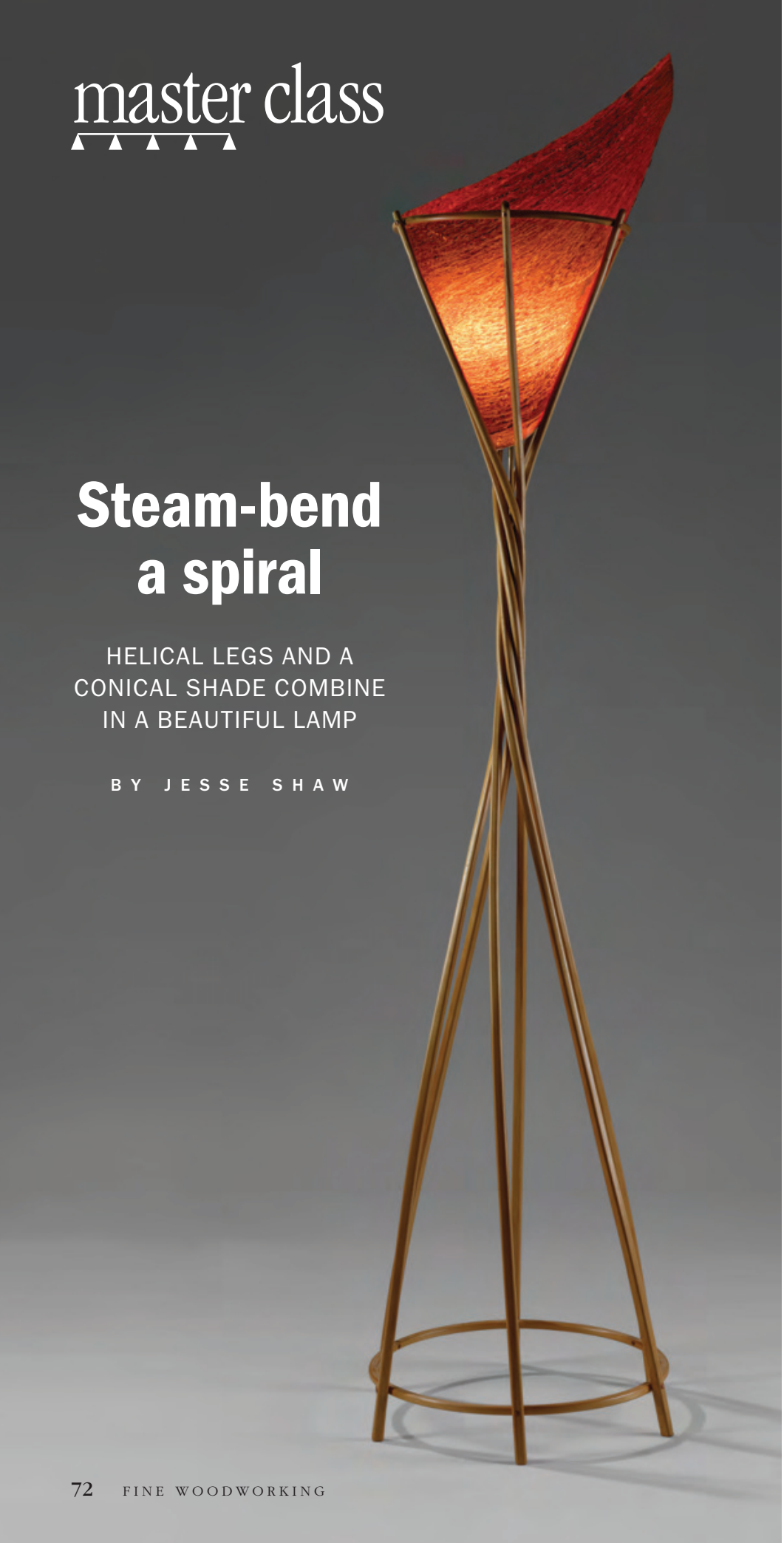
WALNUT, ASH, QUILTED MAPLE VENEER
18D X 41W X 31H

master class

Steam-bend a spiral

HELICAL LEGS AND A CONICAL SHADE COMBINE IN A BEAUTIFUL LAMP

BY JESSE SHAW



I discovered an appreciation for the interplay of wood and light years ago while I was sitting on the steps of the Center for Furniture Craftsmanship in Rockport, Maine. As I held a thin shaving of maple burl up to the sun, the grain glowed a rich amber-red hue with thin radiant circles outlining the cellular tubes of the wood. I was mesmerized by this effect. As I sat staring deeper into the grain, the sun continued to elicit previously untapped natural beauty in the raw material. The design for the shade of my Prometheus Lamp grew out of that experience. Building the lamp involves a process with many facets, detailed steps, and techniques.

Building the base

It begins with wood selection. The grain for the steam-bent legs must be very straight, with no knots, burls, or waviness. I try to get all of the legs (which I rough cut at 1 in. square and 76 in. long) from a single board, preferably air-dried. The species should be steam bendable: Ash, white oak, and beech are the easiest; with walnut it can be challenging to find straight grain in seven-foot lengths, but it's well worth the trouble.

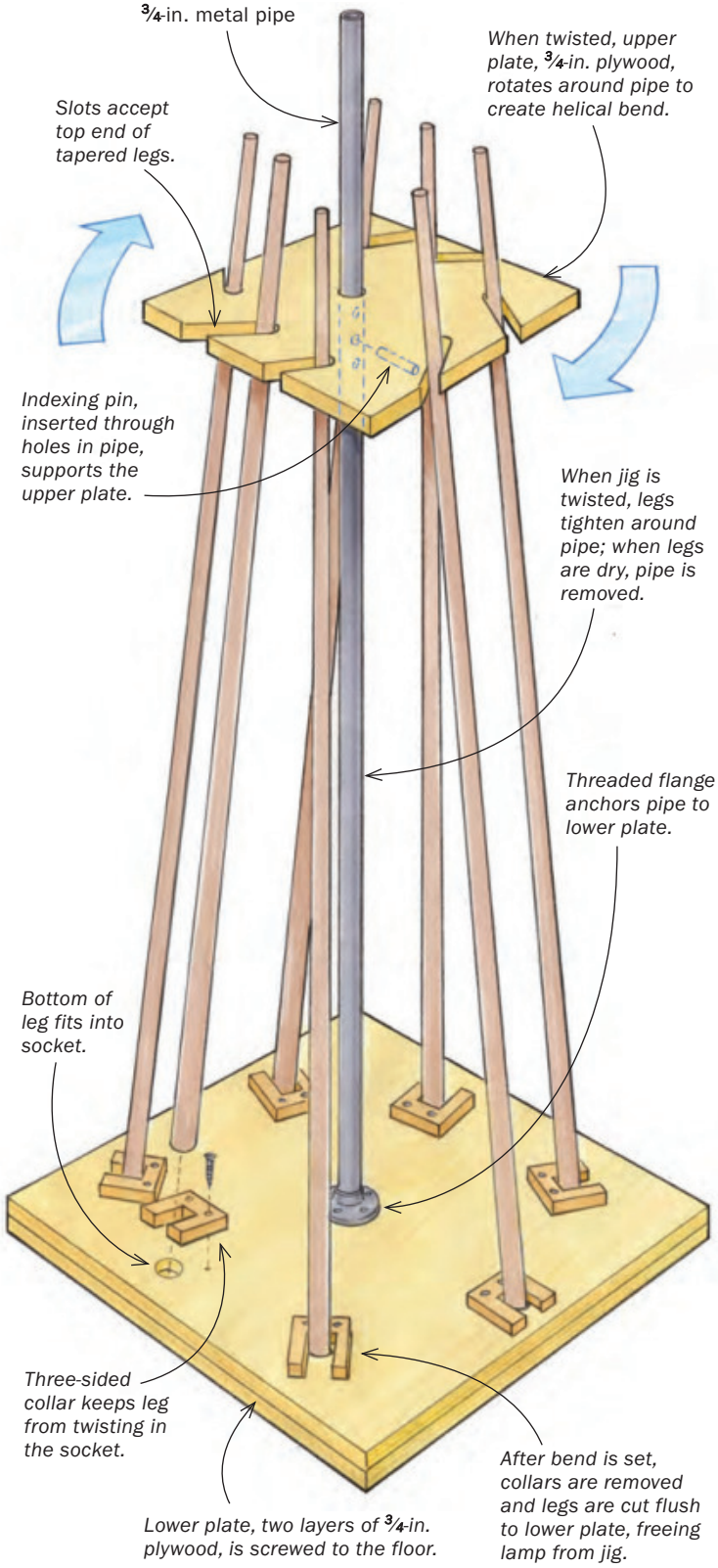
Once the leg stock is sawn and then milled square, it goes through the planer on a tapering jig. The finished legs taper from ¾ in. square at the bottom to ⅜ in. square at the top. After the legs are tapered, I round over their long edges at the router table with a ¼-in. roundover bit. This leaves flats on all four faces for most of the leg, but at the top end the leg's cross-section is essentially a circle. At the tablesaw I give one of the legs a stopped groove to accept the cord for the light fixture. The groove needs to be deep enough for the cord and for a spline, which I'll glue in to hide the cord.

To do the twisting steam-bend, I built a jig that has a lower plate screwed to the floor with sockets around the perimeter for the legs and a threaded flange at the center to receive a ¾-in.-dia. steel pipe that is 7 ft. tall. An upper plate, with a hole in the middle for the pipe and slots around the edges for the legs, gets fitted

Photo, this page: Stewart Clements

SPIRAL BENDING JIG

After steaming the solid-wood legs for an hour, Shaw bends them into a helical twist with this jig. They remain in the jig for a week or so until they are fully cured, and then hoops are added at the top and bottom.



Shape the legs

Time to taper. *The legs are first milled 1 in. square, then they are tapered by passing them through the planer on a ramped jig.*

Round the corners. *Using a ¼-in. roundover bit in the router table, radius the four corners of the leg.*

A slot for the cord. *Run a groove halfway up one face of one of the legs. The lamp cord will lie in the groove, hidden by a snug-fitting spline.*

Get ready to bend

Well-cooked walnut. *The legs spend an hour together in the steambox. Shaw pulls one of them partway out and bends it to check its flexibility.*

Photos, except where noted: Jonathan Binzen; drawings: Dan Thornton

Leg twisting

Seven legs, set at speed. *Shaw and his assistant, Matthew Dinneen, bring the legs out of the steambox in quick succession. They socket a leg's bottom end into the jig's lower plate and slot its top end into the upper plate.*

Do the twist. *Rotating the upper plate causes all the legs to twist together. The upper plate spins around the metal pipe at the center and is held at the right height by a pin that runs crosswise through holes in the pipe.*

Wrap the twist to keep it tight. *With the upper plate rotated as far as he wants it, Shaw wraps the central portion of the twist with packing tape to keep it tight as it dries.*

over the top end of the pipe. A series of holes drilled crosswise through the upper section of the pipe lets me insert a dowel to support the upper plate at various heights. When I bend the legs they wrap around the pipe, and after they cure I pull out the pipe and replace it with a 1-ft.-long dowel made from the same species as the legs and drilled out to accept the cord.

The legs all go into the steambox together to be cooked for an hour plus. When I think they're adequately steamed, I pull one leg partway out and bend it a bit by hand to test its flexibility. If it's ready, all the legs come out in quick succession. With the help of an assistant, I place the legs' bottom ends in the lower plate and top ends into the upper plate, and we start twisting the upper plate. There's no time for conversation; we have a total of about 30 to 60 seconds to do the bend. When the legs are wrapped tight around the pipe, we clamp a board from the upper plate to a bracket on the wall. This keeps the upper plate from turning and thus keeps the legs from untwisting. For extra insurance I wind packing tape around the tightly twisted central section of the bend. I leave the legs in the bending jig for a week or so to let them fully cure.

After the legs have dried, I remove the central pipe and epoxy the filler dowel in its place. I first drill out the dowel with a ¼-in.-dia. by 13-in.-long bit. I also run the cord for the lamp, threading it through the dowel and pressing it into the stopped groove in the leg. And I glue in the spline to hide the cord.

Next I make the two hoops that will link the legs together at the top and bottom. Using the same species I used for the legs, I mill up a rounded stick about 1 ft. longer than the

A brake for the upper plate. *To keep the helical bend from untwisting, Shaw and Dinneen clamp one end of a long stick across the upper plate and brace its other end against a bracket on the wall.*

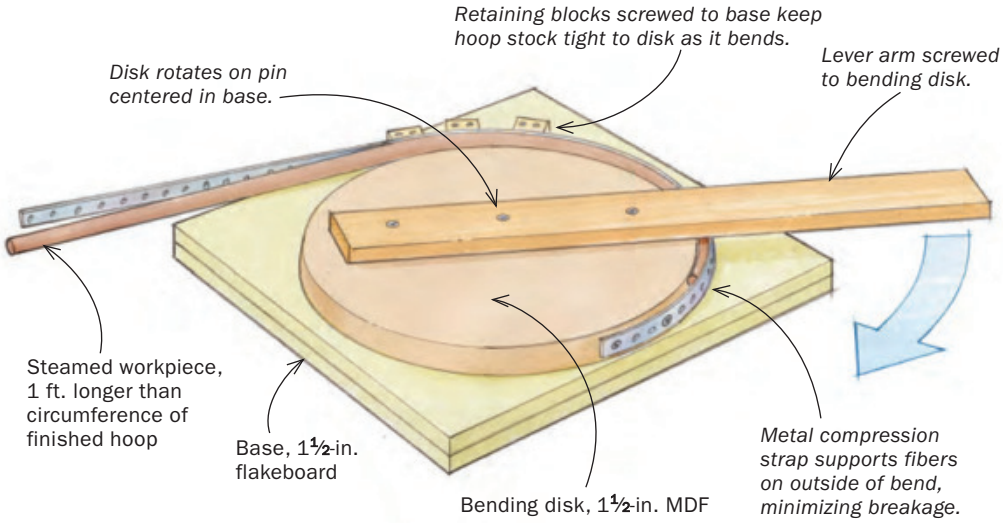
Inserting the center stick. *After giving the legs a week to dry, Shaw removes the metal pipe and replaces it with a wooden dowel made from leg scrap. He drills out the dowel, threads the cord through it, and glues it in place with epoxy.*

A covert cord. *The lamp cord travels down the groove cut in one leg. Shaw here epoxies a spline into the groove to hide the cord.*

Two hoops

Circular steam-bend. *Using a lazy-Susan-like jig, Shaw and Dinneen bend a 6-ft.-long stick into a circle with overlapping ends. A metal bending strap supports the stock as it bends to minimize breakage.*

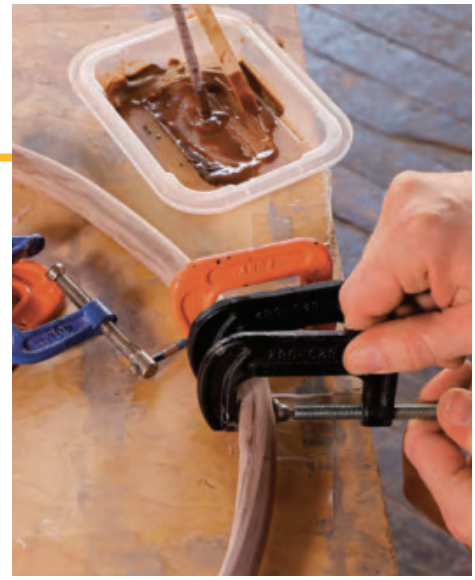
HOOP BENDING JIG



circumference of the finished hoop. I steam it, and again with help, bend it on a shopmade jig. The jig has a perforated metal bending strap that helps prevent failures on the outside of the hoop stock. The top and bottom hoops are different diameters, and I bend them on two different circle jigs. When the hoop has dried, I join its ends with a scarf joint. Then I smooth the hoop with a spokeshave and sand the surface.

The hoops are attached to the legs with copper rivets. I clamp the hoop in place while the legs are still in the bending jig. After drilling through the leg and the hoop, I insert a long boatmaker's rivet, add a copper washer, and snip the rivet to length. I wait to peen over the end of the rivet until I've removed the legs from

Use a scarf joint to close the hoop. *After bandsawing one side of the joint and sanding it smooth, Shaw traces it onto the other end of the hoop. Then he cuts and smooths the second scarf and glues the two together with tinted epoxy.*



Cinch the hoop to the legs. *Extralong copper boatmaker's rivets link the hoop and legs. With the legs in the jig and the hoop clamped in place, drill for the rivets and push them in.*

Custom rivet gun. *Shaw uses a quick-release clamp and a length of copper tubing to drive the washer down the shaft of the rivet. Then he snips the rivet just proud of the washer.*

the jig, so I can back up the peening with a vise or an anvil.

Once the hoops are riveted, I remove the collars from the lower plate and use a flush-cutting saw, its blade laid flat on the plate, to cut through the legs and liberate the lamp base from the jig.

Mushroom the rivet. *After cutting the lamp free from the jig, peen the rivets with a solid surface backing up the hammer blows.*

Wrapping a conical shade

When I'm ready to make the shade, I start by examining a variety of 1/32-in.-thick veneers, holding them up to the sun to evaluate their translucence. As woodworkers we're all intimately familiar with the appearance of many wood species. But with light pouring through a sheet of veneer, suddenly you see its cellular structure revealed, and even common woods can look exotic. Each species has its own distinct hue when illuminated this way. Certain woods are quite translucent, others are not. Some grain patterns look dramatic, others drab. I find rotary-cut burls ideal because the grain spreads out in multiple directions. When someone switches on one of my lamps, I want the grain to be magnificent, to give a warm glow like that of a fireplace.

A conical shade

Test shade. *Shaw uses kraft paper as a template for the real shade. He rolls it into a cone and fits it into the basket of the lamp to establish the size of the shade.*

Find the right veneer. *Held up to daylight, a sheet of tulip burl veneer reveals the colors it will display when it's a lampshade lit from within.*

Impregnate the veneer with epoxy. *To strengthen the delicate sheet of 1/32-in. veneer, Shaw coats it with epoxy.*

Pressed between platens. *Shaw sprays the platens thoroughly with silicone, then slips the package into his vacuum bag until the epoxy cures.*

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A conical shade continued

First fitting. *Having cut the veneer to the size of the kraft paper template, Shaw slices out an arc shape on the bottom edge to facilitate rolling the veneer into a cone. Then he places the veneer into the basket and marks where its ends overlap.*

Once I've selected my veneer, I determine the size of the shade by rolling a piece of kraft paper into a cone and fitting it into the basket formed by the top of the lamp. This becomes the template for the shade. I cut a piece of veneer to that size, and then impregnate the veneer with epoxy and put it between platens in a vacuum bag. After the epoxy cures, the veneer remains flexible but is far less fragile.

I roll the veneer into a cone and gently clamp it in place in the basket. Then I mark the veneer so I can cut it to limit its overlap to a 1-in.-wide strip. I'll cut along the line with a scalpel or a veneer saw, then glue along the seam with epoxy putty.

After the glue cures, I place the shade in the basket, where it rests without fasteners. With the light fixture connected, I screw in an incandescent bulb and wait for nightfall. □

Jesse Shaw makes furniture in Stow, Mass.

Angle cut the overlap. *Using marks he made at the fitting, Shaw cuts one side of the shade to produce a 1-in. overlap when it is rolled again.*

Close the seam. *After applying epoxy along the overlap and rolling the veneer into a cone again, Shaw clamps the seam with an F-clamp and a caul. A second stick, with one end suspended by wire from an overhead shelf, prevents the cone from sagging while the epoxy cures. When it is finished, the shade rests in the lamp without fasteners.*

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Confessions of a hand-tool woodworker

BY JOSHUA A. KLEIN

I have no interest in puffy-sleeved anachronism.

Although I am a die-hard hand-tool woodworker, I don't secretly wish to work for a living history museum—you know, the kind of place we bring our grandkids to show them how it was done in the "olde days." While I appreciate the educational value of historical interpretation, I don't need the buckle shoes or tricorn hat to feel fulfilled at the bench. Make no mistake, I am grateful to live in the 21st century.

So, my attraction to hand tools is not founded upon a nostalgia for some golden period of craft purity, but instead, it's bound up with the freedom they offer. Machinery is expensive, immobile, and limited in usefulness. An ax, on the other hand, can be carried over the shoulder and employed in all manner of applications: felling a tree, squaring a timber, trimming a board, or carving a spoon. Having a handful of human-powered edge tools gives an artisan the adaptability to tackle anything thrown their way. As Japanese philosopher and art critic Soetsu Yanagi said, "Man is most free when his tools are proportionate to his needs."

But how could pre-industrial work give freedom? Aren't we better off now that we have machines to replace the back-breaking manual labor of the past? Get with the times, Klein. "They would've used a tablesaw if they had one."

Why would a 21st-century American with all the benefits of modern technology choose to pick up hand tools?

While it is evident that manual labor has often manifested as grinding toil throughout history, this does not mean that the ways of the past have no benefit for us today. See, few of us are told by our doctors that our major health concern is that we use our bodies too much. I've never been advised to lay off the exercise or to spend more time in front of a screen. It would do most of us some good to get the blood flowing again. And hand tools are great for this kind of thing.

In *Technology and the Character of Contemporary Life*, philosopher Albert Borgmann explains how the devices in our lives tend to disengage us from the world around us. He says we need activities that center us in our humanness. Some of us love to get out hiking, to experience the sounds of the forest, to hear the songs of the birds, and to feel the wind at the summit. We see there is a reward in choosing the hike over the drive up the mountain road precisely *because* of the challenge.

I find hand tools also to be an effective antidote to the technological milieu in which we are engulfed. We all experience the safety and convenience that modern technology has brought us, but there is a nagging recognition of how stultifying it all can be. Most of us use computers or smart phones on a daily basis. In my work, for example, a lot of time is spent at a screen writing, editing, and answering emails. I've learned that in order to stay sane and healthy, I need to counter this with handwork.

My attraction to hand tools is not founded upon a nostalgia for some golden period of craft purity, but instead, it's bound up with the freedom they offer.

Masters at their craft work with such fluidity that it seems to flow out of them. They don't simply feed wood through a machine, depending on fences or jigs—their success is derived from their hand. The simpler the tools, the more the outcome depends on our skill and dexterity. And when we nail it, the satisfaction is that much sweeter.

Some folks talk about the distinction between product-oriented woodworkers and process-oriented woodworkers. I am decidedly the latter—I care more about how a thing is made than how quickly I can make it. But it's not just "process" in a vague, mystical sense; for me, it's a process of cultivating skill. My primary interest in woodworking is laboring to develop the dexterity and endurance necessary to accomplish tasks unguided by fences and not powered by machines. This unregulated, unmechanized woodworking is the summit in my sights. It's pre-industrial woodworking for post-industrial reasons. □

Joshua A. Klein is a furniture maker, author, and editor-in-chief of Mortise & Tenon *magazine.*

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Torchiere with a Twist

It's been nearly two decades since Jesse Shaw spent a year at the Center for Furniture Craftsmanship in Maine, but the passions he discovered and techniques he explored while there continue to illuminate his work. "Steam-bending really captivated me," Shaw says, "I loved that you could bend wood like magic." Teachers David Caldwell and David Upfill-Brown had much to share about how to make the magic happen. At the time, Shaw had been musing over something he'd read, in a book called *The Curves of Life*, about the importance of spiral shapes in everything from mollusk shells to the Milky Way. He decided to braid these two new ideas together and try steam-bending a spiral. After producing a coatrack from a twist of steam-bent sticks, he found a function he thought better suited the spiral form, and he had soon made the first of his standing lamps. But what shade could match the energy and excitement of the interlaced legs? A serendipitous discovery made while holding a thin slice of wood to the light revealed to him "the hidden beauty within the wood." And he had his answer: The shade of his lamp would be a rolled cone of burl veneer.

—Jonathan Binzen

Photos: Stewart Clements (right), Jonathan Binzen (top)