TAUNTON'S

Fine WoodWorking

The 4 handsaws you need and why, p. 28

Greene & Greene: Master the details

Tablesaw clinic

- Make perfect dovetails
- 3 essential jigs for the rip fence

Best handplanes for fitting tenons

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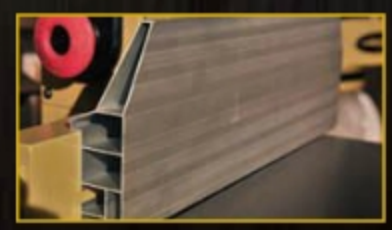

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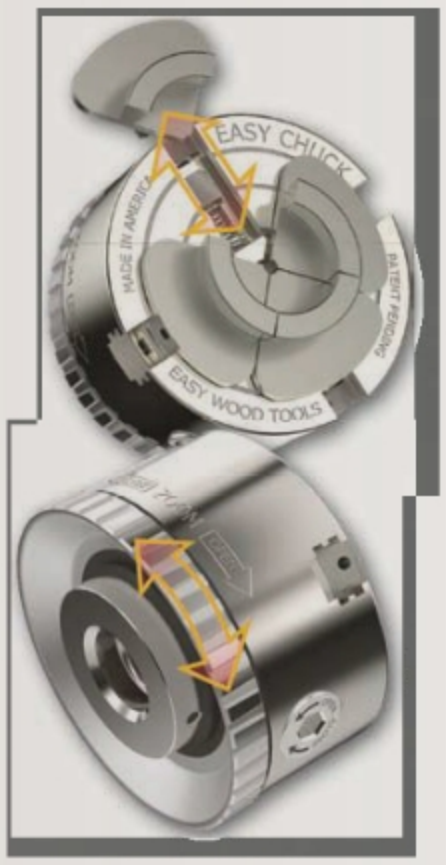

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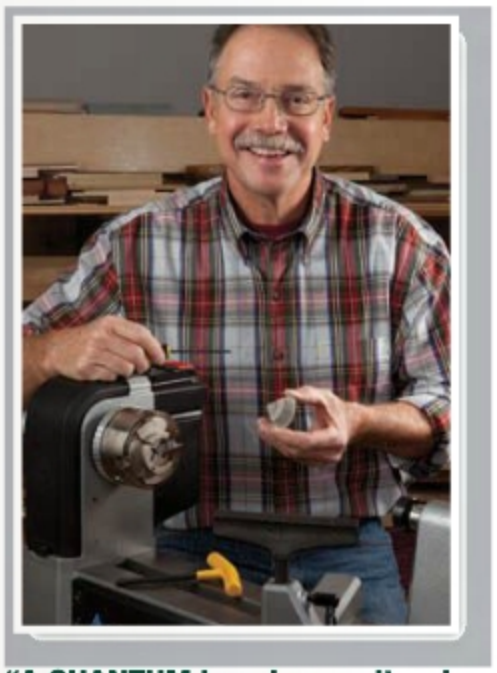

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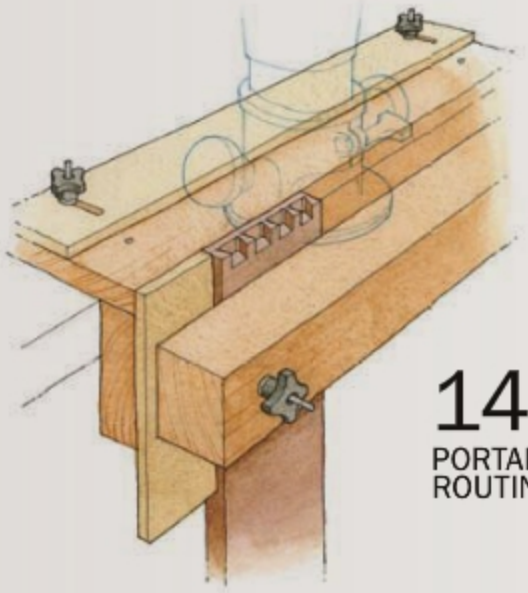

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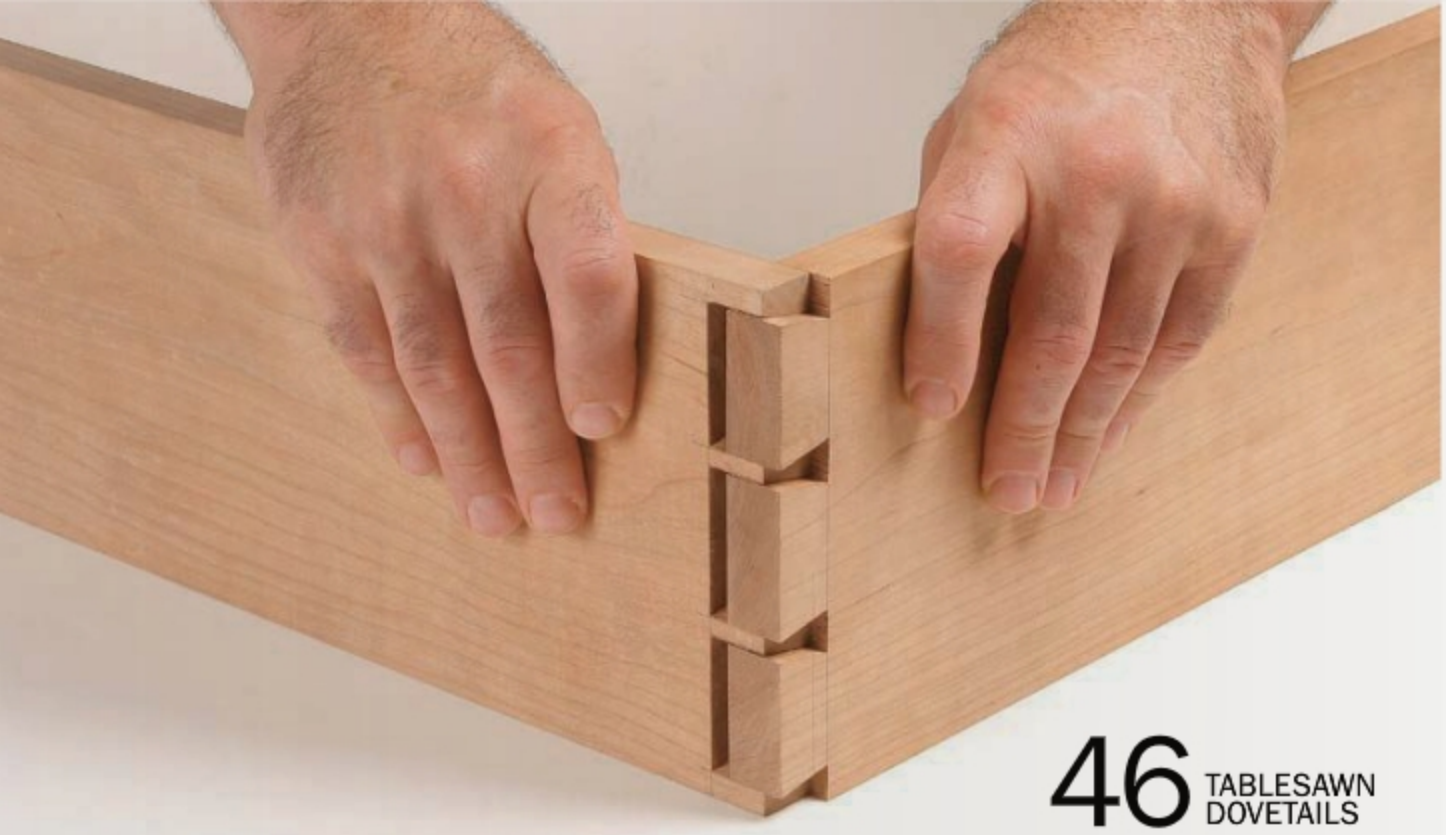

in the back

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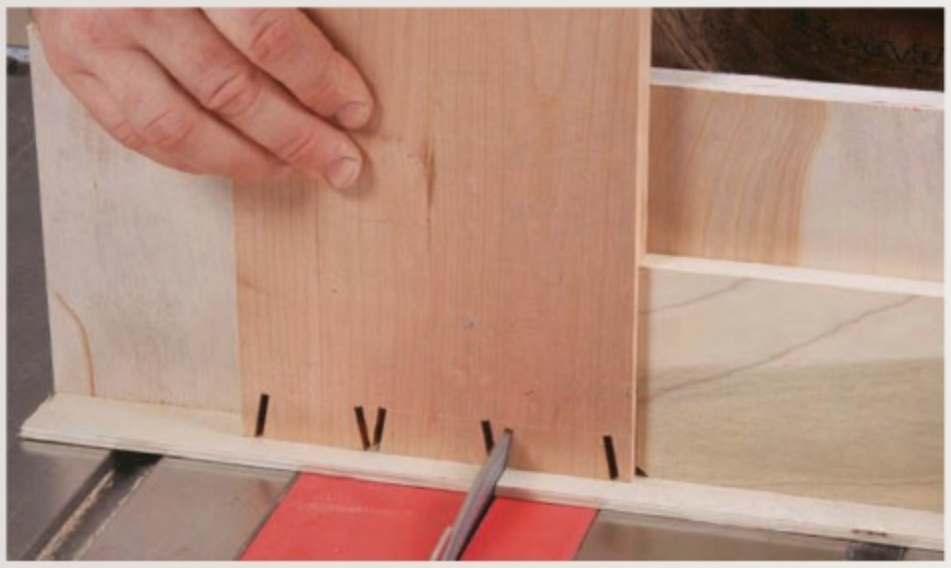

VIDEO:

Dead-On Dovetails

You don't need to be a hand-tool pro to cut accurate, tight-fitting dovetails. See how to crank out beautiful dovetails on your tablesaw, while retaining that hand-cut look.

SHOP TALK LIVE

Nakashima 2.0

When George Nakashima died in 1990, he left daughter Mira with a backlog of work, enough timber to fill a football field, and a long shadow to walk in. Find out where the Nakashima workshop is today in an exclusive interview on our biweekly podcast.

Straight Sharpening for a Skewed Blade

The skew block plane excels at trimming tenon cheeks for a perfect fit, but sharpening this little beauty takes a bit of getting used to. Learn how to maintain the perfect angle on a skewed plane iron.

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VIDEO

Tool Storage Tech

A workbench with built-in drawer boxes is a smart choice for woodworkers with limited shop space. Learn how to outfit your drawers with custom storage solutions:

- Custom dividers for chisels and gouges
- Sliding trays that maximize storage in deep drawers
- Organized handplane storage

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contributors

Martin McClendon (*"Greene and Greene: Master the Details"*) was a professional actor for 10 years and is currently the chair of the theater department at Carthage College in Kenosha, Wis. His introduction to woodworking was through his work as a scenic designer, carpenter, and painter. When he moved to Los Angeles in 2000, his friend and fellow *FWW* contributor Nick Offerman was just getting into woodworking. Nick and Martin built custom pieces for clients around Los Angeles for five years before Martin moved back to the Midwest and began his career in academia. He lives in Racine, Wis., with his wife Jennifer, his daughter Arabella, and his son, Horatio. As you can see, none of them is afraid of helping in the shop, and all believe in safety first.

Christian Becksvoort (*"Build a Shaker Stool with Hand Tools"*) has done a bit of globe-trotting lately, spending part of last summer teaching in Bavaria and one fall weekend in Hollywood, taping a guest appearance on the NBC comedy, *Parks and Recreation*. Word has it that Chris is referred to in that program as "the world's greatest living master of the Shaker style." Amen. The episode, titled "Ron and Diane," was scheduled to air Thursday, Dec. 6, at 9:30 p.m.
Most challenging part of your work week? "Marketing, marketing, and marketing."

Just up the street from the Still River in Sterling, Mass., **Peter Galbert** (*"What the Experts Don't Tell You About Turning Furniture Parts"*) builds Windsor chairs and woodworking tools in his shop (see the back cover, *FWW* #230). Before making the jump into full-time chairmaking, Galbert built custom cabinetry, furniture, and museum displays. When not at work, he tends to his goats, brines homemade pickles, and generally lives the country life with his wife, Sue, and their two dogs, Rocket and Lily.
Last thing you made? "Soup, or a chair, you pick."

Gregory Paolini (*"Dovetails on the Tablesaw"*) knows power tools. But when he first got interested in woodworking as a teen, he couldn't afford them. Fortunately, he had inherited some hand tools, so he learned old-world techniques of furniture making, picking up a solid understanding of the craft along the way. He built his first piece of furniture in high school, and in those days he salvaged wood from pallets and anywhere else he could find it.
Best lesson you've learned? "It is the smallest things that make the biggest difference."

For more information on our contributors, go to FineWoodworking.com/authors.

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

WHEN DOES EASY BECOME CHEATING?

PERFECT JOINTS IN MINUTES

For $550, the Leigh Super FMT Mortise & Tenon Jig (top) makes both parts of the joint, with a perfect fit each time. Double that and you can have the Domino XL. Double it again and you can almost afford the JDS MultiRouter (bottom), which will make any mortise or tenon you can dream of.

When I tried out the first Festool Domino Joiner (Tools & Materials, *FWW* #190), which makes mortises as easily as a biscuit joiner cuts slots, I realized right away that I could make a houseful of furniture with the thing, in about half the time it would take with traditional joinery. But the first Domino's beech tenons are a bit small for larger pieces, so I was able to convince myself I didn't need one, saving $800 and a tough conversation with "the gatekeeper."

Then the Germans had to go and make a better Domino (see p. 18), with tenons large enough for almost anything I will ever build. Now I have a dilemma, and not just about the $1,200 price tag.

The real question is: How handmade do I want my furniture to be? Am I cheating by using a joint-making machine or jig?

The answer is different for different people. On one hand you have those who want to make furniture the way our forefathers did, with hand skills alone. For them, even a single machine, such as a bandsaw, might be a compromise. On the other hand, there are those who have embraced SketchUp for designing their pieces and CNC for making them.

As for me, I currently use a router for mortises anc buy mo anc anc des g de

Dang, I think I just convinced myself that I n

—Asa Christiana

Not every handplane needs a tune-up

Tommy MacDonald is highly trained and very capable, and helps many woodworkers with his show, *Rough Cut*, but his article "Every Handplane Needs a Tuneup" (Fundamentals, *FWW* #230) could cause real problems for folks starting with top-quality planes. While the techniques described all have a place on older or less well-made tools, a new Lie-Nielsen or Veritas plane is more likely to be harmed than helped. If you're starting with a fine plane, your best investment is refining your sharpening, blade adjustment, and planing techniques.

—PAT MEGOWAN, Corvallis, Ore.

Help or hindrance? *Flattening a plane's sole on sandpaper is great if the sole needs it, but not recommended for soles already in great shape.*

Editor replies: *We pushed it a little with that headline. Our experience with Lie-Nielsen and Lee Valley/Veritas planes is the same as yours. Over many years of testing them, we have not seen any soles that needed flattening. In fact, all were dead-flat, finely ground, and ready to go. So you are right to warn that an attempt to flatten these in a home shop will only make them worse. The article did recommend flattening the sole of a plane only if light shows under a straightedge, but we should have made this point more strongly and clearly. A few of the other steps are also unnecessary on the better*

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planes out there, but none will hurt, and some, like adjusting the chipbreaker and mouth opening, are helpful on any plane.

Taper offcut can kick back

While using a jig almost identical to the tapering jig in a recent issue ("Perfect Tapers on the Tablesaw," *FWW* #229) but without a splitter or riving knife in place, the offcut fell onto the back of the blade, kicked back, and hit me in the face. The laceration required many stitches. Although a riving knife is clearly visible in the magazine photos, I didn't see it mentioned in the article. Never use this otherwise excellent jig without a splitter.

—ANDY OLERUD, Driggs, Idaho

Use a splitter or riving knife. *Sitting just behind the blade, it keeps the offcut away from the back teeth, which could kick it back at you.*

Use a drum sander on reclaimed lumber

Like John Tetreault ("Fine Furniture from Reclaimed Wood," *FWW* #229), I make many of my projects from used lumber, everything from birch locker-room bench seats to white oak wine vats. The cost varies from really cheap to free, and most of the lumber is first class. It usually also comes with a good story. But one thing I disagree with is putting salvaged lumber on a planer or jointer. I never run any of this material through my milling machines without cleaning it up first on my open-ended drum sander. I use 60- or 80-grit paper on it to remove dirt and paint and the small rocks that my metal detector doesn't pick up.

—FRANK MAC FADDIN, Hacienda, Calif.

How to float a tabletop

The cover of *FWW* #229 includes the article teaser, "How to Make a Tabletop Float." Surely I am not the only reader who thought, "Throw it in the water."

—BILL HOUGHTON, Sebastopol, Calif.

When to sharpen a tablesaw blade

Like Roland Johnson says in a recent Q&A (*FWW* #229), it is hard to tell exactly when the carbide teeth of a tablesaw blade need sharpening. He goes by feel, but I have a better way. With the saw off, drag your thumbnail or fingernail over the top cutting edge of the carbide (as if it were a card scraper) and see if the edge scrapes off a little bit of nail material. If it does, it still has some sharpness; if not, or if it has difficulty doing so, then it's ready for resharpening. Also, in my experience, it only costs about $15 to have a typical blade reground at a specialty sharpening shop.

—WES SUTHERLAND, West Baldwin, Maine

New tool steel from Lee Valley/Veritas

I just read Chris Gochnour's review of the new PM-V11 steel (Tools & Materials, *FWW* #230). He didn't say whether the A2 steel being compared was cryogenically treated or not. This special process is used on the blades in my Lie-Nielsen planes, and is supposed to make them hold an edge longer than A2 blades that are not cryogenically treated. Can you ask the author to clarify?

—ROBERT L. JAMES, Chapel Hill, N.C.

Editor replies: *Sorry for the omission. The A2 blades Gochnour tested were from Lie-Nielsen, and were cryogenically treated.*

FWW for iPad and iPhone

Just downloaded the *Fine Woodworking* app for my iPad and iPhone, from the iTunes store. I'm very impressed. I love that I can read through all the articles just like I do with the hard copy but have the option of watching the video extras right there as well as clicking on any of the advertisers and being linked immediately to their websites. Same excellent content with a quantum leap in functionality.

—GORD AYER, Victoria, B.C., Canada

Correction

As one knowledgeable reader pointed out, the ½-in. dovetail chisel from japanwoodworker.com that we recommended in a recent Q&A (*FWW* #230), has a small vertical flat on the sides that will prevent it from fitting easily into the corners of a dovetail socket to clean out the waste. A Masashige Dovetail Chisel from Hida Tool & Hardware Co. (hidatool.com) has sides that are sloped all the way down to a sharp edge, and will work better.

Dovetail specialist. *This Japanese chisel's sloped sides reach all the way to the bottom, making it perfect for tight corners.*

About your safety

Working wood is inherently dangerous. Using hand or power tools improperly or ignoring standard safety practices can lead to permanent injury or even death. Don't perform operations you learn about here (or elsewhere) until you're certain they are safe for you. If something about an operation doesn't feel right, find another way. We want you to enjoy the craft, so please keep safety foremost in your mind.

EDITED AND DRAWN BY JIM RICHEY

Best Tip

Portable vise is great for dovetailing

Philip Houck began woodworking at age 10, making toys and useful items for his family, and has never stopped. His shop was featured in our 2011 *Tools & Shops* issue.

I made this fixture for routing away the waste between pins in half-blind dovetails, but it also works well for tasks like sawing the tails or routing a dovetail socket in the top of a table leg.

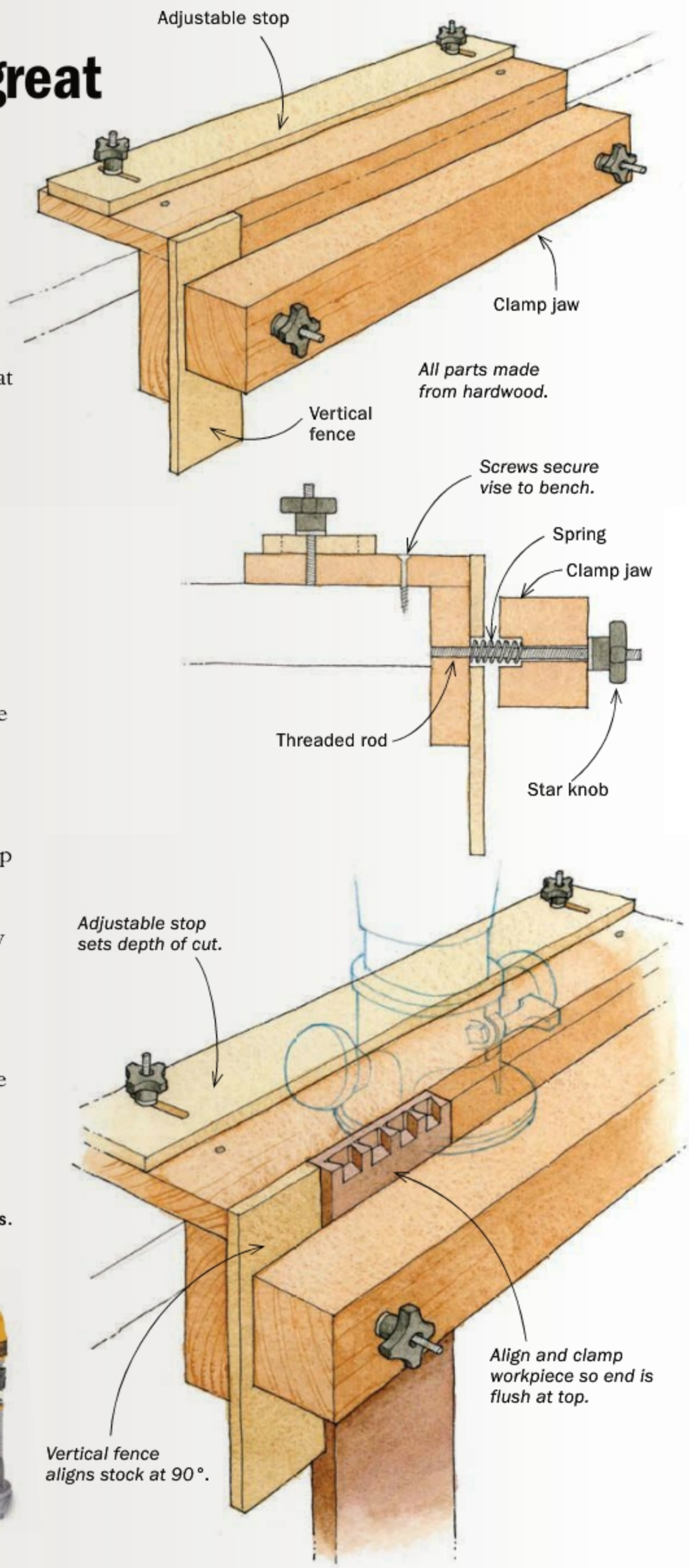
It is essentially a portable, twin-screw vise mounted on a right-angle bracket that gets screwed to the edge of a bench. An adjustable stop at the rear of the fixture sets the router's depth of cut.

Use a tough hardwood like oak or maple for the wooden parts. Make the twin screws from ⅜-in. threaded rod cut into 7-in. lengths and mount them in a pair of holes that are either tapped or fitted with threaded inserts. A pair of matching but slightly larger holes in the clamp jaw allow for a sliding fit. I counterbored these holes on the backside to accommodate compression springs that make it easier to open the jaw. Finally, I glued a thin vertical fence to the fixture, drilling through the fence to accommodate the left-hand screw, to keep the workpiece perpendicular.

Clamp the workpiece in place so the end is flush with the top of the vise. Now set the stop parallel to the work so that it stops the bit on—or just short of—the baseline.

I like a ¼-in. straight bit for this task because it lets me cut to full depth in one pass and is easy to control. After routing as close to the layout lines as I dare, I keep the workpiece in the vise and trim the pins to fit with a sharp chisel.

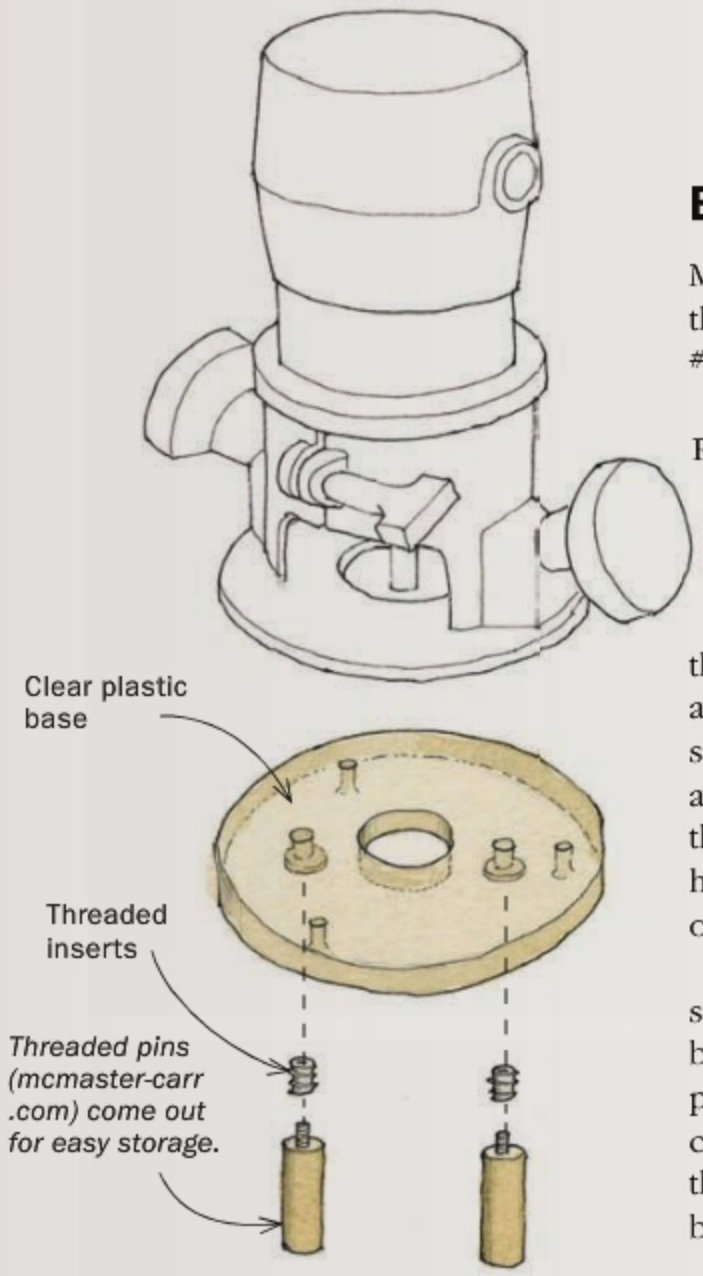
—PHILIP A. HOUCK, Boston, Mass.



A Reward for the Best Tip

Send your original tips to fwmow@taunton.com or to Methods of Work, *Fine Woodworking*, PO Box 5506, Newtown, CT 06470. We pay $100 for a published tip with illustration; $50 for one without. The prize for this issue's best tip is a DeWalt router kit.

Better base for routing mortises



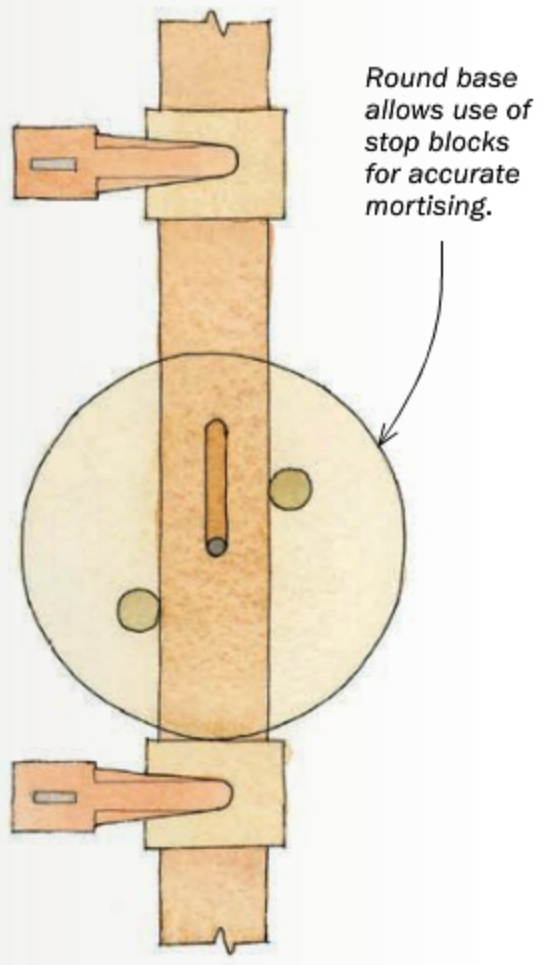
My self-centering mortising base is similar to the one illustrated in Jeff Miller's article (*FWW* #224, p. 38) but with some useful differences.

First, I make my base from ½-in. or ¾-in. Plexiglas, acrylic, or Lexan. A clear base lets me see what's going on when using the tool.

Second, and most useful to me, I make the base round, which allows me to clamp stop blocks on the workpiece to control the length of the mortise. A round base will always contact the stop block at the center. A square base, angled to make the cut, will strike a stop block at its corner, which could cause the router to pivot offline. This is enormously helpful when making identical mortises in a set of legs.

Third, I make my router base with removable screw-on pins. This way the pins can't be broken off or bent and made loose. I epoxy a pair of threaded inserts in the base and then counterbore the base with a Forstner bit to seat the pins. The result is a sturdy and storable base that will last quite some time.

—ADAM LINDSAY, San Diego, Calif.



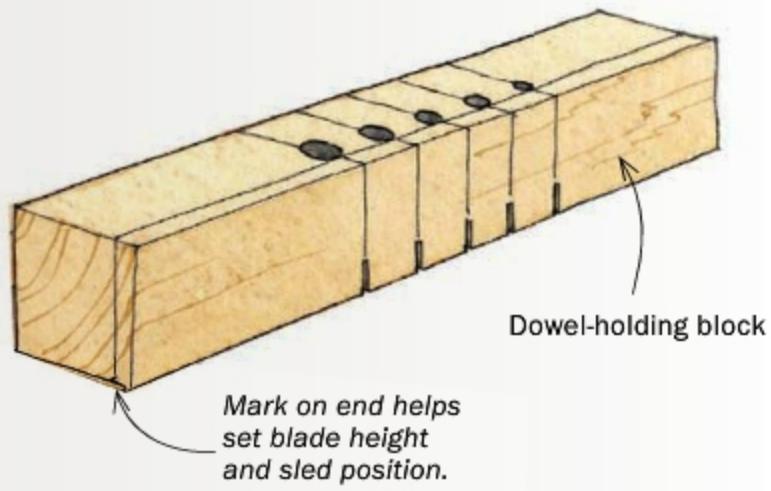
Tablesaw jig chamfers dowel ends perfectly

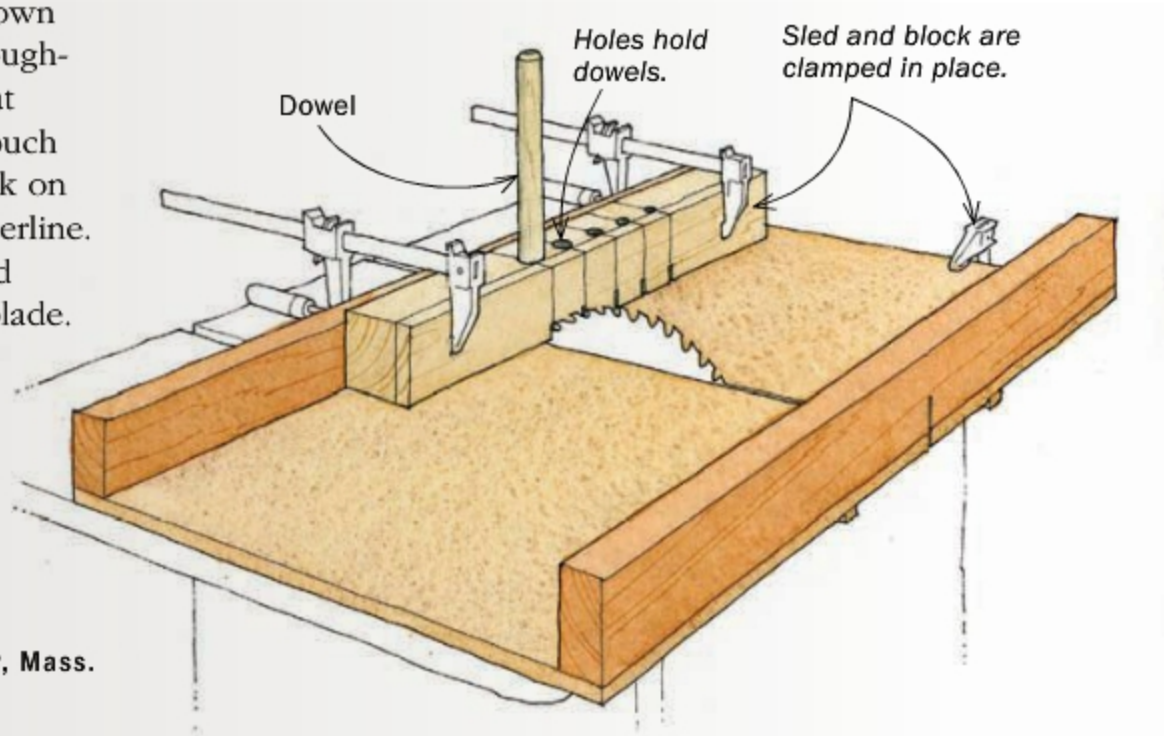
When making a large number of tote boxes with dowel handles, I needed a quick way to put a crisp, uniform chamfer on the dowel ends. I made this simple jig, which is also great for chamfering the ends of pins for drawbored mortise-and-tenon joints, when you have a lot of them to cut.

Start with a 2-in. by 3-in. block about 15 in. long, milled straight and square. On top, pencil a line about ½ in. from the front edge. Next, make several marks perpendicular to the line on top, spaced to accommodate your largest-diameter dowel. Extend them down the front face. On the drill press, use Forstner bits to drill through-holes of varying diameters on these centerlines. My jig starts at ⅜ in. and goes up from there. Their front edges should just touch the reference line from behind, as shown. Put the drilled block on the crosscut sled to cut entry slots into each hole at each centerline.

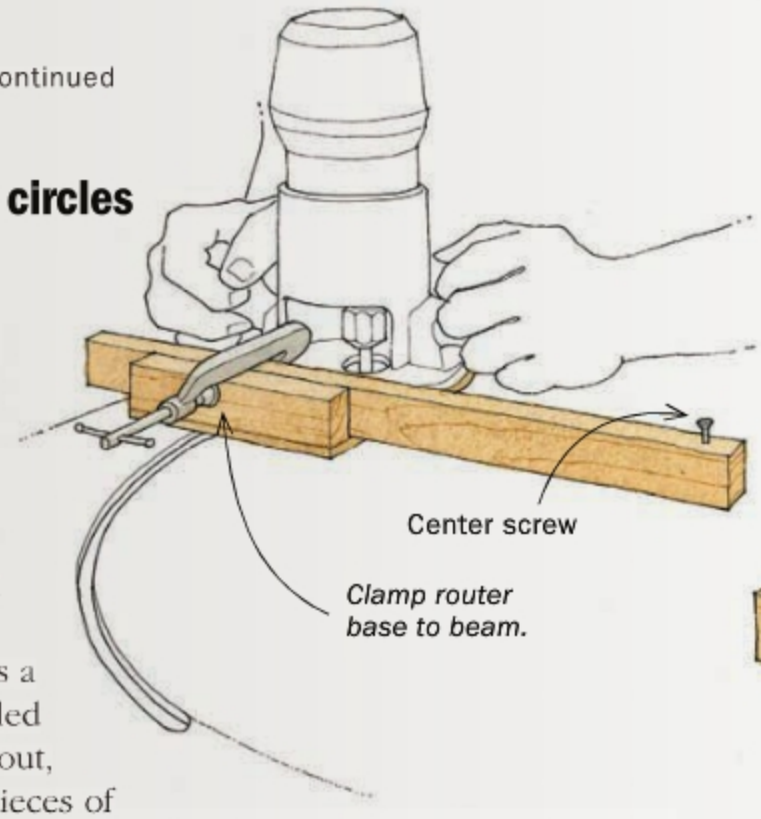
To use the jig, clamp it to the back fence of the crosscut sled with the marked end resting against the leading edge of the blade. Reposition the sled and raise or lower the blade to set the desired chamfer, then clamp the sled to the table. Now set the jig in place, with the blade sitting in the appropriate entry slot for your dowel. Clamp the jig to the sled's back fence and turn on the saw. Push the dowel into the hole and slowly turn it around in either direction. The dowel will have a neat chamfer in seconds.

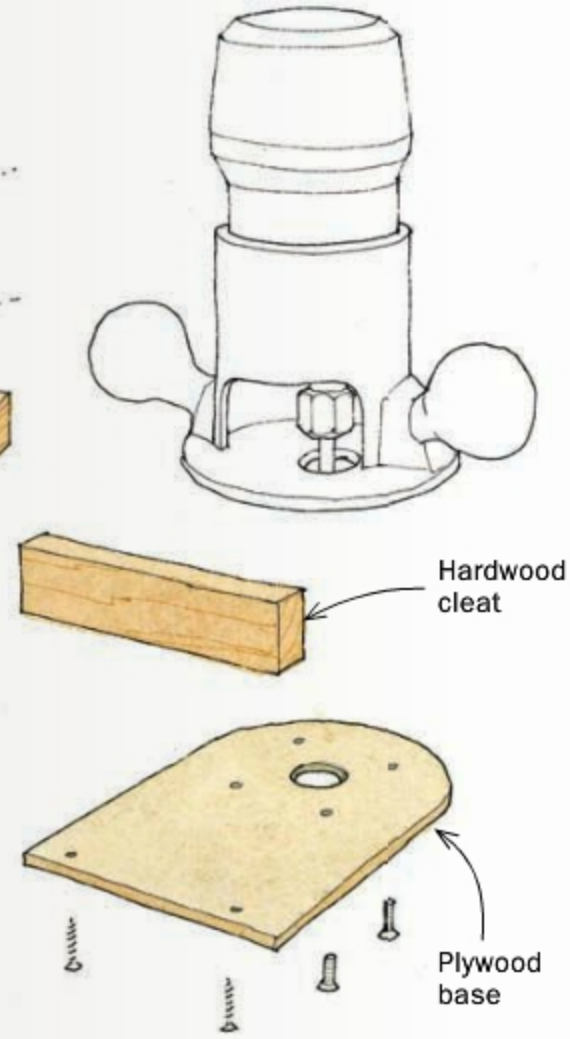
—JAMES STANSFIELD, Winchester, Mass.





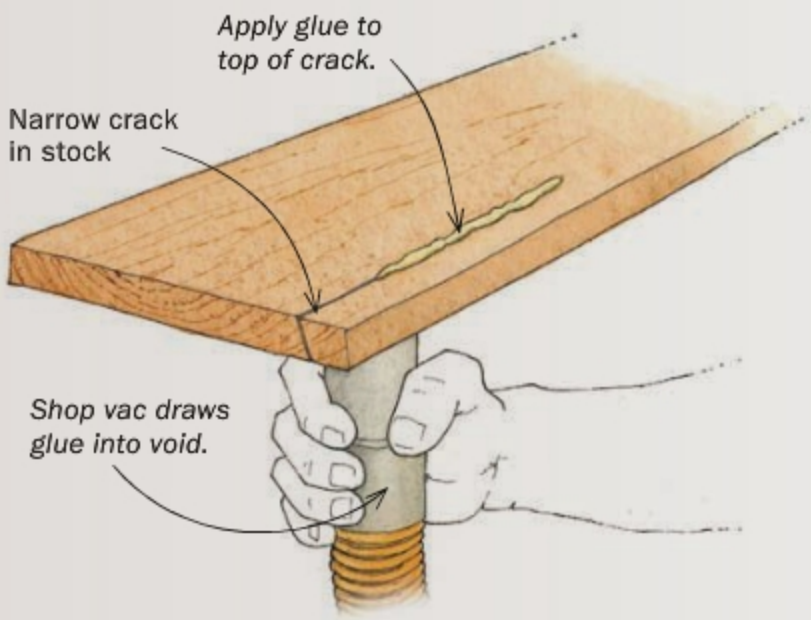
Low-tech router compass cuts large circles





For a large radius, this router compass is easy to make and adjust. To make it, remove the router base and trace its outer edge, the center hole, and the screw holes on a piece of ¼-in. or ½-in. plywood. Cut out the base, leaving it a couple of inches long and squared off on one end. Drill for the center hole and screws, and attach a square cleat on the leading side. Countersink the screws so they don't scratch the workpiece. The beam is a longer length of square stock with a hole drilled through one end for the center screw. For layout, make a pencil compass by overlapping two pieces of narrow stock and clamping them together at the correct length. Drill one end for the pencil and drive a nail through the other to hold the center. With the circle drawn, insert the router-compass screw in the center, place the bit on the pencil line, and clamp the beam to the cleat on the router's base. Now you are ready to rout.

—GARY WILLIAMS, Lakeside, Calif.



Shop vac sucks glue into cracks

While preparing stock for a blanket chest project recently, I noticed a narrow crack in one piece, about an inch from the edge and a foot long, running to the end of the board. I could see that trying to work glue into the crack with a brush or piece of veneer would be fruitless. Then I saw my shop vacuum and inspiration struck. With the vac hose underneath the board, aligned with the crack, and a bead of glue on top, I turned on the vac. The glue started to disappear into the crack, so I did it again. Soon I had glue coming out the bottom of the crack, even at the end of the board. I clamped the board and, after the glue cured, the crack had disappeared and I had a sound piece of wood.

—LES CROOKS, Mishawaka, Ind.

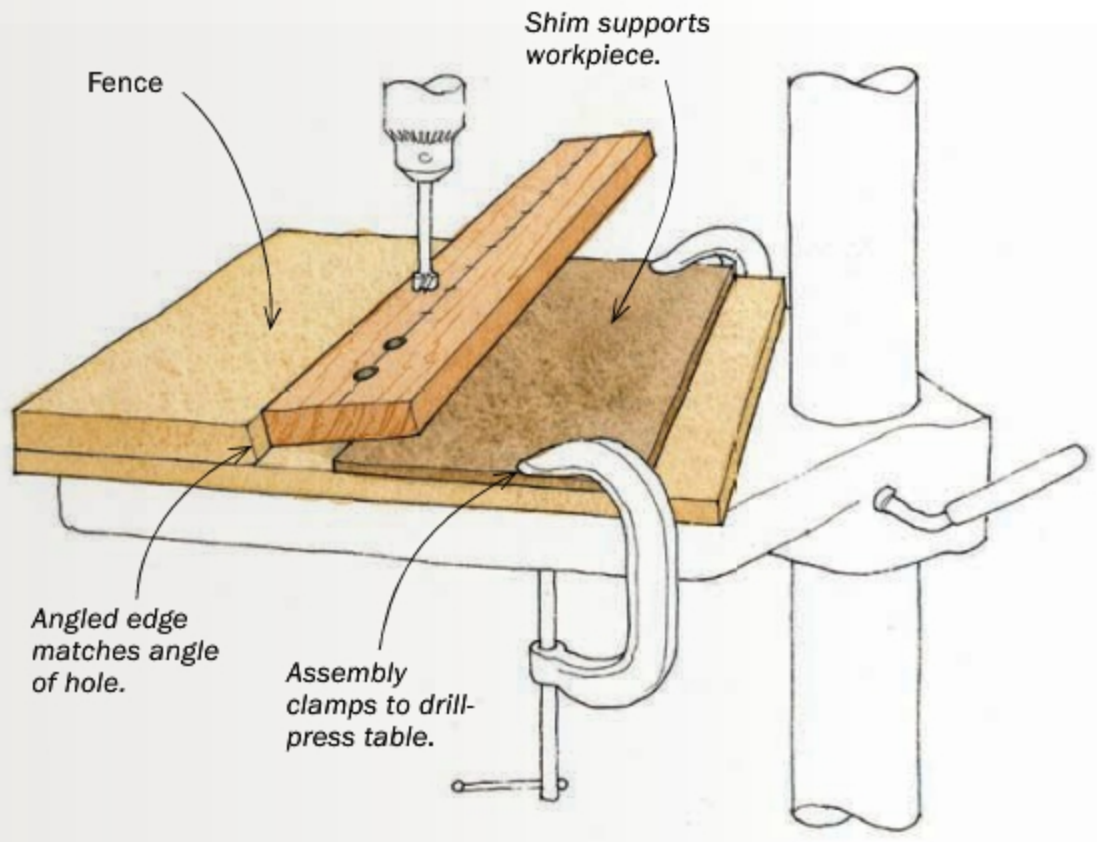
Angled drilling made easy

For a closet-organizer project, I needed a line of peg holes at a 7½° angle in a single board. This jig—a fence and shim attached to a simple base—made the task easy.

To make the fence, use MDF or scrap about the same thickness as the workpiece. Rip a bevel matching the desired angle along one edge and fasten the fence securely to the base. Next, butt the workpiece lengthwise against the fence and tilt the stock until its edge makes full contact with the bevel. Then slide the shim into place underneath so that it supports the workpiece at the correct angle to hold it snug against the fence. You can fasten the shim in place with clamps or hot-melt glue.

Set up to drill by positioning the jig with the line of holes centered under the bit, then clamp the base to the table. After drilling a hole, slide the workpiece along the fence to the next hole location.

—JOHN CUSIMANO, Lansdale, Pa.



tools & materials

POWER TOOLS

Larger Domino produces fast, flawless joints for full-size furniture

WHEN THE FESTOOL DOMINO DF 500 was introduced in 2007, it was a head-turning idea: a handheld joinery system that made loose mortise-and-tenon joints as easy as biscuits (see Tools and Materials, *FWW* #190).

When I purchased the 500 it was a "paid for itself with the first project" deal. I do a lot of architectural woodworking—doors, built-ins, custom gates—and I used it to build primarily frame-and-panels and window frames, and to register large panel glue-ups. It performed well, so I was happy to take a look at the newest Domino, the XL DF 700.

This model is bigger, made to cut bigger slots for larger tenons, and I had the perfect job for it: cutting joinery in the rails and stiles of a large door I was making for a camper.

Essentially, the tool operates much like a biscuit joiner. You lay out the slots to be cut with tick marks, install the proper-size bit, adjust the fence and size of the slot, and bring the tool to the work, aligning the layout marks with a center line on the fence. The bit both oscillates and plunges to create the tenon slot.

The fit and finish on the 700 is very good, and the pistol grip is a much better design than the original, giving you a firm hold on this 11-lb. tool. I also found that the trigger and other controls are better than on the original. The fence adjustments for the height and depth work particularly well.

For this tool to work properly, you need good dust collection to clear the chips. I used an old shop vac, and it worked fine.

The 700 cuts slots for tenons sized from 3/8 in. thick by 7/8 in. wide up to 1/2 in. thick by 1 1/8 in. wide. But the 700 also cuts slots as deep as 2 3/4 in., so you can use tenons as long as 5 1/2 in. That's big-time joinery. A smaller Domino joint (5/8 in. by 7/8 in. by 2 in.) featured in a strength test (see "Joinery Shootout," *FWW* #203) was able to withstand close to 600 lb. of pressure. That test revealed that bigger tenons are stronger, so it stands to reason that the bigger Dominos would perform as well or better. Unfortunately, the bits for each machine are not interchangeable.

Like the 500, the 700 comes with repetitive locating pins, which help locate slots a set distance apart or in from the edge of the workpiece. A nice feature on the 700 is that the pins can be hinged back out of the way when they're not used.

Overall, the 700 has several design improvements over the 500, with plenty of power and control, even when cutting slots for the biggest tenons. Though pricey, it is a good, well-thought-out tool for quick, flawless joinery.

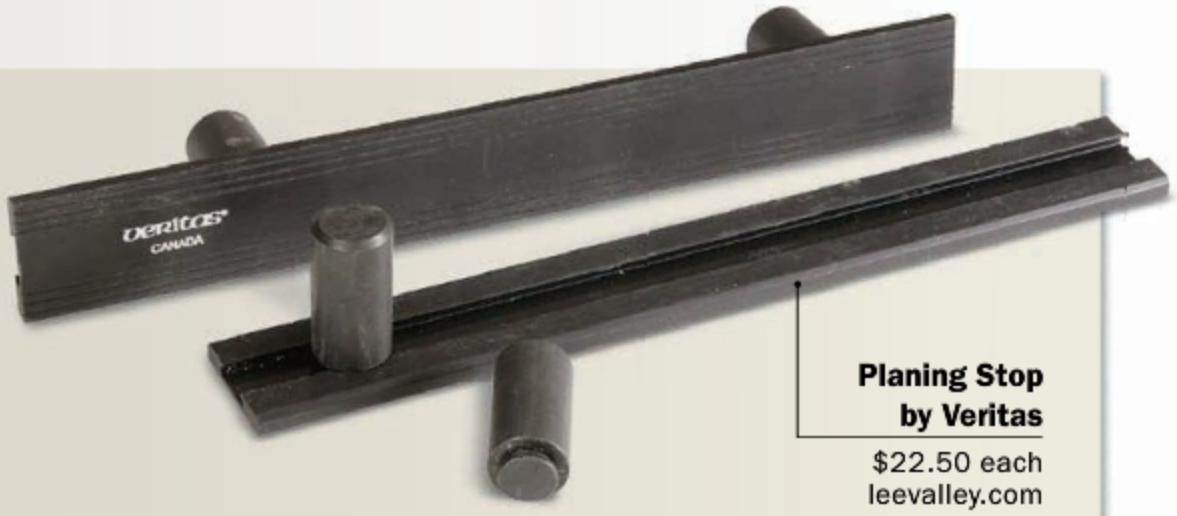
—Andrew Peklo is an architect and woodworker in Woodbury, Conn. (peklodesignandjoinery.com).

New Domino cuts deep. *The original 500 cuts slots for tenons up to 5/8 in. thick by 5/8 in. wide by about 2 in. long (above left). The 700 goes bigger, cutting slots for tenons up to 1/2 in. thick by 1 5/8 in. wide by 5 1/2 in. long (above right).*

Photos: staff

ACCESSORIES

Handy stop for handplaning



Planing Stop by Veritas
$22.50 each
leevalley.com

I'M A BIG FAN OF PLANE STOPS. It's much faster to butt a board against a stop rather than clamp it in a vise or between two benchdogs for face-planing. Still, I was a little hesitant to try the new planing stop by Veritas. First, it's easy enough to make one, and second, the thought of planing against a metal stop left me a bit queasy. But I took a pair home to use in my shop.

After a few weeks, they've gotten a lot of use. The thing I really like is that unlike my shopmade stop that clamps into my front vise, the Veritas stop frees up the vise for other tasks. This comes in handy when planing parts like table aprons, where I'll plane the face using a stop and then clamp it in the vise to hit the edges.

The posts underneath fit nicely in ¾-in. dog holes, and they can be adjusted to fit any dog spacing up to 9 in. apart. The aluminum stop is less than ¼ in. thick, which let me plane fairly thin stock. I did hit it once with my plane, but there was no apparent damage to the iron. Finally, adding a second Veritas stop perpendicular to the end stop helps secure long or narrow workpieces.

Overall, the new Veritas planing stop is an affordable bench accessory that will get plenty of use.

—Michael Pekovich is FWW's art director and an unrepentant hand-tool junkie.

Safe stop. *The new Veritas planing stop sits low enough that you can plane thin stock without worrying about collisions. A second stop helps keep long workpieces from shifting.*

HAND TOOLS

Classic tool made better

WITH ITS ABILITY TO CONTROL DEPTH WITH PRECISION, the router plane excels at fine tuning machine-cut joinery, stepping in to flatten and level the bottoms of dadoes and half-laps. It's also great for delicate work, such as trimming a too-shallow hinge mortise.

As I mentioned in a previous article ("Why you need a router plane," *FWW* #229, p. 24), I prefer the closed-throat type, because it handles narrow stock better than open-throat models, so I was happy to test Lie-Nielsen's new offering.

The initial fit and finish of the plane was quite nice, but there was some tune-up required to correct a sole considerably crowned front to back. It took 45 minutes to fix the problem, first with a mill file and then polishing with sandpaper (starting with 80 grit) on a steel flattening plate. The good news is that it's a one-time fix, so it was time well spent.

The iron was square to the sole and was easy to flatten and polish with bench stones. The cutting edge held up really well while in use. Adjusting the depth was easy and precise with the finely fitted threads on the knurled knob. The cutter lock also worked well with no slipping or loosening during use.

The Lie-Nielsen closed-throat router plane is well made overall and would be a welcome addition in any woodworking shop.

—Dan Faia runs the cabinet and furniture-making program at North Bennet Street School in Boston.

Large Closed Throat Router Plane by Lie-Nielsen
$140
lie-nielsen.com

■ ACCESSORIES

Lumber from your firewood stack

Log to lumber. *With this log mill, you can salvage prized figured wood from a firewood pile, converting it to usable stock for small jobs. Use the mill to create two flat reference surfaces (above), then use your bandsaw fence to resaw boards (right).*

AccuRight Log Mill
by Carter Products
$140
carterproducts.com

THE CARTER ACCURIGHT LOG MILL is a heavy-duty, user-friendly sled that works with any bandsaw to turn firewood logs into lumber.

An adjustable steel guide bar rides in the bandsaw's miter slot, and Mylar strips on the bottom of the base smooth out the sliding action. But the heart of the jig is its steel fence, which holds the log with two adjustable clamp heads. The fence is also nicely adjustable side to side, and heavy-gauge, which makes the sled very stable in action.

To use it, you position the rear jaw to suit the length of the log, and then tighten the front one. The clamps hold logs securely, even if the ends are crooked. After adjusting the fence to set up the path of the first cut, you saw one flat face, and then put that face down to cut an adjacent face square. Now you're ready to cut off perfect slices with a normal resaw setup.

The jig can handle logs up to 21 in. long with the diameter depending on your saw's resaw capacity. That makes it great for box makers and turners, who work with short lengths and chunky sections, but it can yield beautiful drawer fronts and other furniture parts too.

If you run across beautiful log sections from time to time like I do, and you don't mind waiting for green boards to dry, this jig is your ticket to a steady source of free lumber.

—Asa Christiana is editor of FWW.

Mini Digital Height Gauge
by Wixey
Model WR 25
$25
wixey.com

■ ACCESSORIES

Simplify your machine setups for less

WIXEY HAS INTRODUCED ANOTHER MODEL to its line of digital gauges, bringing easy and exact measuring to the shop. It's a height gauge, and there is a lot to like about it.

Aside from the affordable price, the gauge is intuitive and easy to read in both metric and fractional measurements. With the ability to measure height to 3 in. and depth to 2 in. (with the included plunger), this gauge will be handy for setting up router bits, sawblades, and checking the depth of dadoes and drilled holes.

The legs straddle the blade or bit, allowing for exact measuring. The gauge also has an incremental mode so you can reset it to a second distance, a handy feature if you're routing an odd-size dado with two passes (two fence setups).

The gauge's legs have magnets on the bottom, so it won't tip over—at least on a metal surface. After zeroing out and setting the gauge, you lock in the measurement. The only downside is that the body is made of plastic, so you must treat this tool with care. All in all, though, it is a welcome addition to the shop.

—Peter Breu is a furniture maker in Manchester, N.H.

Get an edge on turning

HOW TO SHARPEN THE FOUR ESSENTIAL TURNING TOOLS FOR PEAK PERFORMANCE

BY PETER GALBERT

A FURNITURE MAKER'S KIT

Four tools can cut just about any shape a furniture maker will need (from left): ⅛-in. diamond parting tool, ¾-in. roughing gouge, ⅜-in. detail gouge and ¾-in. oval skew chisel. Be sure to buy high-speed-steel, which can be ground more easily than other steels without affecting its temper.

For many woodworkers, learning to turn furniture parts, such as legs, pulls, or even columns, is a natural progression. It's a fun journey, but to be successful you need to buy the right tools (see photo, above) and keep them sharp.

Sharp tools take the frustration out of turning and ease the learning curve when using a lathe (see "What the Experts Don't Tell You About Turning Furniture Parts," pp. 68–73). And you need to sharpen frequently, since cutting so many linear feet of material at the lathe dulls cutting edges quickly.

Here, I'll show you my sharpening tricks and techniques. I use an 8-in. bench grinder and a set of commercial sharpening jigs made by Oneway. I also hone some of the tools with a couple of inexpensive sharpening accessories. These make sharpening fast and foolproof, and get you back to turning quickly.

Touch up the parting tool

The diamond parting tool cuts straight, accurate diameters, like the ends of tapers or the shoulders of tenons. It's a chisel beveled on two sides with a diamond-shaped cross section that ensures the chisel's cutting edge is the widest part of the tool. The design lets you take deep cuts without the sides binding in the kerf. The key in regrinding this tool is to keep that geometry while removing material.

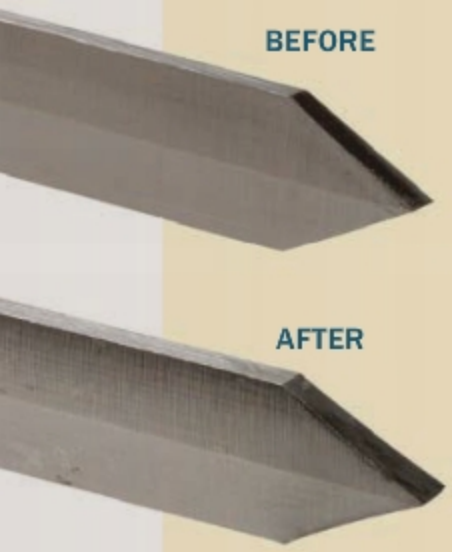
Turn on the grinder and lay the tool on the top edge of the rest so that the wheel contacts the heel of the bevel lightly. Then lower the top of the tool until the wheel contacts the middle of the bevel. Grind it evenly by flipping back and forth frequently between both sides.

It shouldn't take much to refresh the edge. Stop as soon as the edge is square and a burr has formed. Don't worry about the burr. It gets knocked off harmlessly when it touches a blank. There's no need to hone the tool—grinding alone leaves a cutting edge that's plenty sharp.

Accentuate the bevel on the roughing gouge

A roughing gouge can turn blanks into cylinders, and also cut some basic shapes like tapers. When sharpening, you need to

⅛-IN. DIAMOND PARTING TOOL



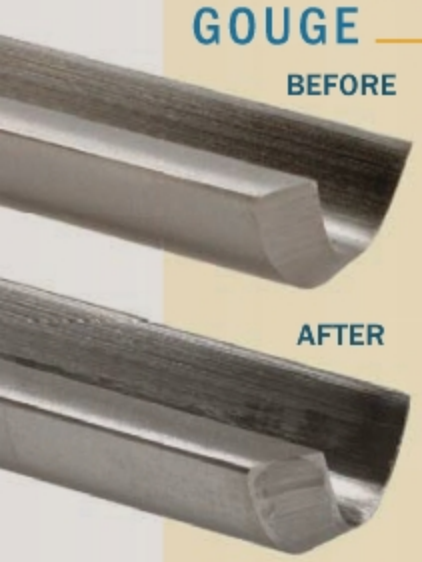
Straight out of the package, the diamond parting tool needs just a quick touch-up on the bench grinder. It's the only tool that needn't be honed.

A delicate balance. *Rest the tool on the edge of a flat tool rest and grind evenly from both sides.*

SEE IT IN MOTION

Photos: staff

¾-IN. ROUGHING GOUGE



New gouges have bevels that are too steep and short for effective turning. Regrind them to lengthen the bevel, and then hone the edge.

Set up and grind. *Stick the handle into the V-pocket at the back of the jig (below) and adjust the arm so the bottom corner of the bevel is resting on the wheel. Rotate the tool back and forth, and concentrate on getting an even grind along the whole edge.*

polish the flute, regrind its bevel, and hone its edge. Start on the flute with a small DMT honing cone ($29, amazon.com) and then switch to a ⅝-in. dowel that's been charged with jeweler's rouge or a similar, fine-grit buffing compound. Work them up and down along the first ½ in. of the flute until you have a high polish along the tip. Then move on to grinding.

In most cases, the factory-ground bevels on new gouges are too short and steep, so count on doing some extensive grinding the first time to reshape the bevel on yours. It should end up between 30° and 40° and about ¼ in. to 5/16 in. long. I use the basic Wolverine jig ($90, woodcraft.com), which lets me butt the end of the handle against a V-notched metal rest. The notched piece slides in and out on a long arm, which is used to set the bevel angle. Once set, just butt the gouge in the pocket, and rotate left and right to get an even grind around the tip. Keep the gouge's tip straight, however. It lets you turn more consistent spindles.

I hone my gouge because I find the finer edge lasts longer, cuts cleaner, and gives me greater control over the tool. To do this, I brace the tool against the edge of a workbench and use a set of fine and super-fine EZE-LAP diamond paddles ($6 each, highlandwoodworking.com) to hone the edge. Rock the paddle on each pass to find the tips of the hollow-ground bevel, and rub it both across the bevel and diagonally toward

SHARPENING JIG IS A BARGAIN

The Wolverine Grinding Jig comes with a great tool rest, and a special arm (far right) designed for turning tools. The set is $90 at woodcraft.com.

POLISH AND HONE

Inside first. *Hone the first ½ in. of the gouge's flute with a diamond cone (left), followed by a dowel charged with jeweler's rouge or finer-grit buffing compound (right). Keep both flat in the flute to avoid beveling the edge.*

Then the bevel. *After regrinding, brace the tool against the rest or a workbench and hone the beveled edge with a diamond paddle.*

3/8-IN. DETAIL GOUGE

BEFORE

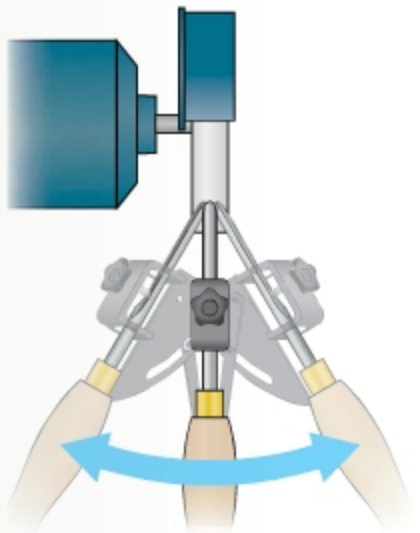
AFTER

Create a true fingernail profile on a new detail gouge using a commercial jig, then hone the edge for a clean, easy-to-control cut.

Set the projection. *Adjust the gouge so that it sticks out about 2 in. from the Vari-Grind jig.*

Leg in the pocket. *Adjust the pocket of the Oneway jig to set the bevel angle, and grind with no worries.*

SIMPLE MOTION



You simply pivot the Vari-Grind jig to the left and right for an even grind.

the center. Honing leaves a burr along the inside of the flute. Remove it with the charged dowel.

Detail gouge gets a fingernail grind

The detail gouge cuts curves, coves, and other detailed profiles. These shapes are easier to cut if you lengthen and curve the gouge's bevel to look like a fingernail. I do this with a Wolverine Vari-Grind Attachment (right).

Polish the flute first. Then place the gouge in the Vari-Grind jig so that the tip projects about 2 in. Adjust the leg of the jig for an angle of about 150° between the leg and gouge. Place the leg of the Vari-Grind in the pocket of the Oneway jig, and slide the arm in or out to create about a 35° bevel angle at the tip of the tool.

Grind the tip first, and keep pivoting the jig to the left, right, and then back to center. Check often to see that the grind at the tip is symmetrical on both sides. The bevel should be about ¼ in. long at the tip, and half that length at the grind along the sides. Finish it by honing the edge just like the roughing gouge.

Relieve the skew

An oval skew chisel can cut shapes and smooth surfaces, but it works better if the cutting edge is slightly curved. Grind that shape by balancing the oval shaft on a flat tool rest set at about a 35° angle to the wheel. Round the edges by pressing the center of the shaft tightly against the rest and swinging the handle in a side-to-side arc. Flip back and forth between sides to remove equal amounts of material from the bevels of the chisel. When done correctly, the bevels will be the same length.

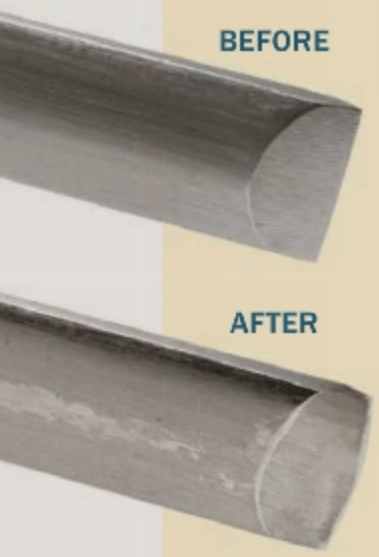
FOOLPROOF GUIDE
The Wolverine Vari-Grind Attachment ($55 at hartvilletool.com) fits into your Wolverine Grinding Jig. Set the leg to roughly a 150° angle to the gouge to create a perfect fingernail profile.

Finish by honing the bevels on 4,000- and 8,000-grit sharpening stones, rocking back and forth with each stroke to find the ends of the hollow-ground edge. A few strokes should create a fine polish line that hugs the entire curve. You can refresh it a few times by re-honing it, before eventually having to regrind it.

You now have a kit of tuned and sharpened tools, You'll be turning in no time. □

Peter Galbert teaches turning and builds Windsor chairs in Sterling, Mass.

3/4-IN. OVAL SKEW CHISEL



BEFORE

AFTER

Relieve the heel and toe of the bevel with a bench grinder and then hone the edge for clean cut.

SEE IT IN MOTION

Press in the middle. *Keep the gouge tight against the rest and swing the handle to the left and right to create a curved edge.*

Hone on stones. *Rock the hollow-ground bevel to find the flat spot and then drag it in a sweeping motion to hone the edges.*

4 must-have handsaws

THESE TOOLS CAN BE FASTER AND MORE ACCURATE THAN MACHINES

BY MATT KENNEY

I regularly use four handsaws in my shop, not because I'm a hand-tool nut but because a handsaw is often the smartest, most efficient choice for the job at hand. Take the job of crosscutting or mitering delicate moldings and miter keys. You could do those tasks at the tablesaw or miter saw, but you'd need to devise a jig to hold the workpiece during the cut, and there's no guarantee that the spinning blade won't chew up the workpiece. It's much quicker, safer, and cleaner to make the cut with a backsaw.

Handsaws are great for getting into tight spaces, too. A coping saw is the perfect tool to cut out the waste between dovetails. The thin blade can fit into even the tightest pin socket and make a turn along the baseline, removing the waste in seconds. Chopping out waste with a chisel takes much longer, and routing it out is possible only when there's enough clearance between the tails to fit the bit.

And then there are jobs that a power tool simply couldn't (or shouldn't) do, like cutting pegs flush. The only power-tool option is a router, and you have to make an auxiliary base to raise the router and then dial in the bit's cut depth so that it doesn't ruin the surface. Not to mention that pegs are often used on narrow parts, like legs, where the router can tip and ruin the part.

There are lots of handsaws out there, but I think the four you need most are a dovetail saw, a backsaw set up for crosscuts, a dozuki, and a coping saw. I'll show you some tips on getting the best from each one.

Matt Kenney is a senior editor.

Easy way to start the cut. *After cutting a line with a knife or marking gauge, put the nail of your forefinger and thumb into it, place the saw's teeth against the nails, and push lightly.*

1. Dovetail saw

I bought my dovetail saw to make hand-cut dovetails, but over the years I've found that it's good for other tasks, too, such as notching a shelf or drawer divider to fit in a stopped dado cut in a case side. For a smooth cut, I'd recommend a saw with about 19 teeth per inch (tpi), sharpened for a ripcut. Western-style saws cut on the push stroke and come with two different handle styles—pistol grip or straight. I prefer a pistol-grip handle, which makes it easier to push the saw and control the cut.

Photos: Michael Pekovich

Cut a clean shoulder. *A crosscut backsaw is perfect for getting rid of the waste in the half sockets on the edges of a tail board. For the best results, chisel an angled groove along the scribed baseline (above) and use the vertical wall of the groove to get the saw started (left). The groove helps to start the saw in a straight cut, so that it naturally cuts down along the baseline, leaving no waste that needs paring.*

2. Crosscut saw

When you're making furniture, there are always small parts—like moldings, pulls, drawer stops, and pegs—that need to be cut to length. Instead of using a tablesaw, which could destroy those delicate parts in a flash, I use a Western-style carcass backsaw. A crosscut saw with about 12 to 14 tpi and a blade that's a bit taller and longer than on a dovetail saw can easily make clean, accurate cuts in parts up to 1 in. thick and 3 in. to 4 in. wide. To increase accuracy, I use the saw with a sawhook, which is simply a flat board with a square fence (and a cleat that goes in your vise). The hook is great because it gives you a way to hold the workpiece still during the cut (both you and the saw press it against the fence) and helps to keep the saw cutting straight and square.

A sawhook is great for small parts. *The saw cuts on the push stroke, which helps keep the part against the fence while you cut. A large fence with two kerfs in it—one at 90° (above) and the other at 45° (left)—improves the accuracy of your cuts and prevents tearout. Locate the kerfs so that the fence will support a workpiece on either side of each one.*

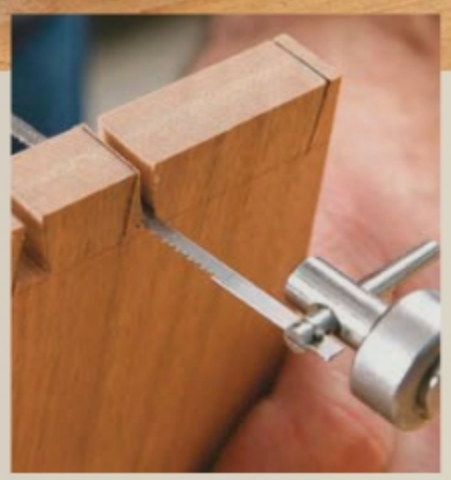
3. Dozuki

A dozuki saw has a thin, flexible blade, with fine teeth and a straight handle, which makes it well-suited to flush-cutting pegs. The flexible tip helps it get close to the base of a pin, and the straight handle is easier to hold and control with the saw on its side than a pistol grip would be. Get a crosscut dozuki with about 20 tpi. So why not just use a flush-cut saw? Their teeth have no set, so they clog and don't cut as well. Dozukis don't have those problems. The thin blade can kink, so get a saw with a replaceable blade.

Ride the spine. *As you saw, press down on the spine to keep the teeth away from the surface. Use a chisel or block plane to flush the edging.*

Sandpaper prevents scratches. *Where the spine trick won't work, fold a small piece of sandpaper (abrasive side in) and put it under the blade to prevent the teeth from marring the wood.*

The teeth face the handle. *This means the saw cuts on the pull stroke, which puts the thin, narrow blade under tension so it won't buckle.*



4. Coping saw

With its thin blade and tall frame, the coping saw is adept at cutting curves. It was used in the past to cope molding to get perfect miters. But I use it when cutting dovetails. I was taught to chop out all of the waste with a chisel—a tedious job. When I tried sawing out the waste with a coping saw, it was a watershed moment for me and I'll never go back. You don't need a super-expensive frame, but don't go with a hardware store cheapy, either. I spent about $20 on mine and it's easy to tighten and adjust the blade. The handle is comfortable, too. As for blades, get ones with a fine cut. They cut slower, which means the saw is less likely to jump the kerf at the end of the cut and damage the tail or pin.

One more worth having around

If you've ever found yourself at the lumberyard with several boards that are too long for the bed of your truck, you'll appreciate having a panel saw. Carrying around a circular saw and hoping to find an outlet is more hassle than it's worth. But leaving a panel saw (8 to 12 tpi) in the truck is no problem. Lay the boards in the bed with the gate down, and cut them to fit. I even use a panel saw in the shop to cut a board to rough length when it's too big for my chopsaw.

Greene and Greene: Master the Details

Perfect the classic cloud lift and ebony accents while building this iconic bed

BY MARTIN McCLENDON

I'm a big fan of Arts and Crafts furniture, so when it came time to build my daughter her first big-girl bed, I looked at a lot of beds in the style. But I returned time and again to beds designed by Charles and Henry Greene for the Gamble House in Pasadena, Calif. The design features the Greenes' signature cloud lifts, and ebony plugs and splines that pop against the cherry parts. Though classic, the design fits well in a modern setting, including a little girl's room.

For this article, I made a queen-size version of the bed. The cloud lifts might seem difficult, but I'll show you how to bandsaw them and how to make the ebony plugs.

The biggest challenges are fitting the spindles between the cloud-lift steps in the rails, and fitting the mitered top rail between the posts. I have great techniques for both. Stepped mortises in the top rail hide the spindle's top shoulder, which means you don't actually have to fit it.

Start with the post and rail joinery

When working with shaped parts, it's smarter to cut joints while the parts are still square. But with this bed, there are grooves and mortises that can be cut only after the cloud lifts are cut into the rails in the foot and head boards. So, the joinery is broken into two sessions: one before the cloud lifts are cut and the other after.

Start with the posts. They join the upper rail with a splined miter joint. Before cutting the posts to length, cut the 45° miters on the top of them, but don't cut the miters on the upper rail yet. Because the joint is so prominent in the completed bed, it must be perfectly tight. The easiest way to

Photos, except where noted: Matt Kenney; this page: Maria Ellen Huebner

How to handle the tricky miter

Getting the head- and footboard square is a challenge, because the top rail meets the posts with a miter. Dialing in the rail's length is the most critical step.

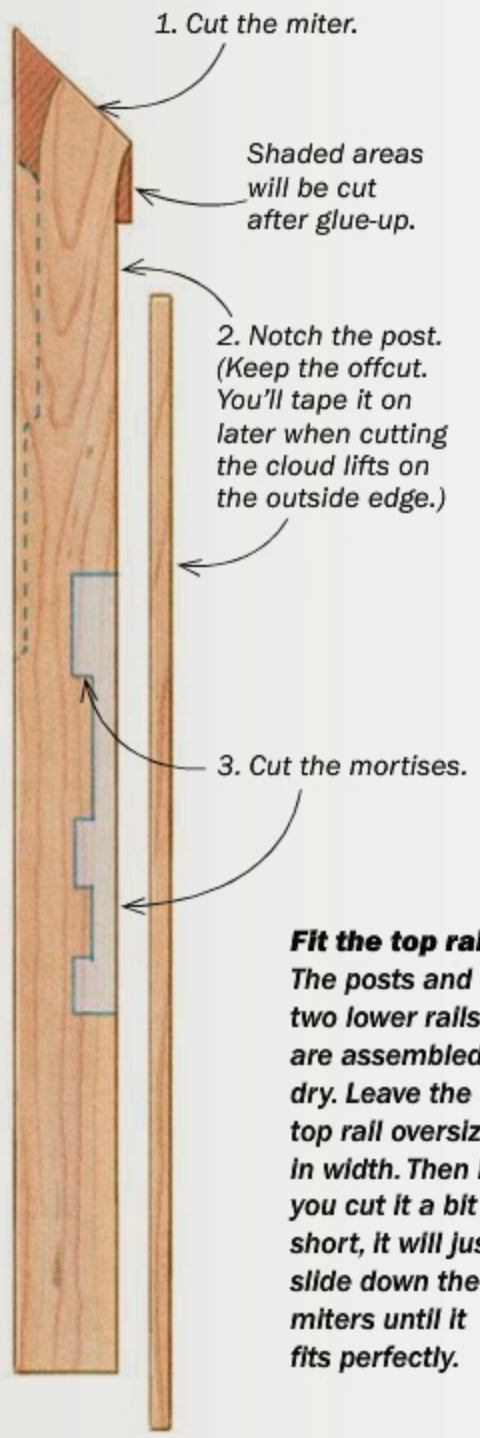
get it there is to fit the top rail after all the joinery below it is cut and you can dry-clamp the posts to the bottom and middle rails. That creates a rigid, square assembly that allows you to dial in the top rail's fit.

Now cut the posts to length, chamfer the bottom edge to prevent splintering, and cut them to width. You have to leave about ⅜ in. extra near the top to accommodate the inside curve of the miter where the top rail meets the post. Cut this notch on the bandsaw. Smooth the cut with a handplane, using a file to get into the corner.

Next, cut the mortises for the head- and footboard rails and the side rails. I hog out most of the waste at a drill press using a Forstner bit, then square up the mortises with a chisel. Finally, the bed bolt needs a counterbore and clearance hole in the post. Drill the counterbore with a Forstner bit, and then the clearance hole. Now cut the grooves in the rails for the bottom panel, and the inside edge of the two stiles that partially frame the upper panel. They're all through-grooves; cut them with a dado set.

The last bits of joinery before cutting the cloud lifts are the tenons on the ends of

START WITH THE POST

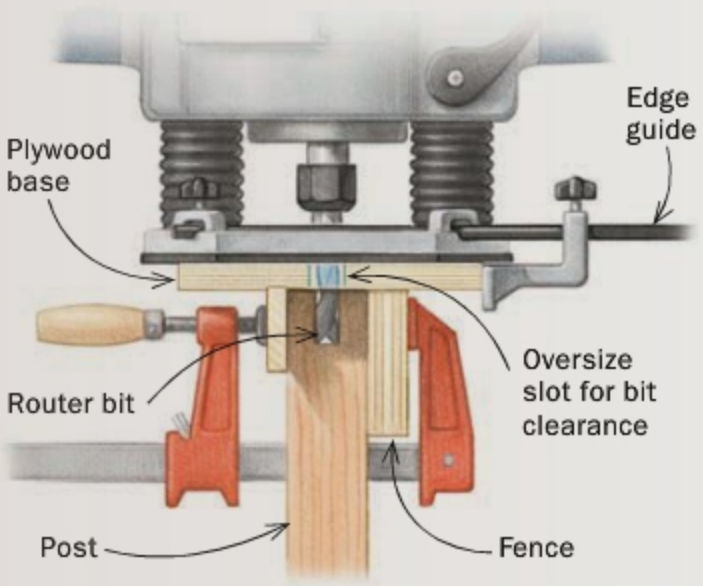


Fit the top rail. *The posts and two lower rails are assembled dry. Leave the top rail oversize in width. Then if you cut it a bit short, it will just slide down the miters until it fits perfectly.*

Use a sled for the miters. *Your miter gauge won't hold these big pieces as securely or give you as accurate a miter.*

SIMPLE JIG FOR ROUTING SLOTS

Center the jig's slot on the workpiece, and use the router's edge guide to align the bit for the cut. To ensure perfect alignment, be sure to register the jig and edge guide the same way on every piece that's routed.



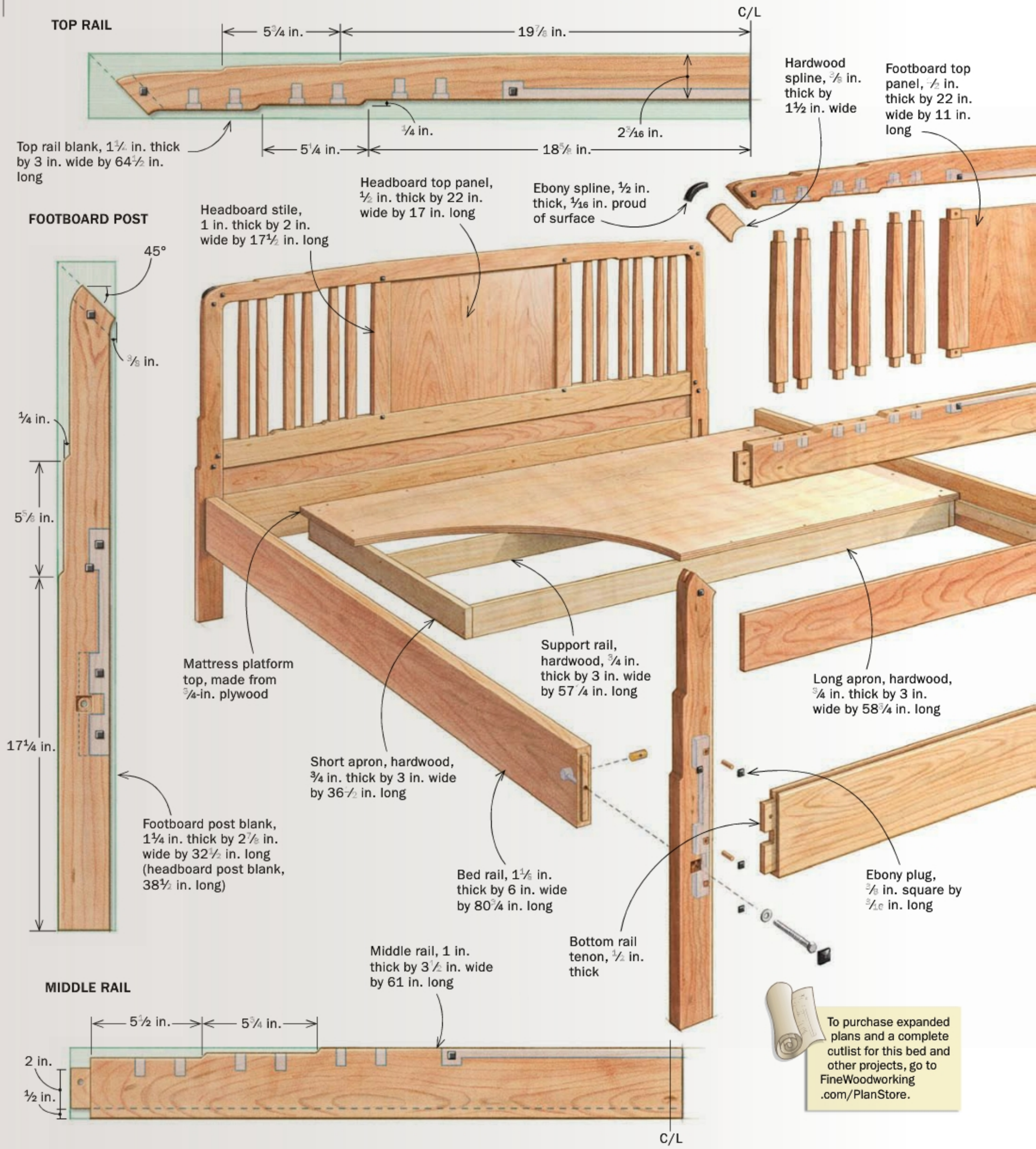
Mind the edge guide. *Use a spiral bit, and pull the router toward the outside of the joint to keep the edge guide tight.*

Grain direction matters. *Cut off the spline across the grain, so it will move in the same direction as the post and top rail and won't push the joint open.*

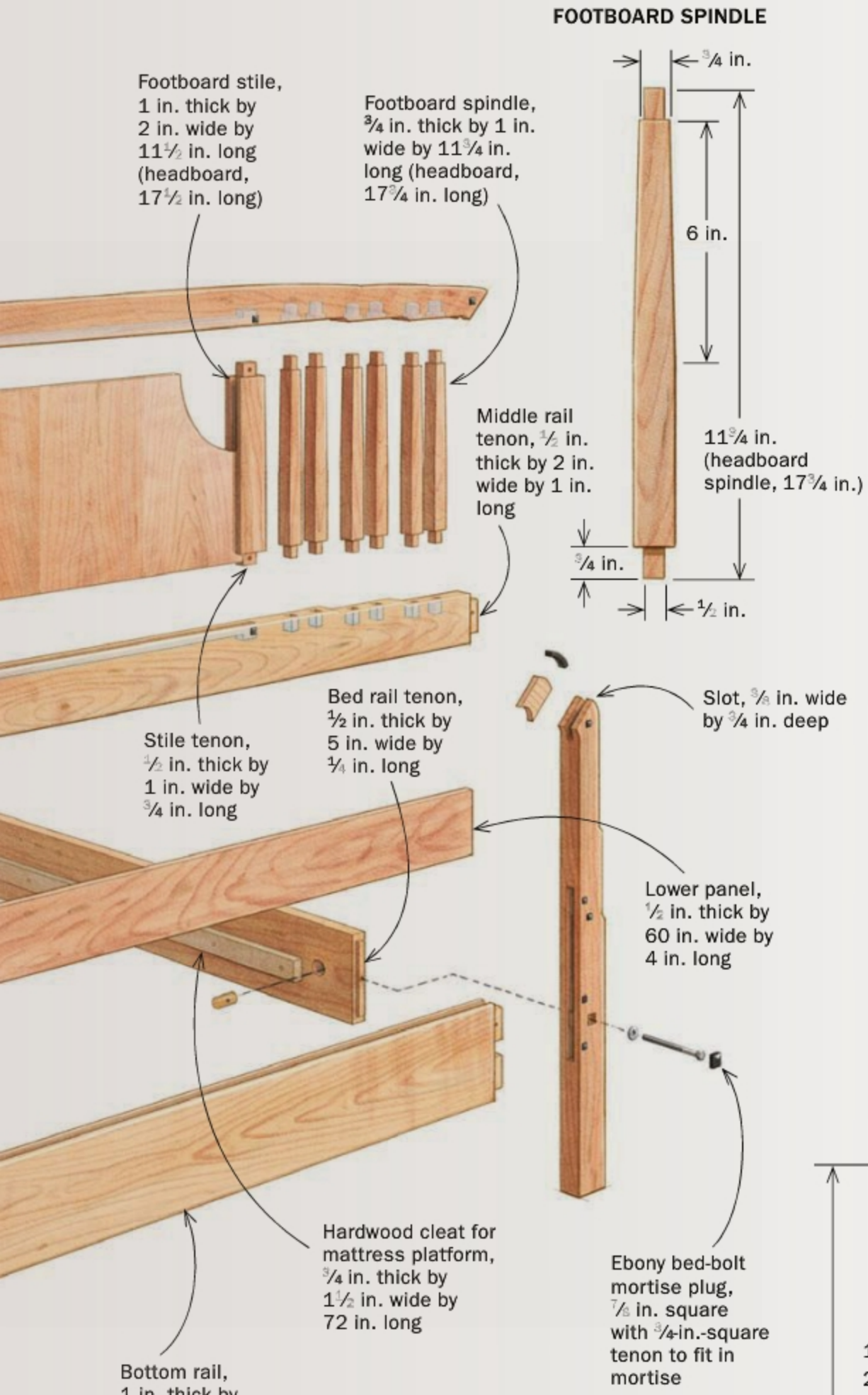
Drawings: John Hartman

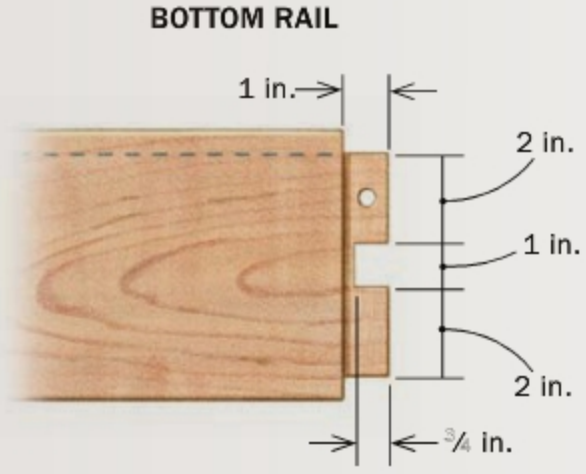
Arts & Crafts bed

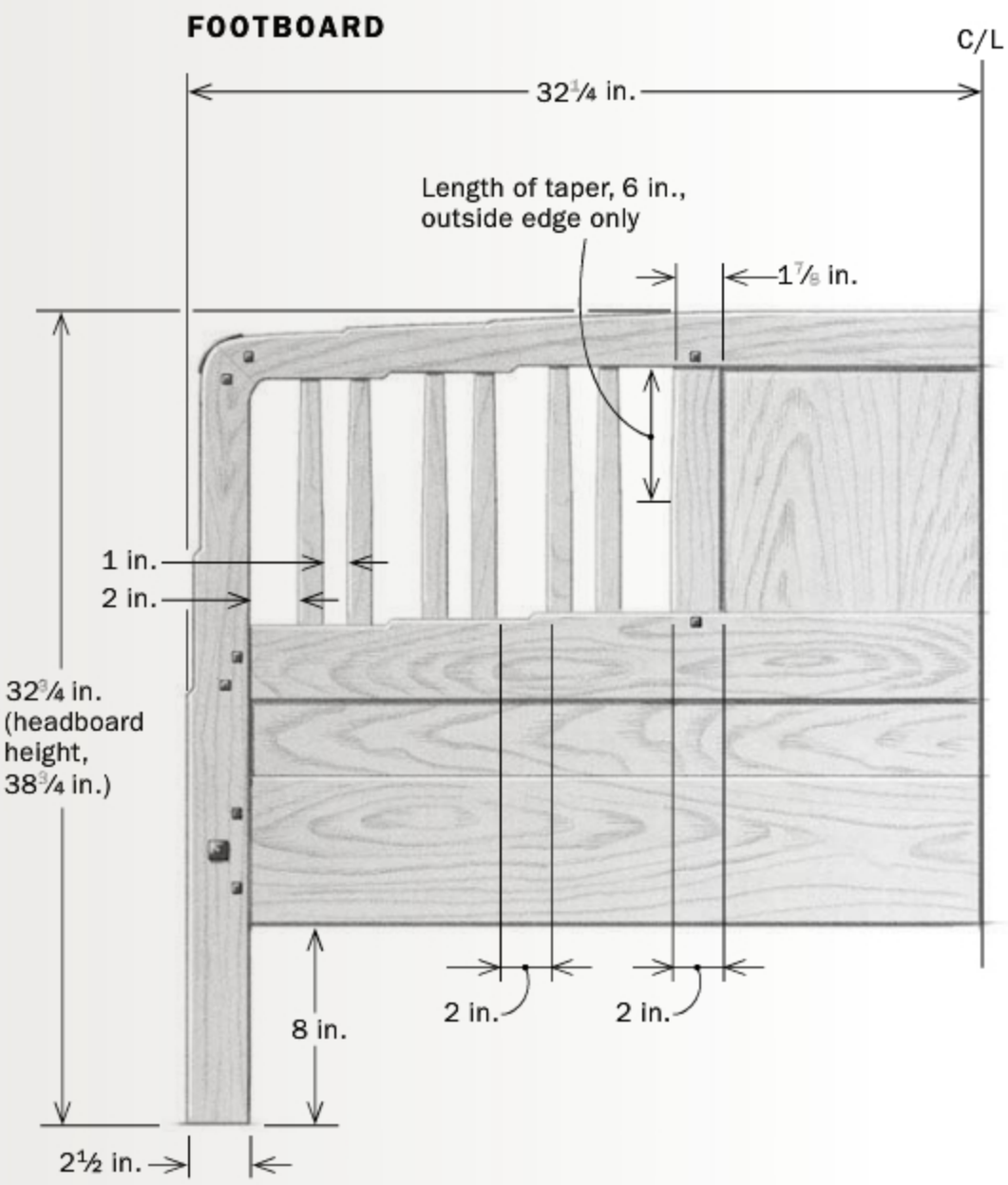
Cloud lifts and ebony accents highlight this queen-size version of a timeless Greene and Greene design. Stepped mortises in the top rail take the pain out of fitting the spindles.



To purchase expanded plans and a complete cutlist for this bed and other projects, go to FineWoodworking.com/PlanStore.







the rails. Because all of the head- and footboard rails are long, cut the shoulders at the tablesaw, using a sled to support them, and then the cheeks at the bandsaw. The double tenon on the bottom rail is made the same way, but cut the inside edge of each tenon with a handsaw and remove the waste between them with a coping saw. Clean up the shoulder with a chisel. Finally, use a shoulder plane to trim the tenons to fit the mortises.

The side rails are even longer, so cut the tenons on those with a rabbeting bit and a handheld router. This is a quick job, because the tenons are just ¼ in. long.

Don't cut the tenons on the footboard and headboard stiles now. You'll get a better fit if you do them later, at the same time as the spindles.

Perfect miter where it counts

To fit the top rail, dry-assemble the head- and footboards. Clamp the bottom and middle rails between the posts and check that the assembly is square.

Start with a top rail that's a bit wider than its final dimension. Cut a miter on one end of the top rail, mark for the miter on the other end directly from the assembly, and cut the second miter. Put the rail in place. If you cut it a bit short, don't worry. It will slide down until the joint is tight. And because the rail is oversize, it won't come down beneath the top of the posts. When it fits nicely, just mark the bottom edge from the dry-fit joint and rip it to width. Don't worry about the top. It will be spot on after the cloud lifts are cut.

Cloud lifts lighten the rails

A hallmark of Greene and Greene furniture, cloud lifts give an Asian feel to Arts and Crafts design, but they make fitting the spindles difficult. By burying the upper tenon shoulder in the rail, McClendon gives himself some leeway there, and needs a tight shoulder only at the bottom.

Stopped cuts create the clouds. *Use the fence for the long horizontal sections, and cut the angled transitions freehand.*

Don't cut the curves on the inside and outside corners of the miter joints yet. Having them square makes it easier to clamp up the head- and footboards during assembly.

The miter joint needs a spline to reinforce it. That means both the post and the rail need a groove along the miter. I rout it, using a jig and edge guide.

Next, mill up a blank to fit the grooves. I use cherry because it's strong and a lot less expensive than ebony. Later, I'll cover the spline with a decorative ebony cap. Cut the splines to size and set them aside. You don't need them until you glue up the head- and footboards.

Now for the cloud lifts

After both top rails have been fitted, it's on to the cloud lifts. Use a full-size template to lay out each part.

I make the cloud lifts entirely at the bandsaw. The long, straight side can be cut with the workpiece against the fence. When it's not possible to start at the end of the workpiece, like on the bottom edge of the top rail, I cut a notch into the edge wide enough for my bandsaw blade to fit into. That lets me cut in both directions from the notch and get a clean, straight cut. The short angled cuts that serve as transitions for one level of the cloud lift to the next are cut freehand at the bandsaw.

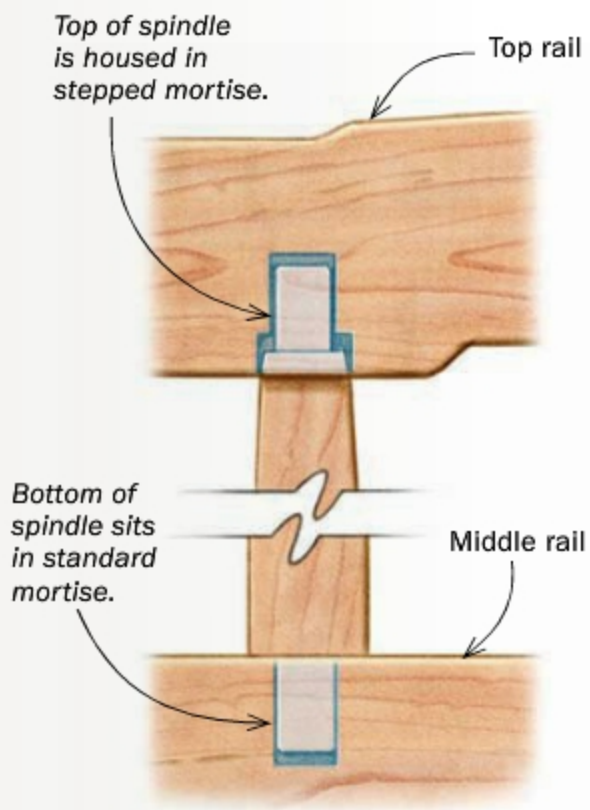
The only cloud lifts you should not cut at this point are those in the top edge of the top rail. It needs to be square so that you can mortise the bottom edge for the spindles. For now, clean up the cuts you've just made. I use a smoothing plane where

Clean up with a chisel. *It's the best tool for the small transition. For the horizontal surface, use a block plane, switching to the chisel near the corner where the plane can't reach.*

Two holes for a stepped mortise. *Drill the larger hole first and then center the smaller bit in the dimple left by the larger one. Use a Forstner bit for both. Square them up, again starting with the bigger mortise before the smaller one.*

STEPPED MORTISE

The advantage of a stepped mortise here is that you don't have to cut shoulders to match the cloud lifts perfectly or make the distance between shoulders perfect (the cloud lifts make this tough to do), because the shoulders are housed inside the mortise.



Assemble in stages

The length of the rails and the large number of spindles make this a tricky glue-up. Use glue with an extended open time and you won't have to rush, which could lead to mistakes.

Glue the posts to the lower rails. *The bottom panel is pre-finished and floats in the grooves (as does the top panel).*

Put the spindles and panel in the top rail first. *It's far easier to get the tenons into the stepped mortises now than trying to do it after the spindles' bottom tenons are locked into the mortises on the middle rail.*

possible and a combination of a block plane, scraper, and sandpaper where the smoother can't reach. Take care to keep these edges square to the faces of the rails.

Stepped mortises simplify joinery

Now it's time to cut the mortises for the spindles. As I did with the rail mortises in the posts, I use a Forstner bit at the drill press and a chisel to square them up. The mortises in the top edge of the middle rail are standard mortises. Those in the bottom edge of the top rail are stepped.

The stepped mortises have a couple of big advantages. For one, it is difficult to nail the shoulder-to-shoulder distance on the spindles when working between the shaped cloud lifts. By having only one standard shoulder to fit, at the bottom, and burying the top one in the rail, you get some leeway on length. You could, of course, just run the top of the spindle into a single mortise, with no tenon at all, but remember it is tapered. So the first step in the mortise accommodates the taper, while the second, deeper one accepts a straight tenon for a strong glue joint.

After mortising the rails, rout the stopped grooves for the upper panel. There are also mortises in those grooves for the tenons of the stiles. I cut the grooves and the mortises with a spiral bit in a handheld router. Use an edge guide to keep the bit centered and cutting straight.

At this point, it's safe to cut the cloud lifts into the top edge of the top rails.

Now cut the tenons on the spindles. I use a miter gauge to guide the spindles past the blade and cut the tenon shoulders, then I cut the cheeks with my tenoning jig

Bring it all together. *As you clamp the assembly, make sure that the tenon shoulders on the spindles are seated squarely on the middle rail.*

Knock in the spline. *With so much glue surface, it takes a bit of force to get it all the way in. Keep your mallet blows straight to avoid breaking off the spline.*

Clamp the miters last. *The horns left on the leg and top rail provide a square clamping surface, so there's no problem getting enough pressure on the joint to create a tight glueline.*

Classic ebony details complete the look

The Greene brothers combined pillowed ebony plugs and splines with their signature cloud lifts, calling attention to sturdy joinery in an elegant way.

Round the corner and rout a slot. *Use a coping saw to cut away the waste on the inside and outside of the corner, checking to make sure the saw is cutting square to the faces of the leg and rail (left). McClendon uses a bearing-guided slot-cutter (leevalley.com, No. 16J83.04) to cut the shallow slot. It takes two passes to cut it to full width (right).*

TWO-PART SPLINE PROVIDES STRENGTH AND BEAUTY

A cherry spline reinforces the joint, but the eye-catcher is the decorative ebony spline that frames the outside corner.

Transfer and lay out the curve. *McClendon uses a contour gauge to read the curve inside the slot (above). Then he traces the curve from the gauge to an ebony blank (right).*

at the tablesaw. Cut the tenons on the stiles that frame the top panel, too.

After the tenons are cut and fitted, taper the sides of the spindles and the outside edge of each stile. I use a shopmade tapering jig at the bandsaw, leaving the tops of the spindles oversize and then handplaning them to fit the first step in the mortise.

Drill for the bed bolts and ebony plugs

To drill holes in the side rails for the bed bolt and barrel nut, clamp the rail in a bench vise, on an angle. Put the post on the tenon and start drilling the hole in the rail, using the hole in the post as a guide but being careful not to deform it. Drill as far as the bit will go. Then remove the post and complete the hole. I used a nifty jig to align the hole for the barrel nut with the bolt hole. You can see how I did it at finewoodworking.com/extras.

Now drill the holes for the ebony plugs. I use plugs only at the major joints to add some visual interest. Most of them cover a peg, but some are just for looks. Drill the shallow plug holes now, so you can use the drill press and get holes that are square to the surface and all the same depth. You can square them up (and drill the holes for the pegs) after assembly.

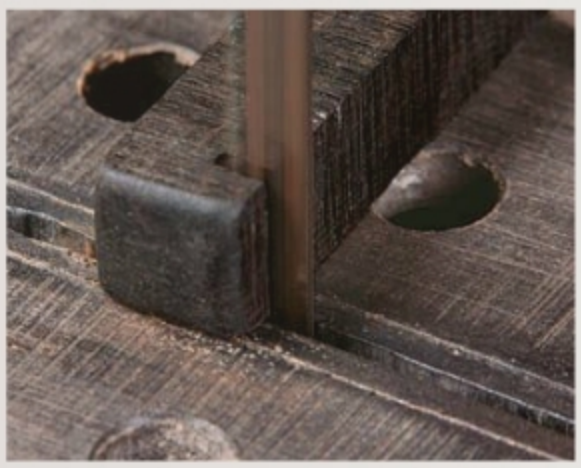
Before gluing up the head- and footboards, round over the edges that are "inside" them on the cloud lifts, spindles, stiles, and posts (do the outside edges after

Glue in the decorative spline. *Don't worry about cleaning up the bandsaw marks on the inside curve. It is the tight joints along the sides that matter most (above). After the glue sets, start pillowing the outside edges with a chisel to remove most of the waste (right), then use a sanding block and P220-grit sandpaper to round over the facets.*

PEGS ARE FUNCTIONAL, PLUGS ARE DECORATIVE

McClendon needed only one peg at every major joint, and covered it with an ebony plug. But the original had more, so he added extra plugs (but not pegs) for a more authentic look.

Mortise on top, peg below. *Use a chisel to square the top holes (left). Don't try to go the full depth at once. For the deep pegs, McClendon used dowels from a woodworking-supply store. Use a spare dowel to drive the peg home (right).*



Pillow first, then cut and install. *Soften the edges by gently rounding them with sandpaper and a sanding block before cutting them off (above). Measure carefully before cutting, to get the right protrusion. Spread glue on the bottom and the walls of the mortise and then use a dead-blow mallet so you don't damage the plug (right).*

assembly). I use a ½-in. roundover bit in a router table. Skip the section of the middle rail that meets the stiles. Those surfaces are flush to the stiles. Use a handheld router to round over the edges of the side rails.

Finally, make the panels. Sand all of the parts to P220-grit and pre-finish the panels.

Round top corners after assembly

This can be a challenging glue-up, so do a dry-assembly first to check that everything comes together square before you spread any glue. Also, use a glue with an extended open time, like Titebond Extend.

After the head- and footboard are glued up, it's time to round the inside and outside edges of the miter joint in the top corners. Draw the arc, rough it out with a coping saw, cutting proud of the line, and then smooth the cut, working down to the layout line with a rasp, a file, and a small sanding drum in your cordless drill.

Next, use the rasp, file, and sanding drum to refine the cloud lifts. Use a handheld router and ⅛-in. roundover bit on all of the outside edges. Take a final pass by hand with P220-grit sandpaper to soften and unify the lines. Now peg all of the joints from rails to posts and stiles to rails.

Next, square up all of the plug mortises and make the plugs. Cut some little sticks of ebony at the bandsaw. Clean up the sides with a block plane. Round over the end with a random-orbit sander, and then hand-sand it up to P220-grit. Measure to the bottom of the plug mortises, add the 1/16 in. that they protrude from the surface, and nip the plug off the stick with the bandsaw. Glue it into place.

An ebony spline covers the cherry spline used to reinforce the miter joint. This detail should be pillowed after it is installed for a nice even projection (see photos, p. 38).

Now for the finish. Raise the grain and sand with P220-grit. I used three coats of Minwax wipe-on gloss polyurethane. Rub out the last coat with 0000 steel wool, and then apply a coat of wax. □

Martin McClendon is a hobbyist furniture maker in Racine, Wis.

Best Way to Fit Tenons

Machines will get you close, but a only handplane will deliver a piston fit

BY CHRIS GOCHNOUR

MACHINE-CUT TENONS NEED A HELPING HAND

Using a tablesaw, router, or bandsaw to cut tenons certainly makes the job faster and more efficient. But even with a careful setup, there are bound to be slight inconsistencies in the cuts, such as a shoulder that has a step. The path to a piston fit is to cut the tenons close, and then trim them using handplanes.

A lot of woodworkers choose to cut tenons with a tablesaw, thinking it will be fast and dead-on, only to get frustrated when their "precise" setup results in ill-fitting cheeks or misaligned shoulders. Truth is, it's hard to cut perfect-fitting tenons using just machinery, whether a tablesaw, a router, or a bandsaw. A better approach is to cut the tenon close and dial in the fit using hand tools. But is there one that's best for the job?

To find the answer, I compared shoulder planes, rabbet block planes, fillister planes, and bullnose planes to see which one is best for trimming tenon shoulders and cheeks. All are essentially planes designed to cut into corners, leaving crisp, square edges and removing material methodically in a way that power tools cannot.

What to look for in a tenon trimmer

For a plane to be effective at trimming tenon cheeks and shoulders, it must have some basic characteristics. First, it must be adept at cross-grain and end-grain cuts, so it should have a low cutting angle. Precision manufacturing also is critical, and the way the blade aligns with the body is important for peak performance. The blade should silhouette the body accurately, projecting slightly (about 0.002 in.—the thickness of a sheet of paper) beyond each side and parallel with the sole to achieve the desired amount of cut. If the blade projects

Wrong tools are hard to handle

You may be tempted to file, sand, or chisel your way to perfect tenons. But these methods are inconsistent. Files and sandpaper tend to round over the work, especially in the corner, and it's difficult to control a chisel over a longer surface without creating a taper.

Photos: staff

Why planes work better

Shoulder planes and rabbet block planes reach into corners and remove material methodically in a way that power tools cannot, and they're more precise than files, sandpaper, or chisels. With each one, the blade should project slightly beyond the side (about 0.002 in.—the thickness of a sheet of paper) for best performance. If it doesn't project enough, the plane is pushed away from the corner and won't remove stock evenly.

Trim a tenon for a perfect fit

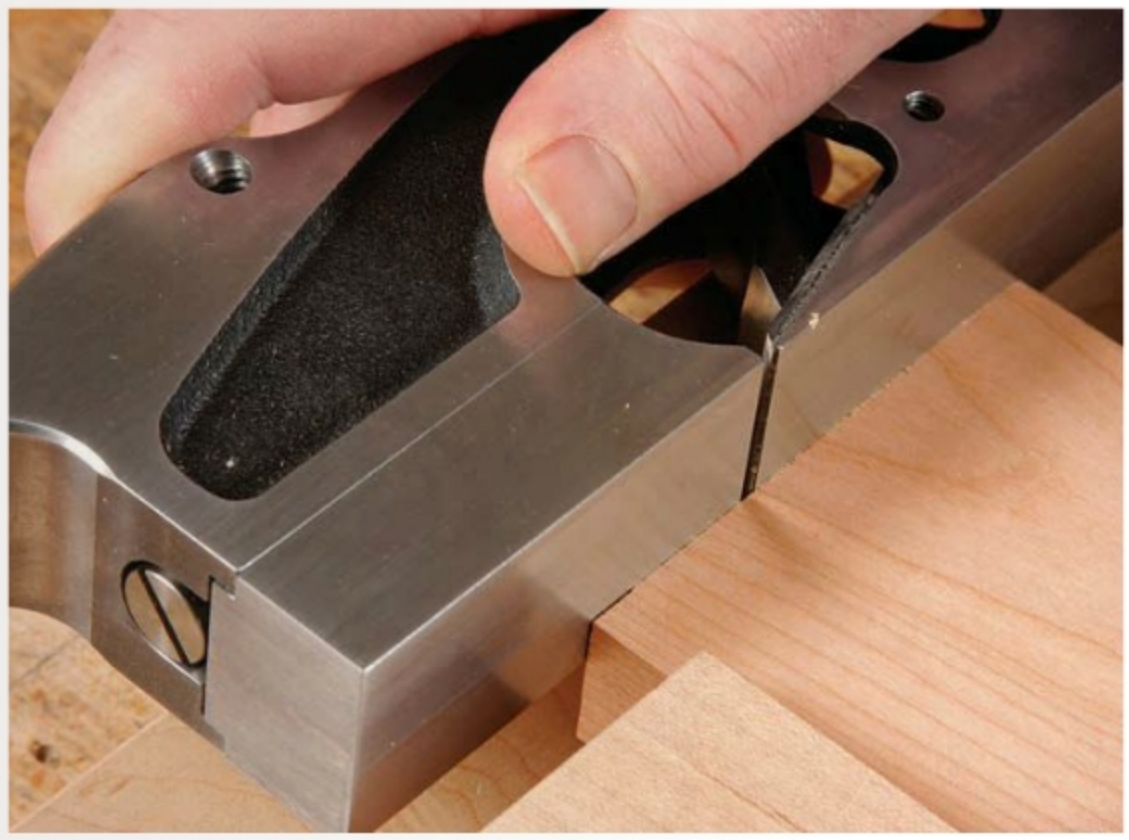
The key to achieving a piston fit is working methodically. Cut the tenon on the tablesaw (or other machine), and then carefully trim the shoulders and cheeks with a shoulder plane and rabbet block plane.

TIP HOW TO DIAL IN MACHINE CUTS

To reduce the amount of hand-trimming you need to do, cut the tenon close enough that a corner just fits into the mortise. Subsequent handwork will be quick.

SHOULDERS

Lower the step. *One of the most common problems with a tablesawn tenon is a step (right), or uneven shoulder that leaves a visible gap in the joint. To fix it, take a light pass with the shoulder plane (below), toward the step, starting near the middle. Take progressively longer strokes until the step is almost gone.*



Then level the shoulder. *Once the step is almost gone, go back in the other direction. One advantage of the shoulder plane is that you can pull it easily toward you. One or two passes should do the trick.*

excessively from the side of the plane, it will dig into and mark the joint's side. If it doesn't project enough, the plane is pushed away from the corner and produces a sloping or wandering cut.

The sole of the plane should be flat and the plane sides should be perfectly square to the sole. The blade should hold up to the rigors of end-grain planing. As with any handplane, the depth and lateral adjustments should be easy and should hold. Finally, since these planes may be used in multiple positions, the body should be comfortable to grip with one or two hands.

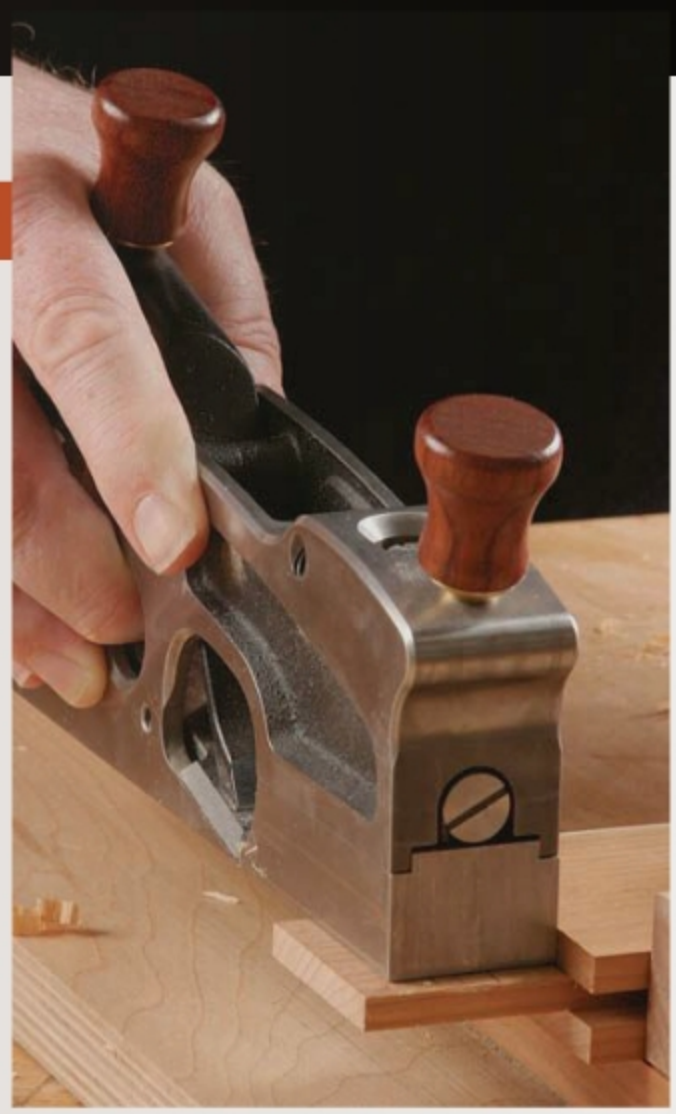
The right planes for the job

I used all of the planes on tablesawn tenons to fine-tune the shoulders and cheeks, a job that involves tricky end-grain and cross-grain work. The stock was cherry, and the tenons were ¼ in. thick by 4 in. wide by 1¼ in. long. I judged the planes based on the test, as well as on their fit and finish and ergonomics.

After all the testing, bullnose and fillister planes fell out of contention (opposite page) while shoulder and block rabbet planes

CHEEKS

A wide berth. *To trim long tenons with a shoulder plane (right) requires overlapping passes, which could taper the tenon if you're not careful. The wider rabbet block plane (below) is more efficient and helps ensure a flat surface.*



rose to the fore. With their low cutting angle, both of these planes handle end-grain and cross-grain cuts. And they're made for use with one or two hands, so you can hold them in a number of positions to handle any trimming job. (For head-to-head comparisons of all the shoulder and block rabbet planes, see pp. 44–45.)

I'd recommend buying a shoulder plane first, and adding a rabbet block plane later (see "Which ones to buy, and in what order, p. 45).

Chris Gochnour is a professional furniture maker and hand-tool expert in Salt Lake City.

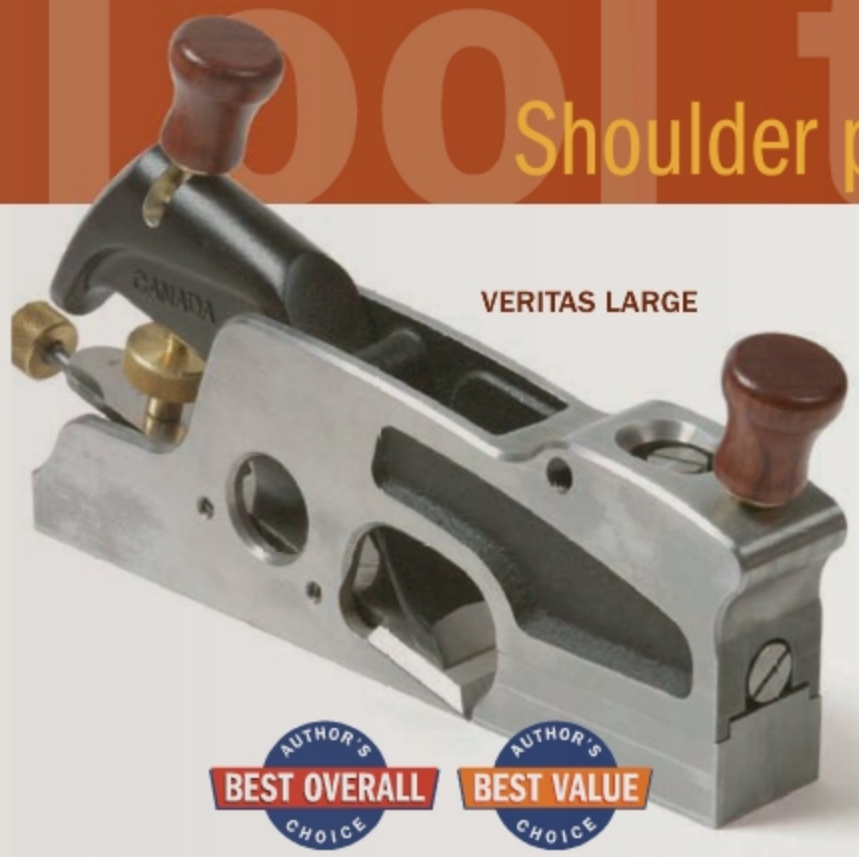
FILLISTER AND BULLNOSE PLANES DON'T MAKE THE CUT

Bullnose and fillister planes are not designed to trim tenon cheeks and shoulders. The bullnose plane has too short of a nose and does not register properly to start a cut. The fillister is really a joint-*making* tool, made for cutting rabbets and raised panels. It's not designed to be used on its side for trimming shoulders, and it's too long to use with one hand, a necessary trait for trimming tenons with the workpiece supported on a bench hook.

Stub nose is a problem. *The short nose of a bullnose plane doesn't give you much room to register the tool on a tenon, so you could inadvertently round over the edge as you work.*

Better for raised panels. *With its long body and a two-handed grip, the fillister plane can work for trimming wide tenons on breadboard ends. However, it is better suited for creating joints, such as rabbets, and for raising panels by hand (left).*

Shoulder planes: The first choice for tenons



Shoulder planes excel at trimming the shoulders of tenons. But they also are great for sizing tenon cheeks (see previous page). Shoulder planes range in width from ½ in. to 1¼ in. For furniture making, I prefer the larger models, ¾ in. or bigger, which are more efficient, covering more ground while still handling narrow shoulders well.

If a manufacturer offered different sizes of the same tool, I tested the largest one offered. I judged the planes based on how well they worked at trimming the shoulders and cheeks of tenons, as well as their fit and finish (flat sole, with sides perfectly square to the sole). I also evaluated the ergonomics of each one, and whether it is comfortable to hold with one or two hands.

Among this group, the Veritas model stood out, and I picked it as Best Overall and Best Value.

MODEL/SOURCE	WIDTH	EASE OF BLADE ADJUSTMENTS	FIT AND FINISH	PERFORMANCE	COMMENTS
Clifton 420 toolsforworkingwood.com **$290**	¾ in.	Good	Very good	Good	Blade needed lapping out of the box; mouth not adjustable; blade shifted laterally during depth adjustments.
Clifton 3110 (3-in-1) toolsforworkingwood.com **$290**	1 1/16 in.	Good	Very good	Good	Blade needed lapping out of the box; mouth adjustments, made via shims, were difficult; blade shifted laterally during depth adjustments.
Gordon Gidgee hntgordon.com.au **$185**	1 in.	Good	Excellent	Good	Blade adjusted with a hammer, which takes practice; blade projection on top made plane hard to grip; mouth not adjustable.
Lie-Nielsen Large lie-nielsen.com **$250**	1¼ in.	Good	Very good	Very good	Solid performer; casting recesses have sharp edges; blade shifted laterally as depth was adjusted; mouth easy to adjust.
Shop Fox 28 (3-in-1) woodstockint.com **$75**	1 3/32 in.	Good	Good	Fair	Blade was poorly prepped and failed on end grain; mouth adjustments, made via shims, were difficult; sole not flat.
Shop Fox 92 woodstockint.com **$55**	¾ in.	Very good	Fair	Fair	Blade needed lapping out of the box and needed reshaping to make it parallel to sole; blade failed on end grain, mouth easy to adjust.
Stanley Sweet Heart 92 woodcraft.com **$125**	¾ in.	Excellent	Good	Fair	Sharp edges on body made tool uncomfortable to grip; blade projection was inadequate, making for inconsistent results; mouth easy to adjust.
Veritas Large leevalley.com **$225**	1¼ in.	Excellent	Excellent	Excellent	Flawless tool; very comfortable to grip with one hand or two; blade lapped dead flat; mouth easy to adjust.

Rabbet block planes: Better for cheeks

Skew is the best. *The blade on the skew rabbet block plane (above) is angled, which pulls it against the shoulder and leaves no tearout at the back of the cut. A normal rabbet block plane (right) cuts in both directions, making it more versatile.*

With its wider blade, bedded at a low angle, a rabbet block plane is well suited to trimming the cheeks of a tenon efficiently. It can work on shoulders, but it's not as easy to use on its side as a shoulder plane. These planes are versatile, also working well as conventional block planes.

After putting all the planes through the same tenon-trimming tests as the shoulder planes, I picked the Veritas skew block plane as the Best Overall. Its skewed blade rabbets on only one side but cuts with less resistance and produces a flawless surface with no tearout. Buy the version that suits your favored hand and cutting direction.

But there's a learning curve associated with sharpening the angled blade, and perhaps some extra honing accessories to buy. For folks who don't want to deal with those issues, I'd recommend the Lie-Nielsen 60½ R as a Best Value buy.

LIE-NIELSEN 60½ R

LIE-NIELSEN SKEW BLOCK

VERITAS SKEW BLOCK

Online Extra

For tips on sharpening a skew blade, go to **FineWoodworking.com/extras.**

MODEL/SOURCE	EASE OF BLADE ADJUSTMENTS	FIT AND FINISH	PERFORMANCE	COMMENTS
Lie-Nielsen 60½ R lie-nielsen.com **$175**	Good	Very good	Very good	Cut quality is good; square, full-width blade rabbets on both sides; depth adjuster tended to shift blade laterally, so you must be careful.
Lie-Nielsen Skew Block Plane lie-nielsen.com **$225 (left or right handed)**	Good	Excellent	Very good	Cut quality is very good; bronze body increases mass and heft, won't rust; depth adjuster tended to shift blade laterally, so you must be careful.
Veritas Skew Block Plane leevalley.com **$215 (left or right handed)**	Excellent	Excellent	Excellent	Cut quality is excellent; easy to set up and holds settings with the help of setscrews on side of body to align blade; extremely comfortable to hold.

Which ones to buy, and in what order

With its tall body, a shoulder plane is ideal for trimming tenon shoulders, offering great control while keeping your hands away from the work. It also can be used to trim tenon cheeks. Buy the biggest one you can (see recommendations, opposite page), which can handle any size shoulder and any tenon cheek.

The problem with a shoulder plane, even a large one, is that it's not the most efficient tool for cheeks, requiring multiple overlapping passes to tackle long tenons, which could result in a tapered tenon if you're not careful. That job is best handled by a rabbet block plane, which has a wider blade (see recommendations, above). Though it can be used on a shoulder, its short body is a bit harder to hold on its side.

Out of both, the first one I'd recommend is the large shoulder plane, because it can do both shoulders and tenons pretty easily. Ideally, though, if you can afford it, add a rabbet block plane for cheeks. With both tools you'll be set up to trim tenons perfectly every time, quickly and efficiently.

Dovetails on the Tablesaw

Make better, faster through-dovetails, with a trick for perfect half-blinds, too

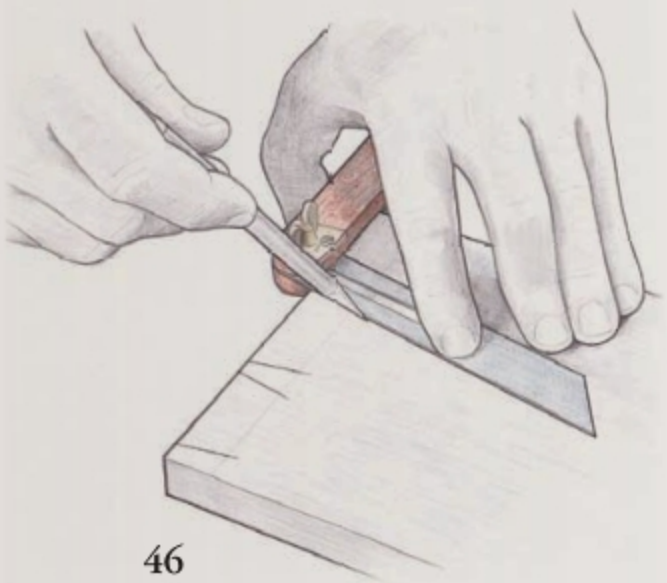
BY GREGORY PAOLINI

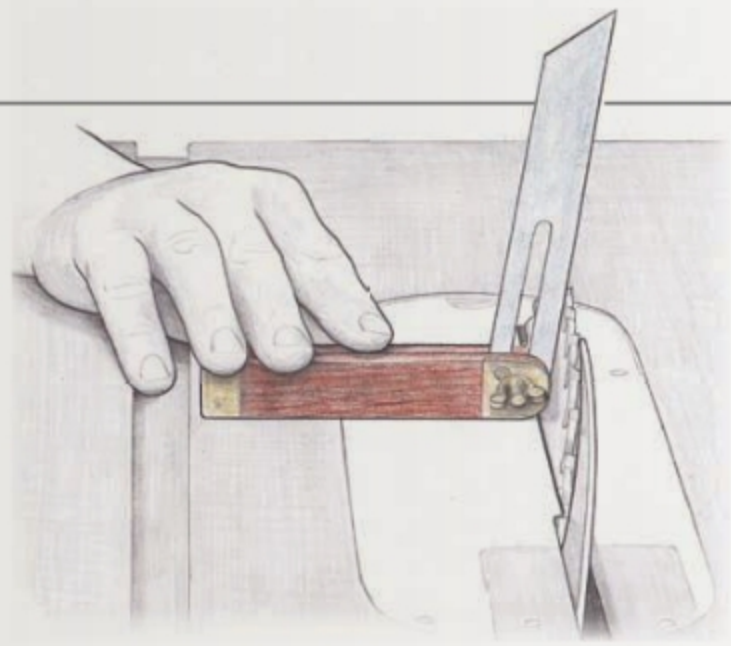
It takes an awful lot of practice to cut dovetails by hand and to do it well. Your sawcuts should be straight, at a consistent angle, and square to the board's face. And you can't cut into the baseline. Later, when you're paring and attempting to make up for bad sawcuts, you can make things much worse.

There are ways to cut dovetails that bypass those challenges. With a router and jig, you'll get straight and square tails and pins that have consistent angles. Unfortunately, they won't look as nice as hand-cut dovetails. It's difficult

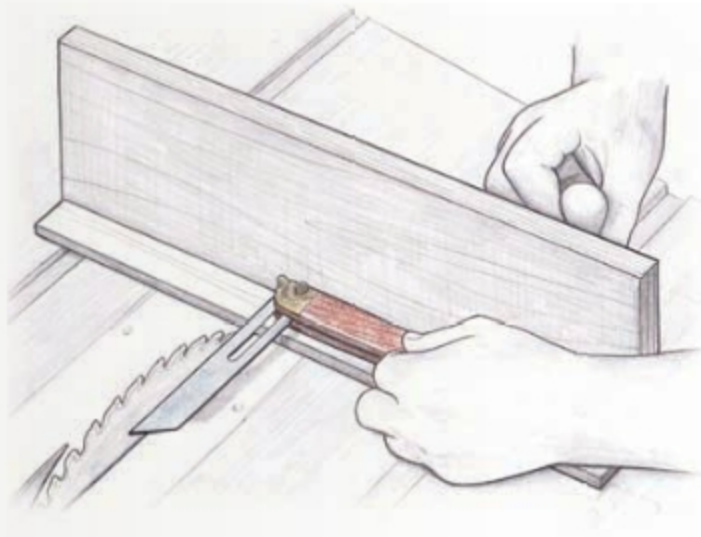
BEVEL GAUGE GUIDES THE WAY

To take advantage of the tablesaw's accuracy, you need to set it up precisely. Using a bevel gauge is the secret.





Mark the tails, setting the gauge at your favorite dovetail angle (left). Paolini likes 10°. Then use the same bevel-gauge setting to angle the blade (above) to cut the tails.



With the blade at 90°, angle the miter gauge for the pins. Don't change the setting on the bevel gauge, and the pins are sure to match the tails.

Photos: Matt Kenney; drawings: John Tetreault

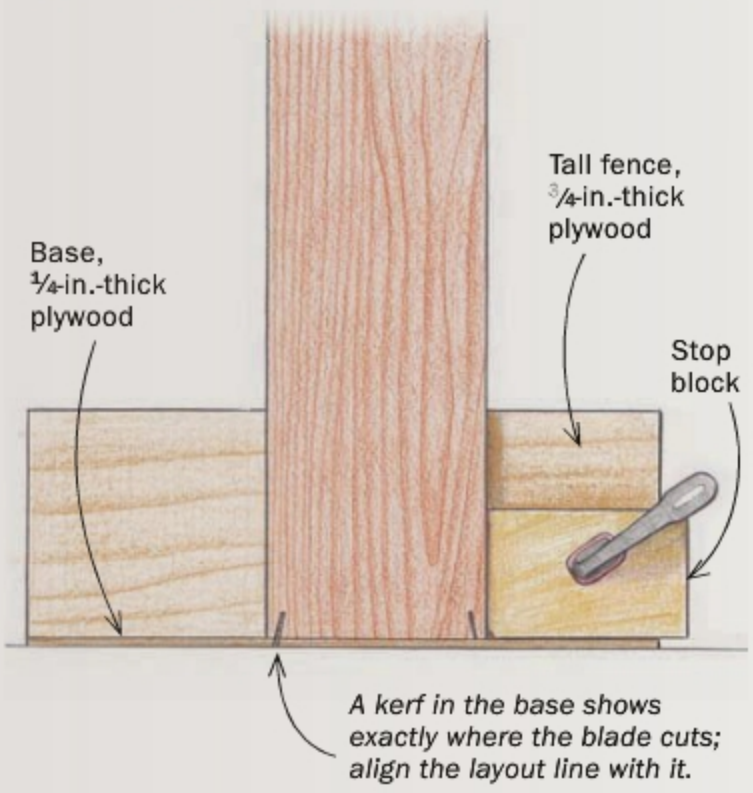
Angle the blade to cut the tails

The tablesaw locks in the cutting angle and a stop block allows you to make eight cuts from a single layout line. So all you need to do is lay out the tails at one end of one board.

Scribe the baselines, then lay out the tails. *Scribe all the boards (left), wrapping the marks around the edges on the tail boards. You can space the dovetails any way you want (right), but they should be symmetrical around the centerline.*

Angle the blade. *Make sure the bevel gauge's setting hasn't changed and that it's flat against the blade's plate, coming up in a gullet between teeth.*

GET ACCURATE WITH AN AUXILIARY FENCE AND STOP BLOCK



Four cuts from a single setup. *Flip the board to make two mirror-image cuts, then rotate it end for end to make the same two cuts on the opposite end. When you've done the same with the second tail board, you've made eight cuts without moving the stop block.*

The mirror effect. *As you work across the board, moving the board (and stop block) to a new layout line and making all four cuts each time, you naturally begin to cut the second side of every tail.*

Nibble the ends. *A few eyeballed cuts knock off most of the waste at the ends.*

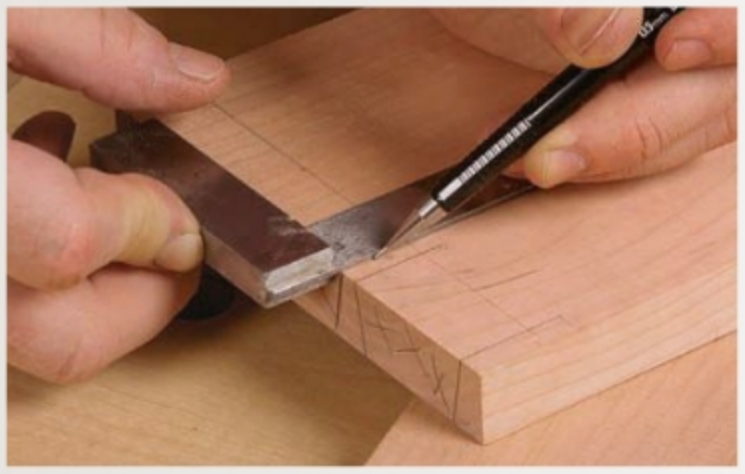
Clean out the waste. *After defining all of the tails at the tablesaw, cleanup goes quickly. Work to your scribe lines.*

Angle the miter gauge for the pins

Move the blade back to 90°. One side of every pin is cut with the miter gauge angled in one direction. Angle it in the other direction to cut the second side.

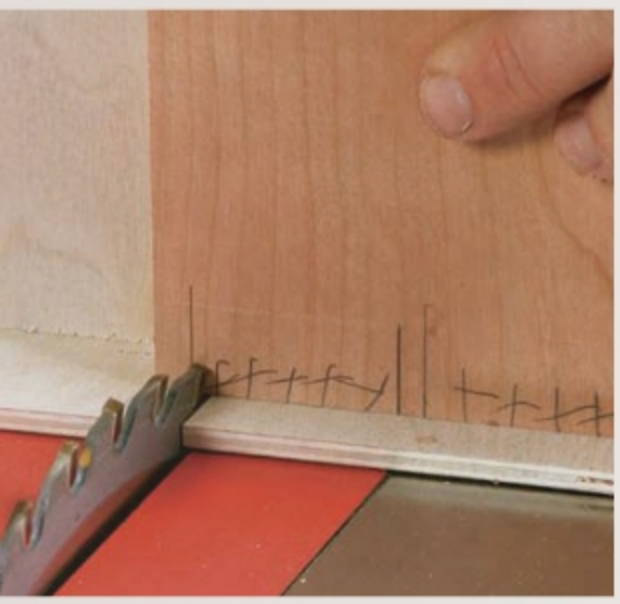
CUT THE FIRST SIDE OF THE PINS

Transfer the tails to the end grain. *Do this on all your boards. Paolini uses a 0.5mm mechanical pencil because of its very fine line.*



Wrap the line onto the face grain. *You can't see the end grain when the board is standing on the auxiliary fence, so you'll need these lines to align the board for cutting.*

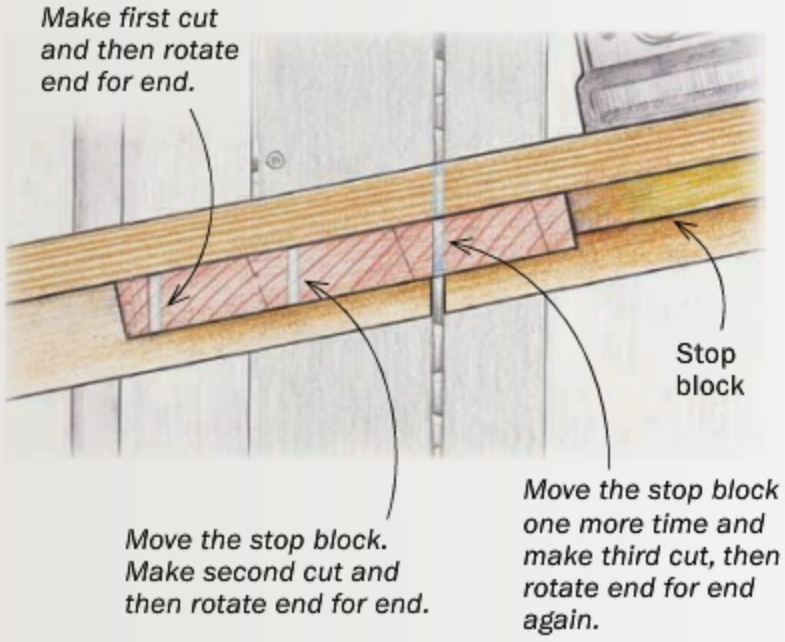
Adjust the miter gauge. *Use the bevel gauge, still set to the angle used for the tails. Paolini attaches a new auxiliary fence so that the kerf for this cut doesn't overlap the one used for the tails.*



Don't cut into the pencil line. *If you do, the pin will be too narrow and you'll have gaps in the joint. Take advantage of the zero-clearance kerf, aligning the board so that the pencil line is right next to the kerf, but not in it.*

MAKE ALL THE CUTS YOU CAN

You can't flip the board this time to make a mirror-image cut on the same end, but you can invert it. Keep the same face out.



to reproduce the wide tails and narrow pins that make the hand-cut version so appealing.

However, there is one power tool in your shop that excels at cutting straight and square, and can easily maintain the same angled cut for both tails and pins: the tablesaw. What's more, because tablesaw blades are no more than ⅛ in. thick, you can reproduce hand-cut dovetail spacing, too.

Of course, because both the tails and the pins are cut at the tablesaw, you're limited to through-dovetails. That's great for case joints and the back joints on a drawer, but what about the half-blind dovetails we all use to join the drawer front to the sides? No problem. I have a trick that turns a through-dovetail into a half-blind, with added benefits you can't get the traditional way. But let's start with the basics.

Use a rip blade and auxiliary fence

To cut dovetails this way, you need only your stock miter gauge and a blade. I use a rip blade because these are ripcuts and because it has a flat-top grind, which leaves a flat shoulder when I cut the pins, with no paring needed. However, any standard blade will leave a bit of material between tails, so you'll still have some

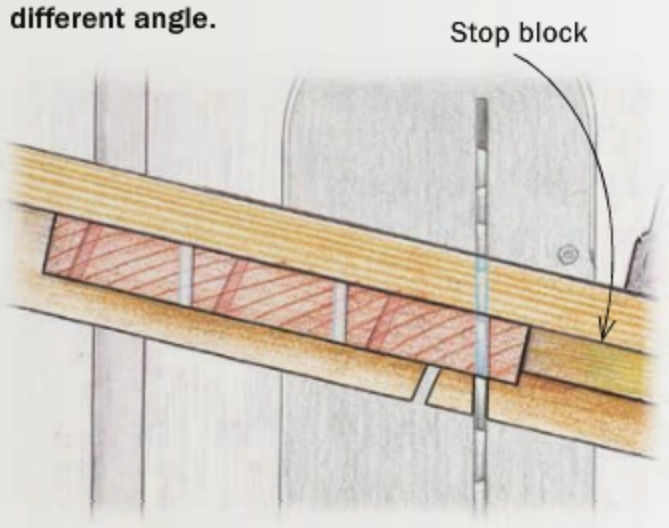
Credit Here

CUT THE SECOND SIDE OF THE PINS

Reset the miter gauge. *There's no way around it to cut the second side of the pins. Be sure the bevel gauge is still locked into its original setting.*

OPPOSITE ANGLE FOR SIDE TWO

This is just like cutting the first side of the pins, except the board goes through the blade at a different angle.



Nibble the waste by eye. *Most of the waste can be cut out with the fence at the second setting, but you'll need to move it back to the first setting to get all of the waste.*

paring to do. If you're going to cut dovetails this way all the time, get a blade with the teeth ground to match the dovetails' slope. Any saw-sharpening service can do it. Use it for the tails and you won't have any paring to do in the corners, either.

You also need two L-shaped fences for the miter gauge—one for the tails and one for the pins. They should be at least twice as long as the drawer sides are wide, so the sides always have support as you move them to cut the pins and tails. After the fence is attached to the gauge and a kerf is cut into it, it's easy to align layout lines with the kerf so the blade cuts exactly where you want it to.

Gregory Paolini is a professional furniture maker and teacher near Asheville, N.C.

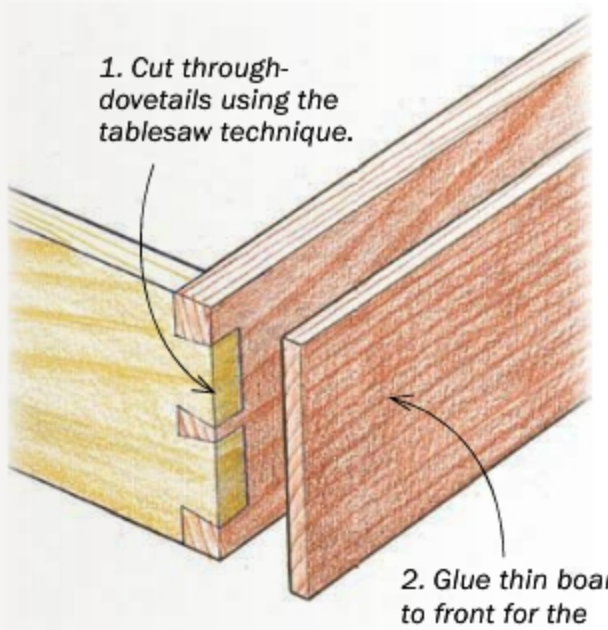
Payoff is perfect joints. *After cleaning up the baseline of the pin board with a file, the joint should come together square, without gaps, and without much persuasion.*

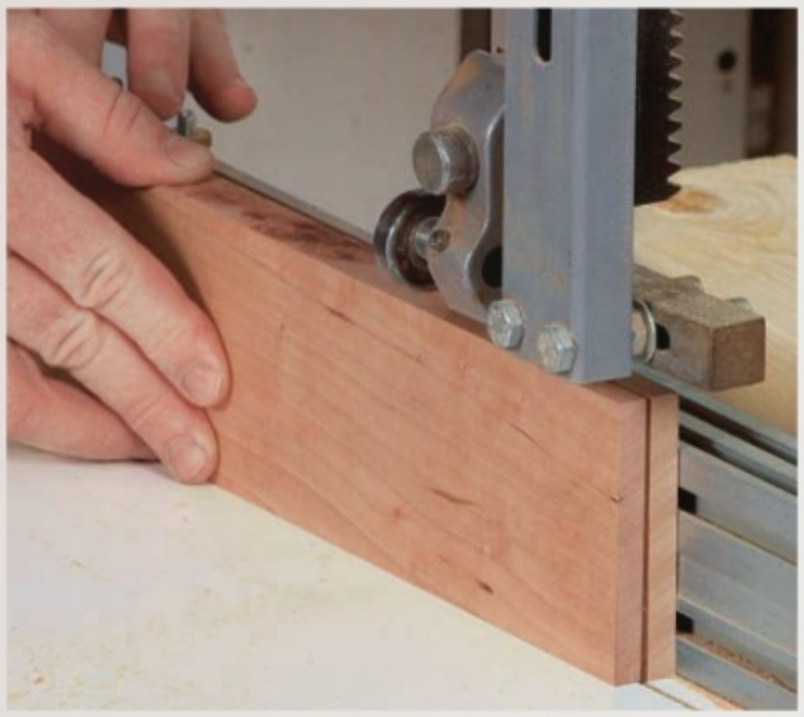
Online Extra

To watch a video demonstration of Paolini's technique, go to **FineWoodworking.com/extras.**

Use the same technique to make half-blind dovetails

You can use through-dovetails in lots of places, but typically not drawer fronts. There, you want half-blind dovetails. But you can still use this dovetailing method by gluing a thin board (⅛ in. to ¼ in. thick) to the front of the drawer box after it's glued together. That allows you to use through-dovetails for all of the joints, but still get the half-blind look. As a bonus, you get more mileage from your best lumber, which you can resaw to get book- and slip-matched fronts.

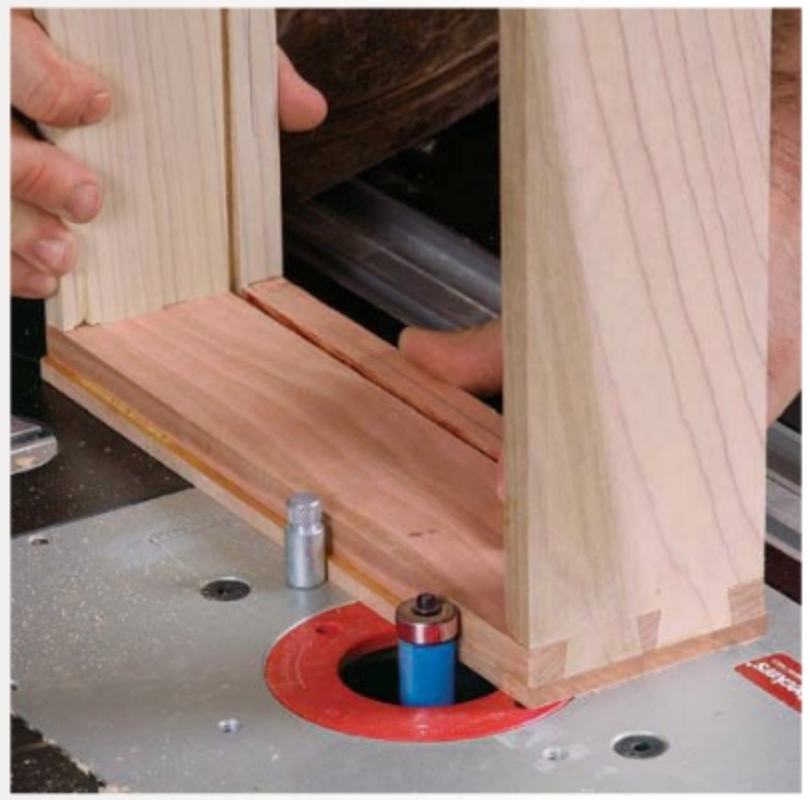




Cut the fronts. *Resawing from a thicker board lets you spread a beautiful board over several drawers.*

Brads lock it in place. *Cut them off short and they'll stick into the front and prevent it from creeping under clamping pressure.*

Don't skimp on clamps. *Paolini uses a caul made from melamine-covered particleboard to protect the front and help spread the pressure over the entire surface (for a tight glueline around all four sides).*



Just rout it flush. *Routing is faster than a handplane and makes it easier to keep the edge square to the face. Do the ends before the long edges, and use a pin in your router table to help you enter the cut safely.*

The Soul of Nakashima

Mira Nakashima carries her father's legacy forward

BY JONATHAN BINZEN

George Nakashima was one of a handful of woodworkers—along with Wharton Esherick, James Krenov, and Sam Maloof—whose furniture lit the fuse for a revival of woodworking in the 1970s, and whose work remains widely influential today among amateur and professional woodworkers alike. These pioneers embodied the merging of the designer with the craftsman and a maker's life with his work. For Nakashima, like Esherick and Maloof, the most powerful expression of his philosophy, furniture style, and way of working is found in the buildings and landscape he crafted bit by bit throughout his life.

Since Nakashima's death in 1990, not much has changed at the leafy hillside property on Aquetong Road in New Hope, Pa., where he settled with his wife and young daughter in 1946. And that in itself is slightly miraculous.

A dozen or so craftsmen still take projects from raw planks to completion one by one; the enormous lumber sheds are still bursting with some of the biggest and most beautiful slabs of flitch-cut Eastern black walnut ever sawn; the nine-acre property and the houses, workshops, sheds, and other buildings Nakashima built on it are still scrupulously maintained; and the finished furniture being produced there bears

Pass it on. *Mira Nakashima carries on the designs and the company started by her father, George. That's her (top) outside the Nakashima chair shop in 2012, and (inset) sharing her father's workbench in 1945.*

Photo, bottom right: Gretchen Van Tassel, courtesy of the Bancroft Library, University of California, Berkeley

Life and work are linked. *George Nakashima's Conoid studio (above) is one of more than a dozen buildings nestled on the nine-acre hillside property. Just steps away are the stone and wood house he built where Mira and her brother Kevin grew up, the main shop (below), where David Lipton puts the finishing touches on a conoid bench, and a handful of wood sheds (right), where mountains of air-dried planks wait to become furniture.*

close comparison to the pieces made during Nakashima's lifetime. Twenty-two years after his death, Nakashima's business is still functioning—and flourishing—much as it did in his lifetime, now under the guidance of his daughter, Mira.

It sounds like a natural transition—one Nakashima leading to another. And Mira, with two degrees in architecture and two decades working alongside her father, could hardly have been better trained to take his place.

Yet when her father died, Mira wasn't at all sure what to do. George Nakashima, reflecting his Samurai ancestry, was, Mira says, "very strict, very authoritarian. I wasn't allowed to question him. He fired me twice for being too assertive." He could be an intimidating figure to his workmen, as well, and uncompromising even with his customers. If a client didn't like what he proposed to make for them,

Photos, except where noted: Jonathan Binzen

Nakashima would be likely to say, "then go to Macy's." Mira had no idea whether she could make the shift from never questioning authority to exercising it herself.

"But after Dad died," Mira says, "I looked at the woodpile, and I looked at the men in the shop, and I looked at the stack of orders, and I thought, I guess we've got to keep going."

Within the first few months, half the customers on the waiting list canceled their orders. Morale was low, and a few of the craftsmen quit. But most stayed, helping pull the company through some lean years in the early 1990s.

Staying is something Nakashima craftsmen are known for. Many on the roster of European-trained and local woodworkers who worked with George measured their tenure in decades. Jerry Everett, who grew up a mile and a half away and became shop foreman when

A table takes however long it takes to make it perfect.

George died, was hired out of high school and is entering his 43rd year with the company. Two other current craftsmen, including Mira's husband, Jon Yarnall, are closing in on 40 years.

Asked what accounts for the record of longevity, Everett recalled that, working with George, "it was seldom that you were rushed to do anything. A table took however long it took to make it perfect."

Yarnall credits his father-in-law with creating a workplace where craftsmen could discover "a meditative aspect to woodwork. It's not that we're sitting back and admiring the wood; we give it tough treatment. But it's a dialogue with the wood, not the craftsman imposing his will. The wood is working on you while you are working on the wood."

Mira has written of her father that, like the Shakers, whose furniture he deeply admired, he "revered meticulous work as an expression of the spirit." Despite the financial

porating their free edges in his pieces enabled him to infuse functional furniture with the spirit of raw nature.

Nakashima had an unerring eye for the great slab and for how much of its natural edge to leave untouched, but his genius lay in combining those erratic slabs with rectilinear bases, turned legs, or spindles. The aesthetic he developed, inspired in part by Japanese architecture, brought him international acclaim and continues to be widely imitated—though rarely brought off with the aplomb of Nakashima originals.

Nakashima's trove of dazzling wood will not be running dry any time soon. The last time business manager John Lutz checked, they had a 68-year supply—and they are still buying. "Wood is king here,"

It takes gnarly wood to make a Nakashima table. *In the main wood shed (above), assistant designer Miriam Carpenter and shop foreman Jerry Everett mark out bookmatched walnut slabs for a table. The table at right, built in the 1970s from an extraordinary log of English walnut, features full-width slabs linked with signature Nakashima butterflies.*

incentives of outsourcing and tooling up for production, she's determined to maintain that tradition.

As shop foreman, Everett tries to do things as George did. He still has individual craftsmen build each piece from start to finish. "I bring the lumber in," he says, "and from there it's their piece. As long as it comes out looking the way a Nakashima piece is supposed to, I don't care how they get there."

Online Extra

To hear an exclusive interview with Mira Nakashima, go to **FineWoodworking.com/extras.**

Another draw for the craftsmen, of course, is the wood. "We're all born woodworkers," Everett says. "We're doing what we love, doing it in a beautiful place, and we get to work on fantastic wood—wood that we wouldn't even see otherwise."

Wood has always been the heart of the matter at Nakashima Studio. For George, who studied forestry before turning to architecture, woodworking provided a means of marrying his love of trees with his love of design. Cutting logs through-and-through and incor-

Lutz says. The primary lumber-storage area—there are five all told—is a metal-frame barn 60 yards long and 15 yards wide, and neck-craning stacks of flitch-cut logs line both sides along its entire length. A recent inventory of the wood stash, which required moving, measuring, and photographing every plank on the property, occupied two apprentices for eight months.

Over the past 22 years, Mira Nakashima has designed a range of new furniture, but her primary focus remains on producing pieces that were in the Nakashima catalog before her father died. New designs, she says, come "mostly by request or necessity." Although she has clearly succeeded in taking on the decisive role at Nakashima, she remains the dutiful daughter. "Hopefully," she says, "I've absorbed enough that I do things as he would have liked." □

Jonathan Binzen is a senior editor.

HOW-TO: DEALING WITH DEFECTS

In his book *The Soul of a Tree*, George Nakashima wrote that a tree, like a piece of fruit, is most delectable when it's just on the verge of rotting. Mira Nakashima shares her father's sweet tooth for wood's imperfections, and decades of dealing with cracks and rot, bugholes and knots have produced a special expertise at Nakashima Studio. Mira, assistant designer Miriam Carpenter, and shop foreman Jerry Everett explained some of their strategies.

Worm holes and bug holes—If nobody's living in there, a lot of times we let them go. Other times we clean them out and fill them with Plastic Wood tinted with oil paint or powdered pigments to match the wood. For bigger holes, we'll fill with epoxy, sometimes mixed with sawdust—a trick we learned from Sam Maloof.

Cracks—If a crack is stable, we might leave it alone or fill it with epoxy or Plastic Wood. But if it seems likely to run, we'll stabilize it by inlaying a butterfly key across it. We use butterflies for visual effect, but they are also structural. We'll sometimes put butterflies on the underside of a top if the cracking is severe or if adding more butterflies on top would look too busy.

Knots—If a knot is loose during machining, we'll remove it so we don't lose it up the dust-collection chute, and then epoxy it in afterward. If a knot is missing or too damaged, we'll sometimes find a matching knot and shape it to fit the knothole.

Rot—We do our best to slice away rot or dress down a board to remove it. But if necessary, we treat it with Rot Fix, an epoxy that penetrates soft fibers and hardens them up.

Cupping—If a big slab is cupped, we'll cut kerfs along the grain on the underside to relax it and then attach a couple of cleats to pull it flat. To cut the kerfs, we set the circular sawblade to about three-quarters of the thickness of the slab.

When a small board is cupped, we'll sometimes put it outside on the wet grass, convex side up toward the sun. That warps it toward flat, and we can screw on some cleats to hold it there.

Whatever defects we're dealing with, it helps to remember that a lot of times, the pieces that look most hopeless in the shed turn out the best once we've got them finished.

Supercharge Your Rip Fence

Smart base supports a host of essential accessories

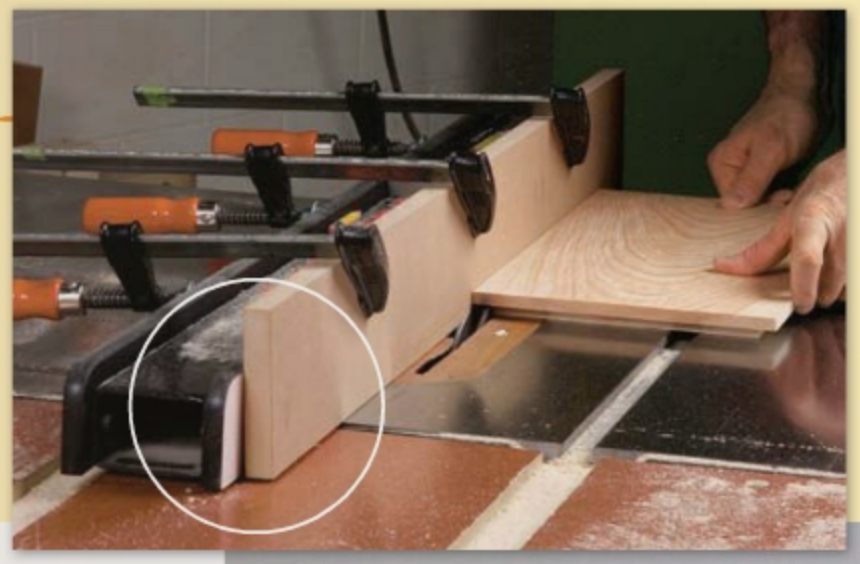
BY BOB VAN DYKE

Your tablesaw's rip fence is an integral part of the tool. It performs the basic task of guiding the workpiece parallel to the blade. Without it, you can't rip wood safely or accurately.

But that's just the beginning of its usefulness. It is also common practice to clamp any number of jigs and auxiliary fences to the rip fence for specific jobs like cutting a rabbet in the edge of a board or a bevel on a raised-panel door. The problem with this is the clamping, and the low height of the fence. Put the clamps low and they hinder the workpiece sliding by; too high, and the extra fence won't stay plumb.

I decided it was time to make something better, so I borrowed an idea from a special fence I had made years ago. What I needed was an auxiliary fence that I could easily attach and remove without damaging the main fence or sacrificing accuracy. I wanted to do it without putting clamps in

Problem



The clamps on this simple rabbeting fence are set high enough to let the workpiece travel freely, but this setup pulls the fence out of plumb, kicking it outward at the bottom edge.

Solution

Clamp this fixture over the tablesaw's rip fence to create a base for a variety of useful fences. The toggle clamps secure the base from the back, leaving a clear path for the workpiece.

RABBETS

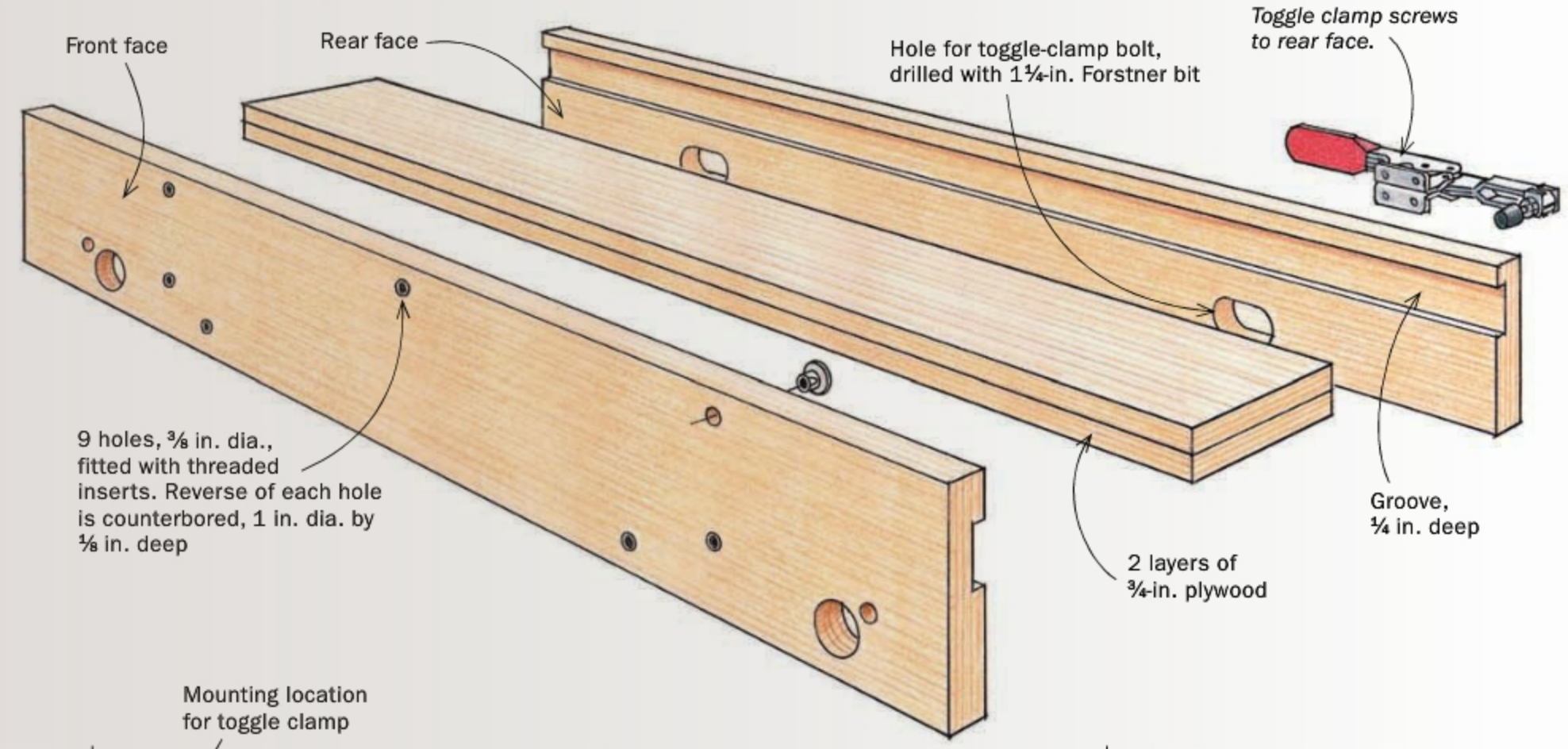
Screw a piece of MDF to the base and bury a dado cutter in it to cut rabbets of all kinds. Van Dyke suggests making several of these sacrificial fences at a time to ensure you'll have a fresh one when needed.

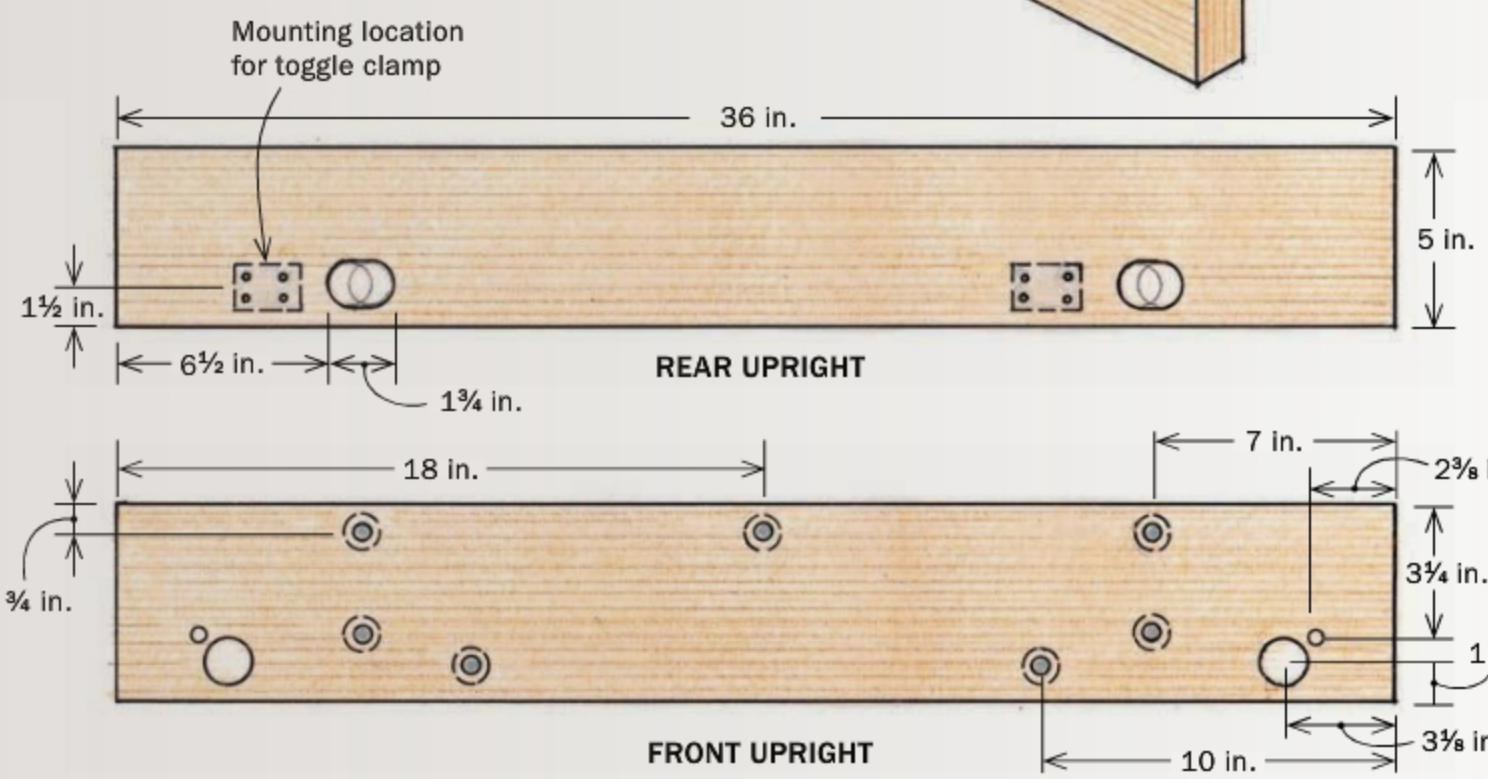
PANELS AND TENONS

A tall fence allows easy panel-raising with no clamps to work around, and a simple tenoning attachment rides the top edge, producing perfect cuts.

Build the base

Made of ¾-in. plywood, two uprights and a bridge fit over the rip fence to serve as an anchor for a variety of special-purpose fences.





Glue up the bridge. *The central piece of the base is made from two layers of plywood, glued and nailed together.*

Trim to fit. *Rip both edges of the bridge to ensure they are straight and parallel, and slightly wider than your rip fence.*

Photos: Steve Scott; drawings: Vince Babak

Wide grooves house the bridge. *Use a ¾-in. dado cutter and make multiple passes to achieve the desired width.*

Install the hardware. *Use a Forstner bit and a brad-point bit at the drill press to drill a set of stepped holes. Epoxy a T-nut-style threaded insert into each hole. A dowel and hammer help seat each nut.*

Install the clamps. *Van Dyke uses a 1-in. Forstner bit to create an opening that lets the clamp reach through to the rip fence underneath. He extends the clamp's reach by replacing the stock bolt with a longer one and adding a rubber tip from the hardware store.*

the way of the work, and I wanted to make it easy to attach a variety of useful jigs.

No one sets up shop just to make jigs, but I think you'll find it's worth the time to build the base and the add-ons I describe here. You will probably find even more uses as you put the system to work.

This base is the key

In terms of usefulness, this auxiliary fence base gets the prize. By adding special-purpose fences, common tasks such as cutting rabbets and tenons and panel-raising are all greatly simplified.

The base is made from ¾-in. Baltic-birch plywood, fastened into an H-shape that straddles the saw's rip fence. A pair of toggle clamps applies pressure to the back of the base, drawing the front tightly into place. The base doesn't need to fit the width of your rip fence precisely because the clamps pull it into position.

Start by creating the bridge from two lengths of the plywood. Face-glue and screw or nail the pieces together and then rip the bridge to width. Make sure the long edges are parallel: They will be glued into dadoes in the backs of the two uprights to form the H.

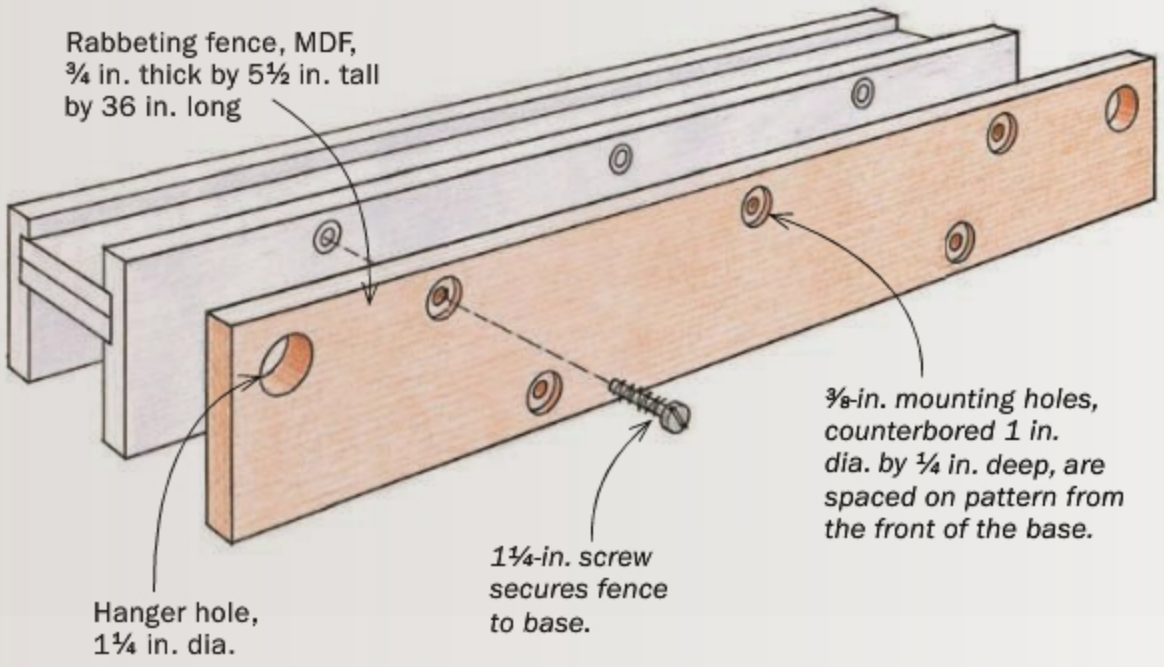
Cut the dadoes in the uprights using a ¾-in. dado cutter at the tablesaw. Take multiple passes to sneak up on the fit.

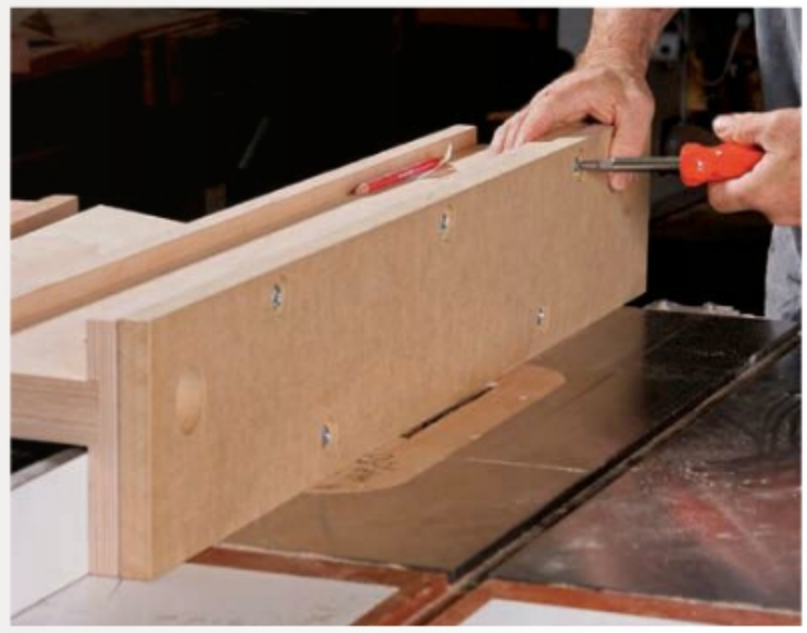
Before gluing up, use a Forstner bit to drill a pair of clearance holes for the toggle clamps in the rear upright. Replace the adjustment bolts on the toggle clamps with ones that are long enough to reach through the plywood upright to the rip fence. A small rubber crutch tip from the

Glue up the base. *Make sure to apply clamp pressure directly over the grooves. Use a square to ensure that the face on the blade side of the base is square with the table surface.*

Make a few rabbeting fences

Burying a dado cutter in a sacrificial MDF fence lets you easily adjust the width of any dado or groove you are cutting.





They attach quickly. *Each accessory fence is drilled with the same bolt-hole pattern. Installation is a simple matter of driving five screws. The two larger holes are for hanging the fence during storage.*

hardware store cushions the bolt head that bears against the fence face.

On the front upright, drill five holes for T-nuts: three evenly spaced across the top and two along the bottom, each far enough from center to avoid touching the blade. The T-nuts provide an easy way of screwing the special-purpose fences to the base. Make a template of this bolt-hole layout so you can transfer it accurately when making the attachment fences.

The value of the base lies in the variety of special-purpose fences you can add to it.

A sacrificial fence for rabbeting

This fence is very simple—just a flat piece of ¾-in. MDF drilled with counterbored holes. But you will use it all the time.

I make most of the special-purpose fences from ¾-in. MDF because it stays flat and its smooth surface lets workpieces slide across it easily. It also costs less than the alternatives. While I was set up to make this fence, I cut and drilled a number of extras so they would be ready when needed.

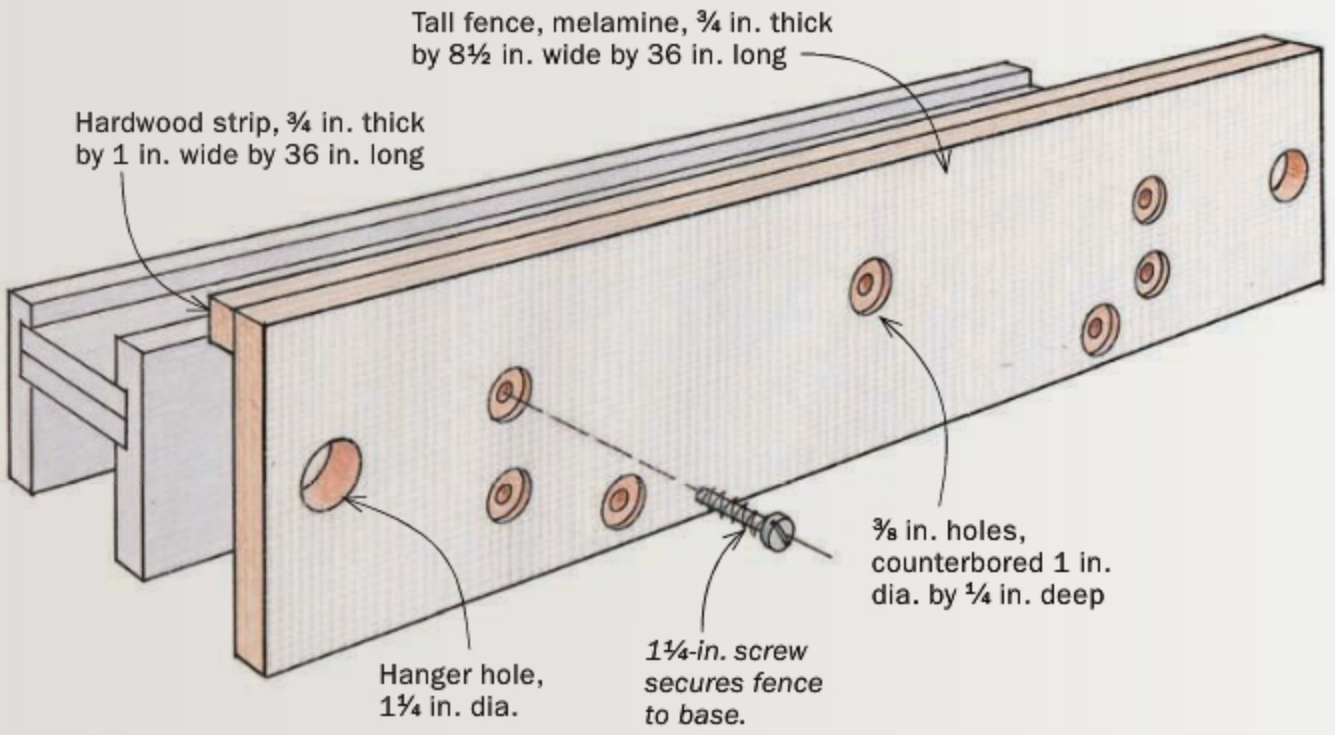
With this fence, it's easy to cut rabbets to custom width. Partially burying a wide dado cutter in it lets you adjust the cut's width simply by moving the rip fence. I also use this fence often as a stop when cutting tenons with a dado set.

To bury the cutter, raise the spinning blade into the MDF fence to the height you need. Then turn off the saw and fine-tune the blade height and the fence location. Don't raise the blade any higher than necessary because a fence with a large cutout won't

Bury the blade in the fence. *Raise the spinning blade slowly into the fence to set the height and width of the rabbet. The arc cut in the fence should closely match the height of the blade to prevent gaps that could catch the stock.*

Cut the rabbet. *The fence also can be used to cut stub tenons, using the miter gauge to guide the workpiece.*

Tall fence is dual purpose



work for smaller rabbets and stub tenons, where the workpiece would dive into the gap between the cutout and the blade.

A tall fence for panels

A taller MDF or melamine fence, this one 8 in. wide, provides extra support for tall work. It is great for cutting bevels on the face of a raised panel or drawer bottom. A push block a few inches above the blade gives you a solid and safe grip on the workpiece as it travels past the blade. For the greatest support, let your right hand ride the top of the fence as it grips the workpiece.

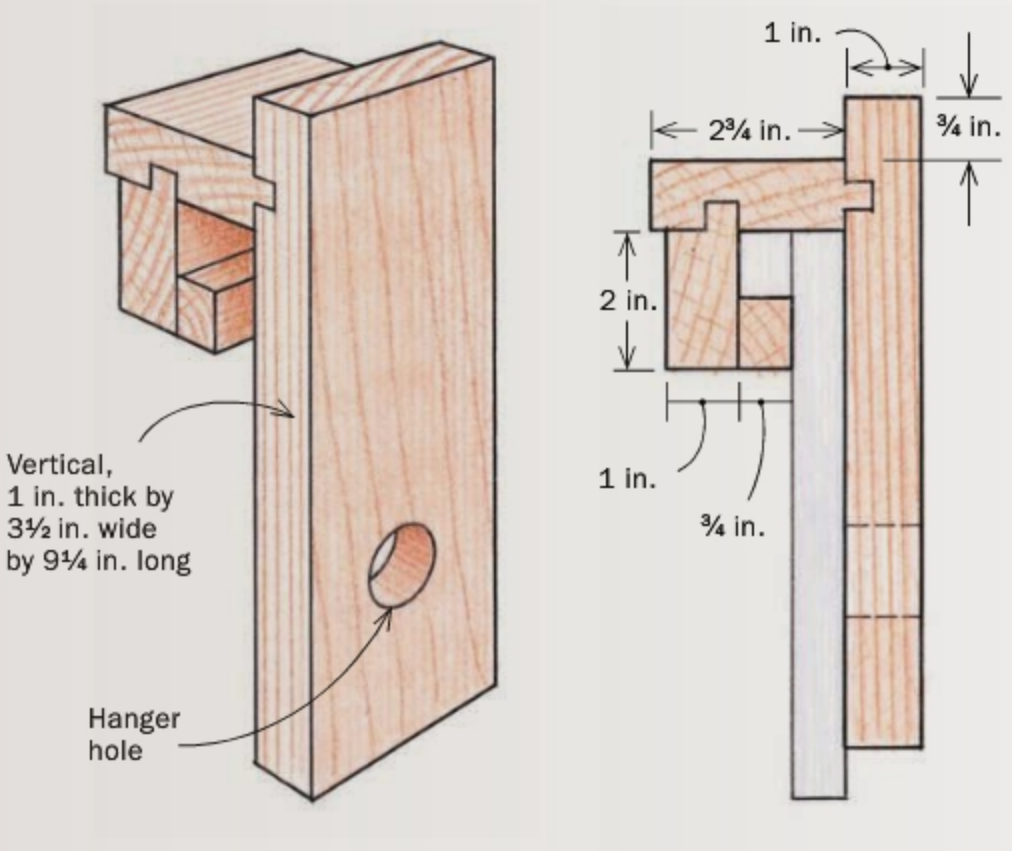
The fence and sliding backer block support the narrow workpiece, keeping it perfectly vertical. The sliding block straddles the upper edge of the tall fence, which is built out with an attached runner strip. The top of the slider actually wraps around the runner strip—an important safely feature that prevents the fixture (and the user's hand) from diving in toward the blade. □

Bob Van Dyke teaches woodworking at Connecticut Valley School of Woodworking.

Perfect for panels. *Multiple fasteners keep the fence plumb despite its extra height. Guide the workpiece from its trailing edge and use a push pad to hold it firmly against the fence.*

TENONING JIG

This push block wraps around the fence's top runner, keeping the narrow workpiece perfectly vertical as you slide it forward.



Tenons, too. *The runner along the top edge holds a push block for cutting tenons.*

Build a Shaker Stool with Hand Tools

Make one in any size while honing your skills

BY CHRISTIAN BECKSVOORT

The Shakers designed and built a great variety of useful stools and benches. Most had through-mortise-and-tenon joints to prevent racking and help support the top. Some had central stretchers and a few had industrial metal-strap braces.

My favorite, for both looks and strength, adds four dovetailed corner braces to the through-tenons. This sturdy, versatile design can be sized for use as a footstool, a bench, or even as a side table. Maybe the best part is that it can be made using hand tools only.

I make this bench from ¾-in.-thick white pine, with contrasting cherry or walnut wedges to help fasten the through-tenons. I'll show you how to build it using hand tools, but I'd suggest using a jointer and planer to flatten the stock and mill it to thickness (or you can start with stock that is premilled at the lumberyard). To save time and increase accuracy, you might also use a tablesaw to cut parts to length and width. If you do mill the stock by hand, be sure to work both faces to make the parts a consistent thickness.

Through-tenons attach the legs

Start by making the legs. Each one has a pair of tenons at the top and a decorative arch sawn at the bottom. First use a compass to lay out the arch, which is about 2 in. high at its peak, and starts about 1½ in. from each edge. Cut out the waste with a coping saw and smooth the surface with a file and sandpaper. Gluing or stapling a strip of sandpaper to the waste piece and sliding it back and forth works well to fair the shape and smooth the surface. Once the arch is done, turn to the tenons. To lay them out, use

Photo, this page, and drawings: Kelly J. Dunton

Make the legs first

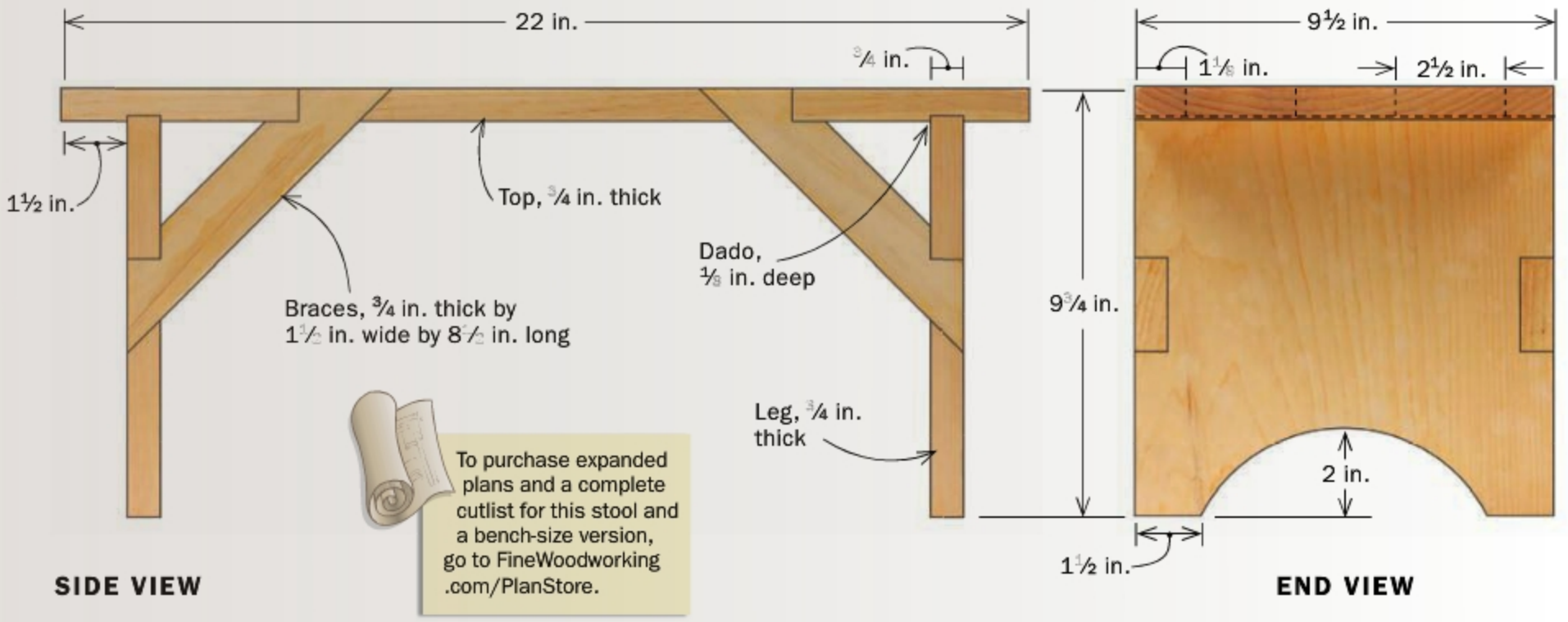
Arched cutout creates two feet. *Stay close to the layout line with the coping saw, then fair the curve with sandpaper attached to the curved offcut.*

Scribe the tenon length. *Set a marking gauge to the thickness of the top and use it to create a baseline for the tenons on both faces and ends of each leg.*

Then mark the width. *Measure in from each edge to mark the width of each tenon. Use a square to carry the layout lines from each mark across the top edge and down to the baseline.*

Saw the tenons. *Use a dovetail saw to cut all four marks down to the scribe line before cutting the end shoulders as shown.*

Chisel in between. *Use a coping saw to remove the waste between the two tenons, then pare to the scribe lines with a wide chisel.*



Photos, except where noted: Steve Scott

Mortise the top

SHALLOW DADOES FIRST

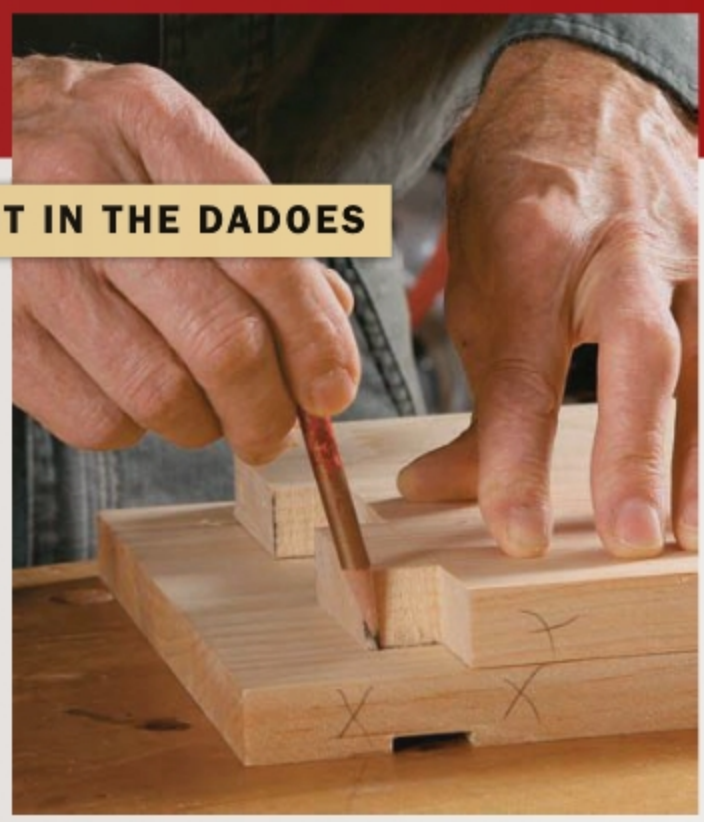
Scribe the edges. *Mark the dado's outer wall using a gauge set to 1½ in. (right). Align the leg's face with this line and mark along the opposite face for the inner wall (far right). Mark the top this way, too, to start the mortise layout.*

Excavate the edges. *First, use a marking knife to deepen the scribe lines on the bottom side of the top to about ⅛ in. (right). Then make a series of angled cuts with a chisel (far right) to reveal the vertical wall created by the knife.*

Clean between. *Angle the chisel, bevel down, to plow out the remaining waste and flatten the dado's bottom. A router plane also works well for this task.*

MORTISES FIT IN THE DADOES

Lay out the ends. *Lay the leg flat on the top face, with the edges of the two pieces flush and the tenons resting between the lines you scribed earlier. Use a pencil to mark the ends of each mortise (top). To mark the mortises on the bottom face, place the tenon ends in the dado and use a square to align the two pieces (bottom).*



Chop from both sides. *Start from the underside, removing about half the waste. Then, to prevent blowout, flip the board and finish the mortise from the top. Check the walls with a straightedge, and test-fit the tenons.*

a marking gauge to scribe the thickness of the top on both faces (because the tenons will sit in a dado, they will protrude from the top so you can plane them flush later). Then mark the tenon width on the top and both sides of each leg—at 1 in. and 3¼ in. from both sides. Cut the tenons and remove the waste as shown on p. 63. To keep track of the parts, mark the legs for their orientation in the finished piece: right leg, right side, left leg, left side.

Because the wide pine legs might cup, I seat them in a shallow dado in the top's underside. You can use the legs themselves to help lay out the dadoes and the mortises. Use a marking gauge to scribe a line 1½ in. from each end above and below the top. Now place the leg on this line and knife along its edge to finish marking out the dado. Deepen the scribe lines on the underside to about ⅛ in. using a sharp knife. Next, chisel out the bulk of the waste. You can flatten the bottom and get the dado to a consistent depth with careful chisel work, but a router plane is quicker.

Next, use a pencil to mark the tenon locations on the top and bottom face of the top. I lay the leg flat on the top so the tenons are directly over the scribe marks. Make sure that each piece is oriented correctly, and that the edges of the top and legs are flush. Mark the tenon locations between the scribe marks, then flip the top and stand the tenons in the dado to mark their outlines.

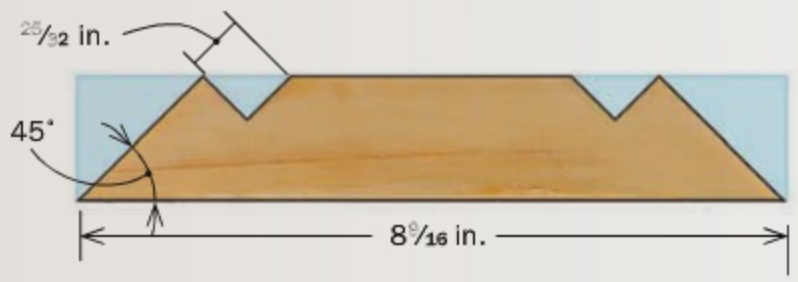
When cutting the mortises, start by chopping vertically, setting the chisel's back flat against the dado wall as you chop along the length. Next, set your chisel in the middle of the waste area and, with the bevel down, make a series of angled cuts toward each scribe line to define the long mortise walls. To prevent blowout on the opposite side, chisel halfway through, then flip the piece and finish the work from the other side. Again, define the mortise walls first, being careful to stay within the scribe lines. When I'm done, I use a small square or the edge of a chisel to check for high points on the mortise walls. These should be pared down. Orient the legs and dry-fit them. Look for a snug fit that holds against gravity but doesn't require brute force to seat.

Corner braces add strength

Each corner brace is mortised into the leg and top, and notched to prevent racking even under heavy loads. With a dovetail saw, cut the brace stock to length with opposing 45° ends. Leave each about 1/16 in. longer than finished length, so the ends can be

Make and fit the braces

Each brace gets two notches. *Miter the ends, then clamp the piece at an angle to cut a right-angle notch at each end. Cut each notch 1/32 in. deeper than the thickness of the mating piece.*



Mark the brace locations. *Dry-fit the stool and rest each brace in place, flush with the inside edges of the assembly, to mark out for the mating notches. Carry the marks onto the faces of the pieces and then use a marking gauge to scribe a baseline for each notch.*

planed flush after assembly. On the short edge of each piece, lay out a pair of 90° notches whose depth is 1/32 in. greater than the thickness of the leg and top stock so the ends will stand proud for trimming. Cut out the notches as close to the lines as possible. I start the cut at the corner with a knife to give the saw some purchase. Afterward, pare with a sharp chisel. Each brace will fit perfectly in only one corner and in only one direction, so label each brace and its corresponding corner.

The next step is to mark and cut the notches that will house each brace. Reassemble the stool. Position a brace on one of the corners so that the horizontal cut at its top is flush with the underside of the stool's top, and the vertical cut at the bottom of the brace is flush with the inside edge of the leg. Mark the location of the brace at the edge of the top and edge of the leg. Then use a square and pencil to carry the layout lines onto both faces of the top and leg. Set a marking gauge to the thickness of the braces and scribe the depth of the notch between the pencil lines.

Use a dovetail saw to cut slightly inside the pencil lines down to the scribed depth mark. Disassemble the stool and use a coping saw to clear the waste between the sawkerfs, then pare to the layout lines. Dry-fit, adjust, and repeat with the other three corners.

Glue-up is simple

Hand-sand the underside of the top and the inner faces of the legs to remove any blemishes, dirt, or pencil marks. Saw a pair of full-depth kerfs about 3/8 in. from the end of each tenon to accept the wedges. Now glue the legs into the top and the corner braces into their notches. Clamp as needed. While the clamps are on but the glue is still wet, glue and pound the hardwood wedges into place.

Once the glue is dry, the protruding tenons, wedges, and braces can be smoothed with a block plane. Sand all the edges, rounding the corners of the top slightly. Hand-sand the entire surface if desired, and wipe on the finish of your choice. □

Christian Becksvoort is a contributing editor.

Cut the notches. *Saw down each pencil line to the baseline (left), and then remove the waste with a coping saw. Pare away any high spots with the chisel (above), test-fitting the brace as you go for a fully seated and snug fit.*

Photo, facing page (bottom left): Michael Pekovich

Assembly and cleanup

Glue-up is easy. *After sawing wedge kerfs in the tops of the tenons, apply glue to the tenons and bring the seat and legs together. Apply glue to the notches and seat the braces, tapping them home if needed.*

Wedges ensure snug tenons. *Cut the wedges from ⅛-in.-thick hardwood about 6 in. long. Use a chisel to taper them from 0 at the bottom to full thickness ⅞ in. up. Cut off 1 in. and repeat three more times. Apply glue to both sides of the wedge and tap it into the kerf with a hammer. Trim with a saw when the glue dries.*

Scaling up

The stool design is solid and functional in a variety of sizes. Becksvoort makes a bench version that is 11 in. deep by 40 in. wide by 18 in. tall. When building to larger scale, sketch the design until the overhang and foot arches please the eye. *Fine Woodworking* art director Michael Pekovich built the piece shown above (which has an overhang of 2¾ in., 4½-in.-high arches, and a bracket length of 11½ in.) in white oak as an entryway seat.

Plane everything flush. *The tenons will protude ⅛ in. or so and the braces a bit less. Use a block plane to level them (left) and to bring the edges flush, too (above).*

What the Experts Don't Tell You About

Turning Furniture Parts

Part 1: A smooth, even cylinder is the foundation

BY PETER GALBERT

I had almost no idea how to use a lathe when I built my first Windsor chair 13 years ago, even though I'd built plenty of furniture by then. So I set about teaching myself to turn by digging through books and magazines for more information. As a woodworker new to turning, I discovered pretty quickly there's a lot they don't tell you.

There is a learning curve in jumping from curious furniture maker to competent turner. I'll show you how to get through it quickly as you turn a basic cylinder, the starting point for any spindle, and then add some tapers and tenons. Along the way, I'll share the tips I wish I'd known when I started turning, particularly things like how to hold the tool and move your body for clean cuts. Master the basics here, and in a future article, I'll take you through adding swells, beads, and coves to fully flesh out an endless array of crisply turned parts for fine furniture.

Luckily, getting started isn't expensive. Furniture makers turn mostly spindles (workpieces secured at both ends on a lathe), which doesn't require an especially powerful machine, although a longer one is better. And you can cut almost any shape with a ¾-in. roughing gouge, ⅛-in. diamond parting tool, a ⅜-in. detail gouge, and a ¾-in. oval skew chisel. Buy those four tools instead of a whole "kit" and you'll save a pretty penny. You can spend that savings on a few essential accessories I'll recommend later (and in Fundamentals, pp. 22–26).

Start from square one

Whether you're making table legs or drawer pulls, every turned piece starts as a blank. Begin with a square one at

Photos, except where noted: Ken St. Onge

Punch the intersection. *The indentation left by an awl helps locate the drive and tail centers.*

Mount the blank

Find the center by drawing corner-to-corner lines on both ends, and then use the marks to line up the workpiece on the lathe's centers.

Tap the drive center. *To mount a spur center, remove it from the lathe and pound it into the end of the workpiece to create a pattern of indents.*

Line it up. *The awl and spur marks will register the piece when you seat it between the drive and tail centers. Line everything up and then tighten the tailstock to secure the blank.*

TRY A STEB CENTER DRIVE

A steb center acts like a clutch, so a workpiece won't keep spinning if it grabs a tool's edge. The design minimizes tearout, so it's great for beginners and veterans alike. Plus, the small diameter is better for turning small or thin pieces.

½-in. "stebcentre"
$55, highland woodworking.com

Adjust the tool rest

TIP

GIVE IT A TUNE-UP

Remove dings and divots. *Tools will glide more easily over a smooth, straight tool rest, so file it smooth and polish it with diamond plates or sharpening stones. Then coat it with wax.*

Keep it close. *Move the tool rest about ⅛ in. away from the workpiece, and keep it at about the height of the centerline.*

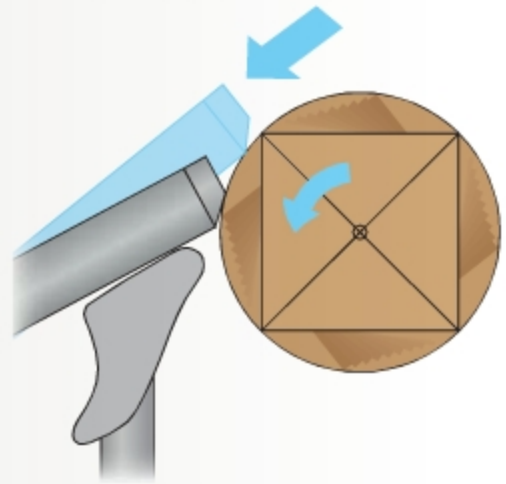
Roughing out a cylinder

⅜-IN. ROUGHING GOUGE

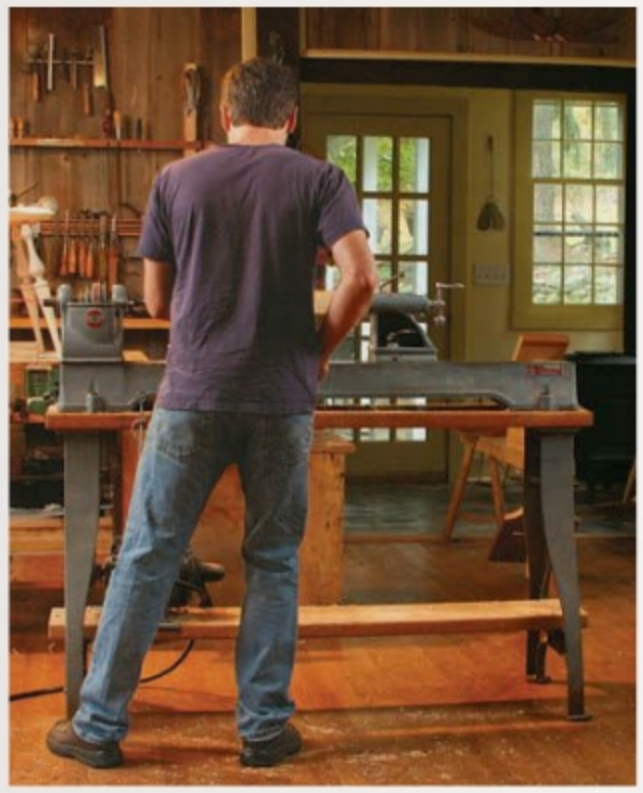
The wide bevel and deep flute make this tool easy to control while hogging out material from a blank.

2 KEYS TO SUCCESS

Drop the tool into the cut. *Let the bevel ride high on the blank before entering the cut. Draw the gouge back slowly and angle it down to drop the cutting edge into the workpiece.*

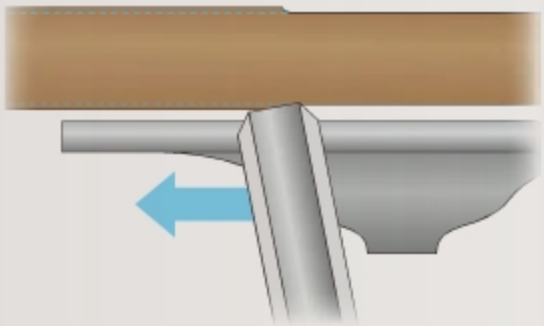


Move with the legs and hips. *Galbert starts a cut with his arms, waist, and torso locked in position, and his weight on his right foot (right). This ensures even cuts because he can hold the gouge in the same position, and move by shifting his weight to his other foot (far right).*



SEE IT IN MOTION

MAINTAIN A SKEW CUT



Skewing the gouge stabilizes the bevel against the already-cut section, leaving a cleaner surface and an easier-to-control tool.

least ½ in. wider than the widest diameter of the finished spindle. That should leave room for roughing and shaping.

It's important to get the blank centered properly on the lathe because if it's off on one end, you'll remove a lot of extra material to get an even cylinder. So draw corner-to-corner lines on both ends, punch the two intersections with an awl, and use the indent to line up the lathe's drive center and tail center.

If you're using a traditional spur center, remove it from the lathe and hammer it into the end of the blank before mounting the whole piece back in the lathe. Use the spur marks to line up the workpiece. If you don't have a center yet, I recommend you buy a steb center instead. A steb center has a circle of teeth with a spring loaded-pin in the middle, and acts like clutch if a spinning piece catches a gouge. It's a more forgiving design, especially for beginners, and it's easier to mount because it stays in the lathe. Just line up the pin by eye. It's a spring, so you can always loosen the tail and move it if need be. With either type of center, tighten the tailstock enough that the piece won't spin freely by hand. Don't over-tighten or you can damage the lathe's bearings.

Now set the tool rest about ⅛ in. from the widest part of the blank, about even with the center. Rotate the blank by hand to make sure it will clear the tool rest as it spins. Keep the rest in the same relative position as you rough out the blank and the diameter shrinks.

Basic roughing technique

A perfect cylinder actually starts as a series of gentle, overlapping tapers that eventually get evened out. That initial taper ensures you're always cutting downhill later on when you smooth the surface. Downhill cuts mean you won't run the risk of catching the gouge on an exposed bit of end grain, which can pop out a wood chunk and or send the tool skittering. For both initial tapering and subsequent straightening, use the roughing gouge.

The basic strategy is simple. A right-handed turner would start

Photo, top left, and drawings: Kelly J. Dunton

TURN A CYLINDER IN 2 STEPS

Start with a taper. *Start at the headstock and cut a slight taper a few inches from the end. Repeat the cut, starting a bit farther away each time. Keep working with overlapping passes to create a rough taper along the blank (inset). Keep working toward the headstock to bring the taper closer to a straight cylinder (below) before moving the tool rest to the next section. When you are done, the whole blank will have a slight taper.*

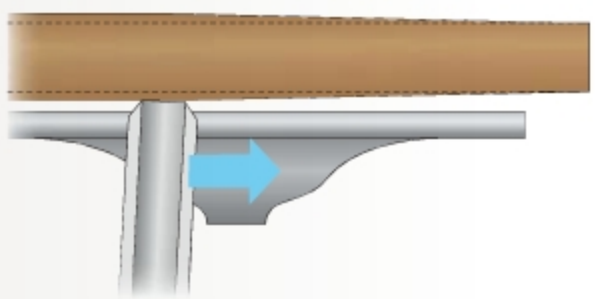
cutting at the headstock end, always working from right to left to break the edges and rough out the subtle taper. Start the first pass about 3 in. from the headstock and cut back toward the headstock. Start each subsequent pass about that same distance farther away. Once you reach the end of the tool rest, or the spindle, keep cutting lightly along the full length of the section until the edges have all broken and the piece has begun to turn round. Then slide the tool rest down the lathe's bed and repeat the process until the whole spindle tapers roughly from end to end. There may be bumps, particularly where you've moved the tool rest, but don't worry, you'll smooth them away afterward.

At this stage of bringing the piece from square to round, there are couple of important points to keep in mind.

First, move with your legs. Your body position and stance are difference-makers when it comes to clean cuts. New turners make the mistake of moving the gouge by pushing their arms or rotating their waist. Those movements make the tool travel in an arc, and leave the turner constantly trying to compensate to cut evenly. Instead, keep your arms and upper body fixed in the same position and generate side-to-side movement from your legs and hips, pivoting your weight from one foot to the other. This keeps the

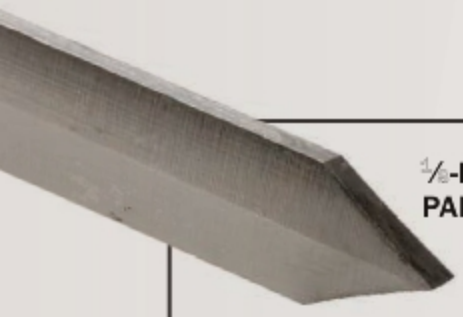
Finish with a cylinder. *After carrying the taper to the tailstock end, Galbert starts there with a series of straight, shallow cuts to turn the long taper into a cylinder and smooth away any high spots.*

Make straight cuts, starting at the fat end, to create a smooth, even cylinder.



Tapers and tenons

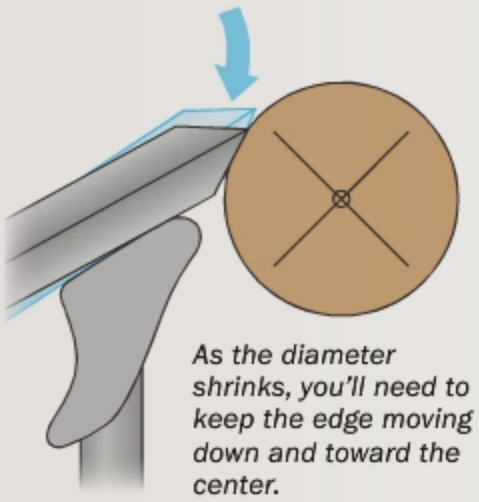
Now you are ready for the next stage of turning: Using a parting tool to set distances and depths, and then using those cuts as references.



⅛-IN. DIAMOND PARTING TOOL

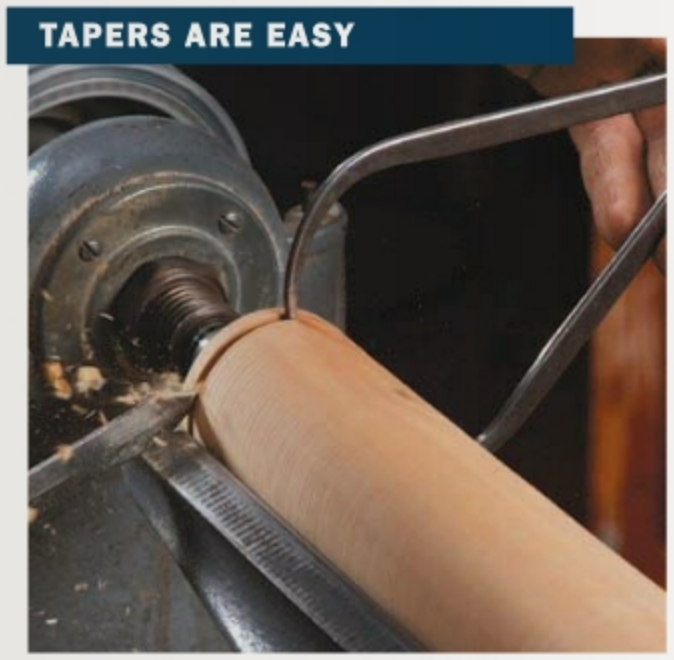
USING A PARTING TOOL

Point the tool straight at the blank with the bevel riding it. Draw the edge back and down to enter the cut.



As the diameter shrinks, you'll need to keep the edge moving down and toward the center.

TAPERS ARE EASY



Set your landmarks. *Galbert starts taper cuts by first sizing the diameters at the beginning and end. Set a caliper for the desired diameter, and slide it into the parting-tool cut.*

Other landmarks. *This turning will get tapered at both ends, with a flattish section between. Shallow parting-tool marks define the thick ends of the taper.*

Start cutting at the end. *Make a series of ever-widening passes to work down to your narrowest diameter without going deeper than your high point at the fat end of the taper. The taper will be a bit rough, but Galbert will smooth it with a skew chisel in Part 2.*

Switch directions on double tapers. *To do the other taper, work toward the tailstock, moving left to right. Remember to skew the gouge into the cut.*

gouge straight throughout the cut. This is easier to do if you align your body so that it feels comfortable at the end of the cut, rather than the beginning. Face the lathe in front of where your cut will end. Then pivot your weight to your right foot to start the cut. As you move through the cut, pivot your weight back to your left foot.

Also, never stab the gouge straight into a workpiece or it will scrape the wood instead of cutting it. Scraping leaves a poor surface and creates lots of dust and the potential for serious tearout. Instead, ride the bevel up high on the spinning piece without cutting, and slowly draw it back, lifting the bottom of the handle to drop the edge and engage the workpiece. Exit the cut the same way, by riding the bevel back up. Always skew the gouge, too. That way, the bevel rides on the just-cut surface, which will support the cutting edge ahead of it as you move. This, too, makes for cleaner, safer cuts.

Lastly, throughout the whole motion, don't hold the gouge too tightly. A heavy grip limits the range of movement and makes it hard to feel the feedback from a spinning workpiece. Grip it like a bird, just tight enough to keep it from flying away.

Even the cylinder

Finish straightening the taper and evening out the cylinder by taking a series of straight passes with the gouge. Start at the tailstock end and drop the bevel in so that

Photo, top left: Kelly J. Dunton

TURNING A TENON

Size the shoulder and ends first. *Cut tenons like tapers, but with the same diameter at both ends. The parting tool works better if used slightly away from the end, supported on both sides of the cut.*

Scoop out the middle. *Remove the waste at the end, and then take straight, even cuts with a roughing gouge (right). The thick jaws of a wrench (far right) make it easy to find high spots, whether the piece is spinning or not.*

you're taking a very light cut. This time, run the gouge straight along the tapered piece. The cutting edge will take increasingly thinner shavings until at some point the gouge's edge will naturally come out of the cut as it moves along. Keep cutting with thin, straight passes to even out the taper, trim any high spots, and leave a uniform shape. Check the diameter of the cylinder with a caliper to make sure it's thin enough. If not, keep taking long, thin passes to remove material evenly and to leave a smooth surface for cutting shapes.

Tapers and cigars

I'll cover more complicated turnings in Part 2, but we can turn your uniform cylinder into two elegant furniture parts right now, complete with precise tenons on the ends. The easiest shape is a simple taper. Create it by sizing the beginning and end of the taper with the parting tool, checking with a caliper set to the desired dimension.

Don't stab the parting tool straight into the workpiece. Enter a cut with the bevel riding on the round, and draw the tool back slowly to engage the tip. Exit the cut the same way. It helps to wiggle the parting tool side-to-side just a bit to widen the kerf while cutting. It also makes it easier to check your progress with a caliper as the work spins.

For measuring diameter, I prefer my Galbert Caliper ($80; petergalbertchairmaker.com; see Tools & Materials, *FWW* #205) because it won't catch the kerf's edges and reads dimensions directly without any setup.

Use a roughing gouge to remove the waste between the two parting-tool cuts, but don't cut down to the very bottom of the kerf. Leave just a little bit of material that you can remove during final smoothing with a skew chisel, which I'll cover in Part 2.

For a basic cigar shape, like those on turned Shaker legs or Windsor-chair stretchers, cut slightly rounded tapers on both ends of the cylinder the exact same way.

You can use the same technique to form accurate tenons. Just size the shoulder and ends and then gouge out the waste. Check that the diameter is even along the tenon using an open-ended wrench. Its wider surface makes it easier to see high and low spots. □

Peter Galbert makes chairs and tools in Sterling, Mass.

readers gallery

RODNEY DIAZ
Southbury, Conn.

With a sewing desk in Christian Becksvoort's *The Shaker Legacy* as inspiration—and with some 20-in.-wide pine boards on hand—Diaz built a pair of chests for his two sons, ages 7 and 4. He left off the side moldings of the original and outfitted the four large drawers with pairs of knobs. The wide boards allowed Diaz to mill the sides and tops of both chests from single boards. The chests (18 in. deep by 27 in. wide by 39 in. tall) are finished with wax. "These chests will be living with two rambunctious boys," Diaz said. "Imagine the patina in 10 years."

JEFFERSON SHALLENBERGER
Santa Cruz, Calif.

Shallenberger has been known to build some astonishingly complex cabinets (jeffersondesigngroup.com). But when a customer requested a dining set that would be "calm," he accommodated that request with a tranquil design. Then he decided he wanted to give this wenge table "some action." He had admired string inlay on traditional pieces, but wanted something "more fluid," so he splayed lines across the top of the table (36 in. wide by 70 in. long by 29 in. tall) and stools (15 in. across by 18 in. tall), giving the placid design some sizzle.

Submissions

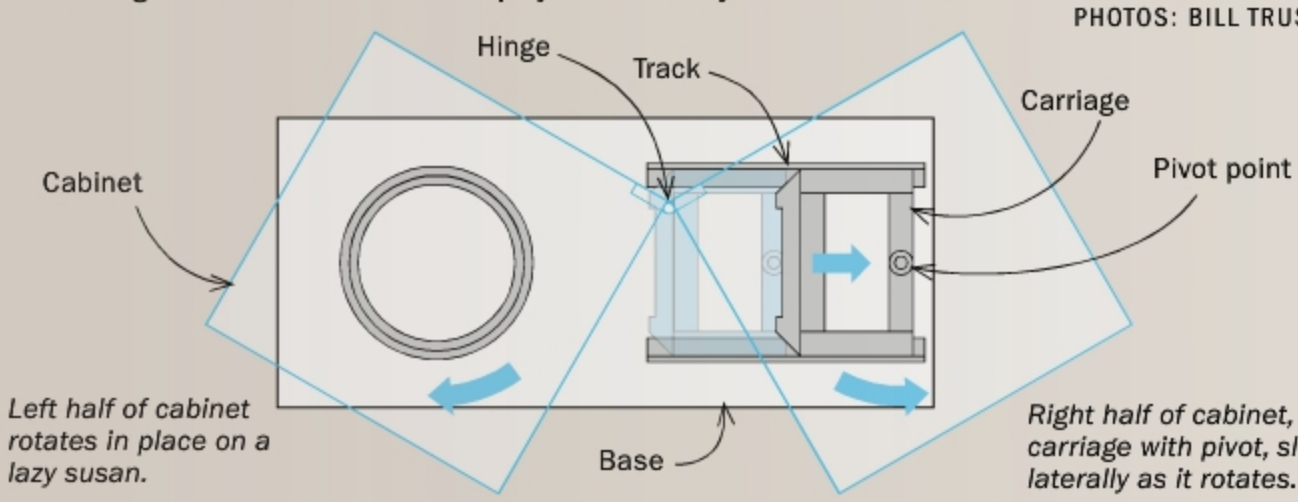
Readers Gallery provides design inspiration by showcasing the work of our readers. For submission instructions and an entry form, go to FineWoodworking.com/RG.

DESIGN SPOTLIGHT

AURELIO BOLOGNESI
Hardwick, Mass.

Bolognesi has always admired the clever clamshell-action cabinets from the 1930s that pivot open to reveal storage inside a plain case. He decided to build one, but he didn't like the idea of putting his on casters like the originals. He wanted his cabinet to be stationary, yet to open and close smoothly and easily. It took some sleepless nights before he arrived at his solution to the puzzle: He put a lazy susan under one half so it spun in place, and a pivot on linear tracks under the other half, so it both spun and moved sideways. He reached his eureka moment after making a Plexiglas mockup of the base and the lower section so he could witness the dynamics of the parts as he pivoted them. Bolognesi bought the lazy susan and bearing hardware, but fabricated the tracks himself on a milling machine. He installed a heavy-duty version of his mechanism in the base and tucked a lighter-duty, lower-profile version under the top. He built the two halves of the cabinet from solid cherry and connected them with double-offset knife hinges. The cabinet is 16 in. deep by 32 in. wide by 43 in. tall.

PHOTOS: BILL TRUSLOW



Left half of cabinet rotates in place on a lazy susan.

Right half of cabinet, on carriage with pivot, slides laterally as it rotates.

LESLEY GOLD
Philadelphia, Pa.

Gold made this lap desk (14⅜ in. deep by 9⅜ in. wide by 2½ in. tall) in a master class at Philadelphia Furniture Workshop. It's a replica of the desk Thomas Jefferson used when drafting the Declaration of Independence. The challenge of using all her skills on such a small scale drew Gold to the project. "Precision was demanded during every step of the build," she says, "installing the minuscule hinges, adding 1/16-in. banding to the drawer front and back of the box, fitting the drawer after cutting dovetails in 3/16-in. mahogany and my favorite—positioning the lock and escutcheon." The box is mahogany with yellowheart banding; the finish is lacquer. PHOTO: MARIO RODRIGUEZ

VINCENT CHICONE
Montour Falls, N.Y.

The original of this reproduction tall easy chair (circa 1800–1810) sits in the library of Thomas Jefferson's Monticello estate. The chair caught Chicone's attention while he was working on reproductions of several pieces of Monticello furniture for the museum's Griffin Discovery Room, where children can learn about Jefferson through hands-on activities. "I was particularly drawn to the hand-carved balloon fluting in the legs," he said. The chair also has carved reeding on the arms and front legs. It is 23½ in. deep by 28¾ in. wide by 58 in. tall, made of mahogany with red leather upholstery and brass tacks. Chicone made the chair for a collector who lives in a home built to match Monticello. PHOTO: DEAN DIGITAL

THOMAS SCHLACK
Glen Gardner, N.J.

Schlack's love of hollow-vessel turning and complex bending techniques sparked the idea for this cocktail table, which he calls "The Gathering." The center of the base is a 20-in.-dia. Jarrah burl vessel, which is surrounded by curved wenge pieces that serve as "hands" and legs that hold the glass. At 48 in. wide by 72 in. long by 18 in. tall, the table can be disassembled piece by piece for moving. Without a straight line to work from, and with the grain flowing through the tapered legs to the hands, the table required Schlack to make a number of jigs and tools.

TREASURES FROM THE NORTHERN WOODS

Each spring, the Minnesota Woodworkers Guild showcases the work of 25 to 50 talented woodworkers in the Northern Woods Exhibition. Organizers say one of the main purposes of the show is to give the craftsmen a chance to display their work and discuss it with the public. Here are just a few of our favorites from the 29th show, held in April 2012. For more, go to mnwwg.org.

PHOTOS: RAMON MORENO

DAVID LANE
Minneapolis, Minn.

Lane built this pair of boxes (each 7½ in. deep by 12 in. wide by 4½ in. tall) from the same design, but varied the base, hardware, finish, and interior to give them contrasting styles. He calls the duo "East Meets West." The Asian-style box is ebonized oak; the Western-style box is walnut. Lane made the copper hardware. The finish is oil and polyurethane. The boxes won the award for Best Finish.

JEFF ANDERSON
St. Louis Park, Minn.

This tea table (12 in. deep by 24 in. wide by 14 in. tall) has a serving-tray top with storage below. Anderson designed it for his wife's former boss, a tea lover. The woods are wenge, mahogany, and ebony; the finish is lacquer. Anderson, a machinist by trade, says he likes to make his own hardware and fasteners, as he did with the solid-brass hardware on this piece.

JOEL FICKE
Bloomer, Wis.

Ficke built this walnut tall-case clock using only hand tools. It's a replica of a circa 1740 clock from the Jeffords Collection that sold for a record $1.68 million in 2004. "I was never all that excited about the overall appearance of this clock," Ficke says, "but I wanted to learn Corinthian capital carving." So he took a carving class with the late Gene Landon and said the idea of the clock "grew on him" as work progressed. It now serves as a reminder of his mentor, who passed away after the first class. The 12-in.-deep by 23-in.-wide by 111-in.-tall clock won Best Traditional Piece. The clockworks are from David Lindow (lindowclockmaker.com).

NICHOLAS NELSON
Maple Grove, Minn.

Winner of Best in Show, this curved cabinet was inspired by the coastal scenery of British Columbia. Nelson said he designed it to convey a sense of motion. The cabinet (13 in. deep by 36 in. wide by 21 in. tall) is made of Chinese elm, European cherry, western maple, and Japanese maple. The finish is shellac and wax. Nelson also won the Peer Award for this piece, which means it was chosen by a vote of all the Guild members who came to the show, and the Paul Lee Award, which recognizes an entry that blends a playful spirit with sound construction.

Q&A

Tips for drawer runners and kickers

Q: Recently I built one of Christian Becksvoort's Shaker tables (*FWW* #210). Unfortunately, when I clamped on the drawer runners and kickers, they slid around in the glue a bit and now they don't line up parallel to one another. How do I avoid that in the future?

—BEN DANIELSON, Eureka, Calif.

A: IT'S IMPORTANT TO GET THOSE PIECES lined up. If they're out of whack in one direction, you'll end up with a drawer pocket that isn't square, and it will be very tough to get the drawer to fit and work properly. Next time, line up the kickers and runners using a spacer block and use clipped brads to keep the parts in place when you glue them in. Here's how.

Start by tapping a couple of thin brads into the apron where the kickers and runners will attach, and then use a pair of wire cutters to trim the brads just a bit above the surface.

To line up the pieces perfectly, use a spacer block that is the same height as your drawer sides. Slide the spacer into the drawer opening. If needed you can use a square to line it up with the front of the drawer. Then just butt the kickers and runners against its edges and tap them into place on the brads. The spacer block ensures the kicker and runners are parallel, and the holes from the brads will create registration points for the parts during gluing.

—Christian Becksvoort is a contributing editor.

Keep glued parts in line. *Kickers and runners can slide around during glue-up and make a drawer pocket hard to fit. Clipped brads under the pieces help keep things in line.*

Start with the brads. *Nail them into the apron where the kickers and runners will go (left), and clip the heads close to the surface (right).*

Add a spacer. *Align the kickers and runners with a spacer, then tap the pieces onto the clipped brads (left) to create registration points (inset).*

Ask a question

Do you have a question you'd like us to consider for the column? Send it to Q&A, *Fine Woodworking*, 63 S. Main St., Newtown, CT 06470, or email fwqa@taunton.com.

Photos: staff

Chamfer end grain without tearout

Q: What's the best way to chamfer end grain with a block plane? My edges look torn out and uneven.

—DON RILEY, Missoula, Mont.

A: FOR A SMOOTH AND EVEN CHAMFER on end grain, set your block plane to take a light cut. A low-angle plane is best, but isn't essential. Most importantly, skew the plane toward the end grain, in effect cutting downhill on the fibers, and making more of a shearing cut.

Aim for an even facet on the chamfer, which you can check by shining a raking light across it. To ensure consistency along all of the corners, tuck a finger or two under the sole of the plane to act as an angle guide. By keeping my fingers in the same spot, I can chamfer the same angle on edge grain and end grain, like when chamfering around the four sides of a tabletop.

—Contributing editor Garrett Hack is a furniture maker in Vermont.

Finger guides. *Tuck them underneath the sole of the plane and skew the plane toward the end grain for consistent, tearout-free chamfers.*

Best dye for curved veneer

Q: I veneered the curved pieces of my serpentine sideboard with hide glue. Can I use a water-based dye on it? I've heard that it can make the veneer bubble up.

—STEVE LANIER, Durham, N.C.

A: WITH A THIN VENEER, there is a slight risk that a water- or alcohol-based dye could penetrate through and weaken the hide glue. With bent veneer, which has built-in tension, this could cause bubbling or delamination. On a flat veneer, any dye would be OK because the veneer just lies there. For curved work, I'd recommend an oil-based dye like those made by W.D. Lockwood.

You could use other types of dyes on a curved surface that's veneered with a less water-sensitive glue like Unibond 800 or Titebond III. I prefer the latter because it's formaldehyde-free.

—Finishing expert Jeff Jewitt is a frequent contributor to FWW.

Curves add tension. *Some dyes can weaken hide glue, causing problems on the sweeping veneered curves of a serpentine sideboard.*

Oil-based is safe bet. *The hide glue beneath veneered curves won't bubble or come up if an oil-based dye seeps through.*

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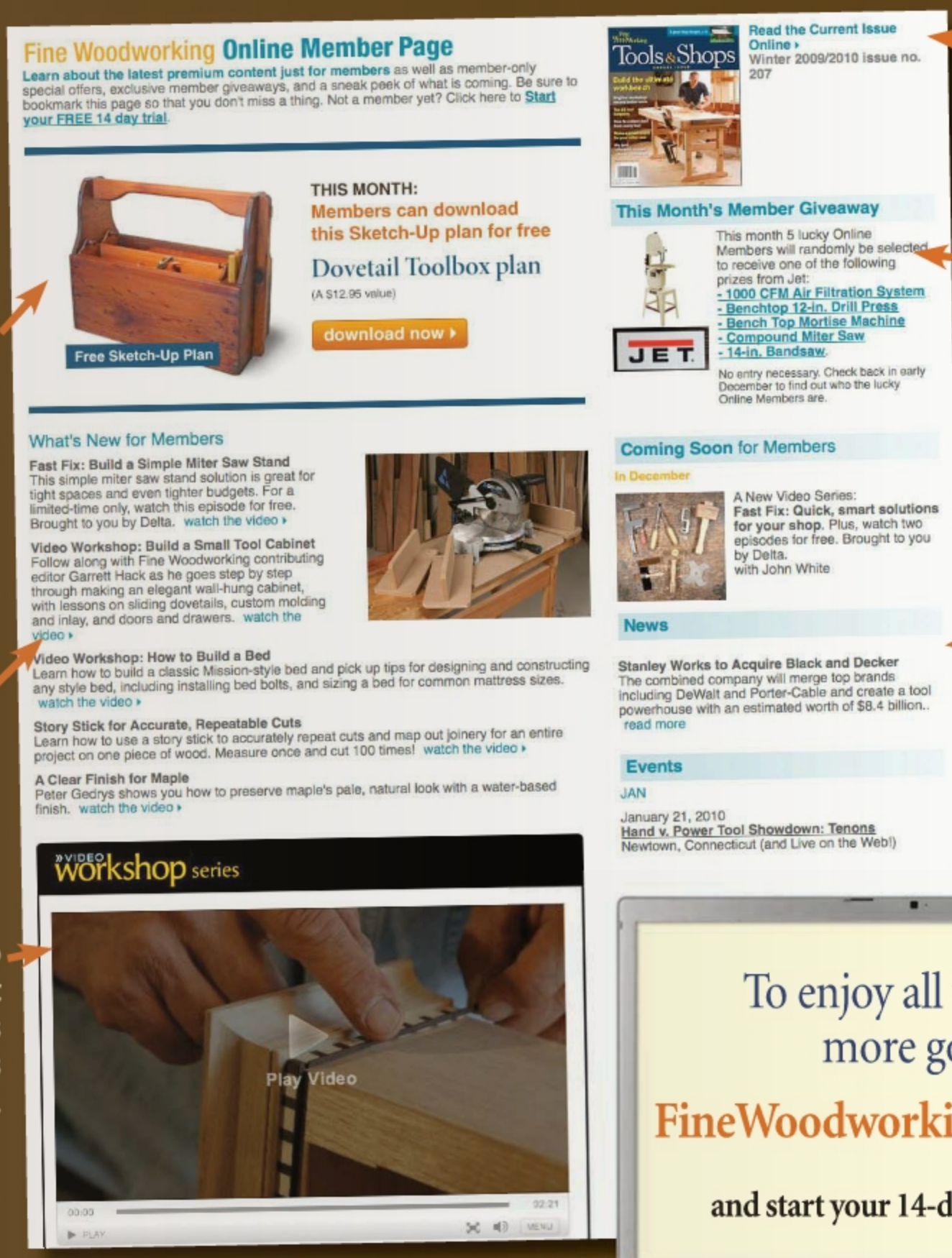

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Curved panels for furniture

SOLID, KERF-BENT CORE CAN BE TAPERED, TOO

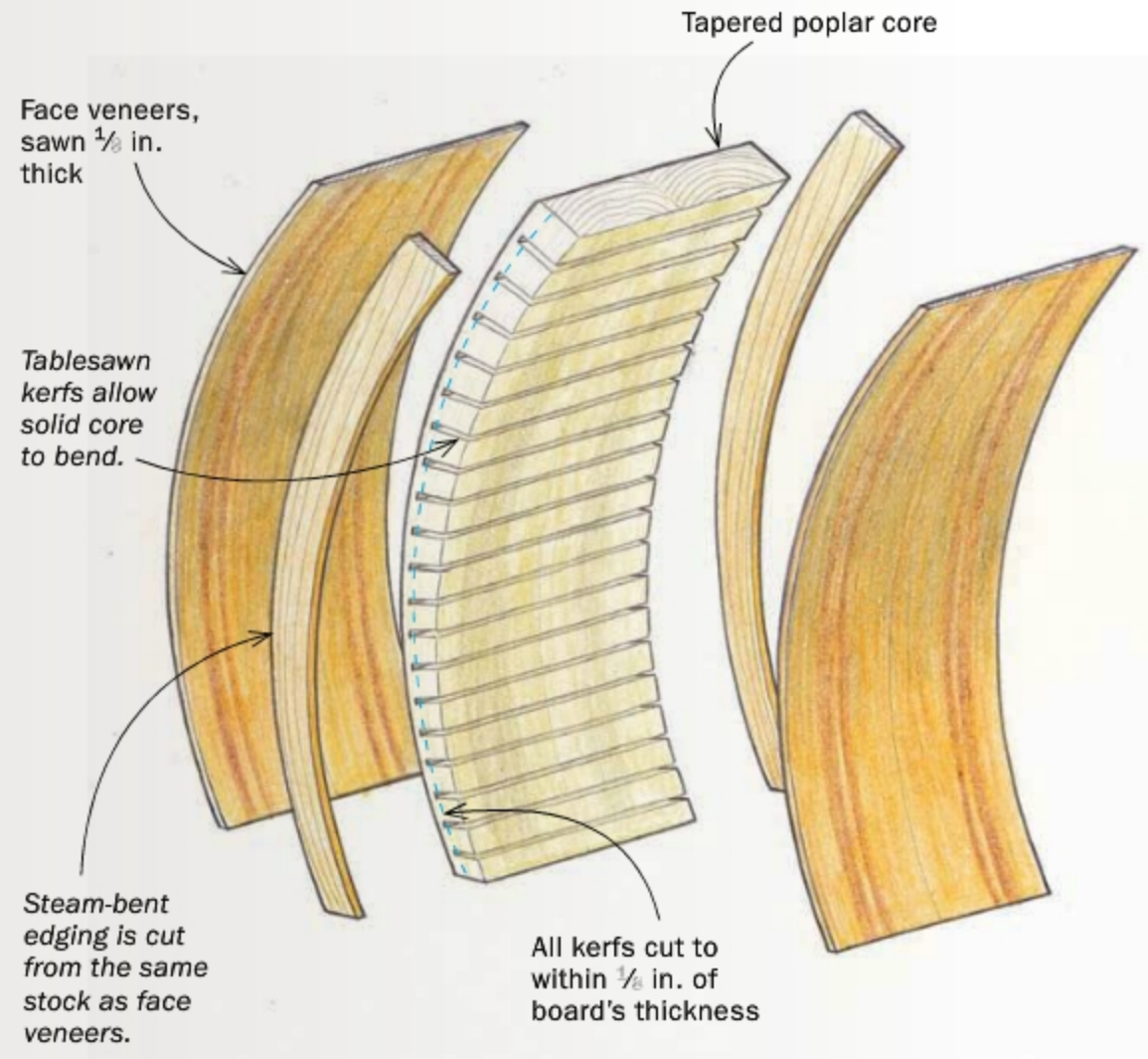
BY DAVID HAIG

I first began bending wood to build my signature rocker (see the Back Cover, *FWW* #215). I learned steam-bending and loved the results I could achieve with chair parts. Then I began wondering how I could bend panels for case furniture. The technique I developed allows me to make curved panels that taper in thickness and will look and behave just like solid wood. Of course, with the same technique I can also make curved panels of uniform thickness.

To make the panels flexible, I use a kerf-bent solid-wood core. I sandwich the core between

Pliable panels. *A solid-wood core kerfed across its width is the heart of Haig's system for making curved, tapered panels. He encases the core in face veneers and steam-bent edging, creating curved panels that look and act like solid wood.*

ELEMENTS OF AN ELEGANT PANEL



Photo, top right: Daniel Allen; drawings: John Tetreault

shop-sawn ⅛-in.-thick face veneers, and add steam-bent solid-wood edging. I cut my face veneers and edging strips from a show wood, and typically use an inexpensive wood like poplar for the kerfed core. If the ends of the panel will be exposed, I make the core from show wood as well.

You can make tapered curved panels using bent-lamination, but I find the kerfing technique much quicker and far more economical of material. Kerfing also allows me to locate the tightest part of the curve at any point along the panel; with bent-lamination, the thick end of a tapered panel will not bend as readily as the thin end.

Essentials of the kerfed core

To produce an even bend, I cut all the kerfs to within about ⅛ in. of the full thickness of the workpiece. As I cut the kerfs in the tapered board, working from the thin end of the workpiece to the thick end, I raise the blade a partial turn for each

Angled resaw starts the taper. *To make the 12-in.-wide tapered core stock, Haig resaws a 6-in.-wide poplar board on a diagonal line. He flips one of the resulting halves end-for-end (so the thick ends correspond) before edge-gluing the pair together.*

Glued up and tapered off. *After gluing up the tapered core (above), Haig smooths the tapered surface with a few passes through a planer on a tapering jig (right).*

Quick kerfs. *Haig cuts kerfs in the core with a purpose-built tablesaw sled and push block (left). Cutting with the workpiece pushed against a front fence enables Haig to use registration lines on the sled to establish quick, accurate spacing between kerfs (above). A pencil line on the workpiece guides the blade height. Sandpaper keeps the workpiece from sliding.*

Photos, except where noted: Jonathan Binzen

Veneer and edging from a single plank. *Haig first rips a blank for the steam-bent edging (above), then he bandsaws four slices of veneer. He edge-glues the veneer using painter's tape as a clamp. Before gluing, he tapes across and then along the joint on the back side, creating a hinge. Then he applies glue (right), closes the joint, and adds cross-strips on top.*

In the bag. *After applying a quick roller coat of glue to the face veneers and the core (above), Haig secures the sandwich with a few strips of tape and slides it into the vacuum bag (right).*

successive cut. I use a standard combination blade, but the type of blade is not critical.

The spacing between kerfs depends on the severity of the bend I want to make. A tight bend might require kerfs 3/16 in. apart; for a gentle bend, 1-in. spacing might suffice. At the ends of a panel, where it connects to the cabinet, I'll adjust the spacing to accommodate the joinery. Since both the kerfed core and the veneers are cut from solid wood, the panel moves with the seasons and should be joined just like solid wood.

Veneer and edging from a single board

Because I want a finished panel that looks like solid wood, I cut the edging and veneer from the same plank. After ripping off the edging stock at the tablesaw, I resaw the face veneers at the bandsaw and then put them through the planer. For the best grain match

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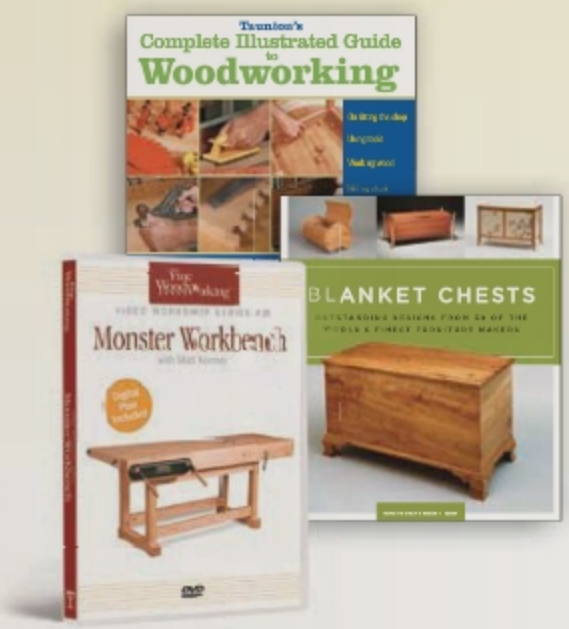

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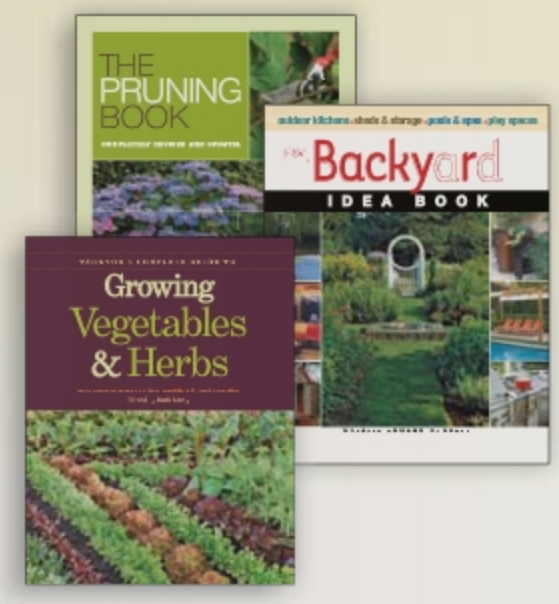

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Complete the panel

Trim the edges. *After glue-up, Haig joints one edge of the curved panel, carefully pivoting it to maintain contact with the fence (above). With the jointed edge riding against a high fence on the tablesaw, he rips the panel to width (right).*

Steam table. *After two hours in the steam box, the cherry edging stock bends readily to shape. The flakeboard bending form matches the curve of the ribs in the vacuum-bending form. A compression strap is critical.*

Ripped on a radius. *Haig resaws edging strips from the steam-bent blank, and then sends them through the planer.*

Clamps and cauls. *He glues on the curved edging strips one at a time, using a thick caul to spread the pressure.*

between veneer and edging, I bookmatch the veneers, gluing them up along the edges that were opposite the edging stock in the original billet. I make a sandwich of the face veneers and the kerfed core and glue them up in a vacuum bag. I put the kerfed side down so the kerfs close slightly as the panel bends, for a more continuous glue surface.

It may seem like a lot of effort to steam-bend edging stock, but the payback is powerful: The edging's grain follows the same curve as the panel and seamlessly matches the face veneers. □

David Haig designs and builds furniture in Nelson, New Zealand.

Shave it flush. *Haig trims the edging flush with a spokeshave and follows up with a card scraper.*

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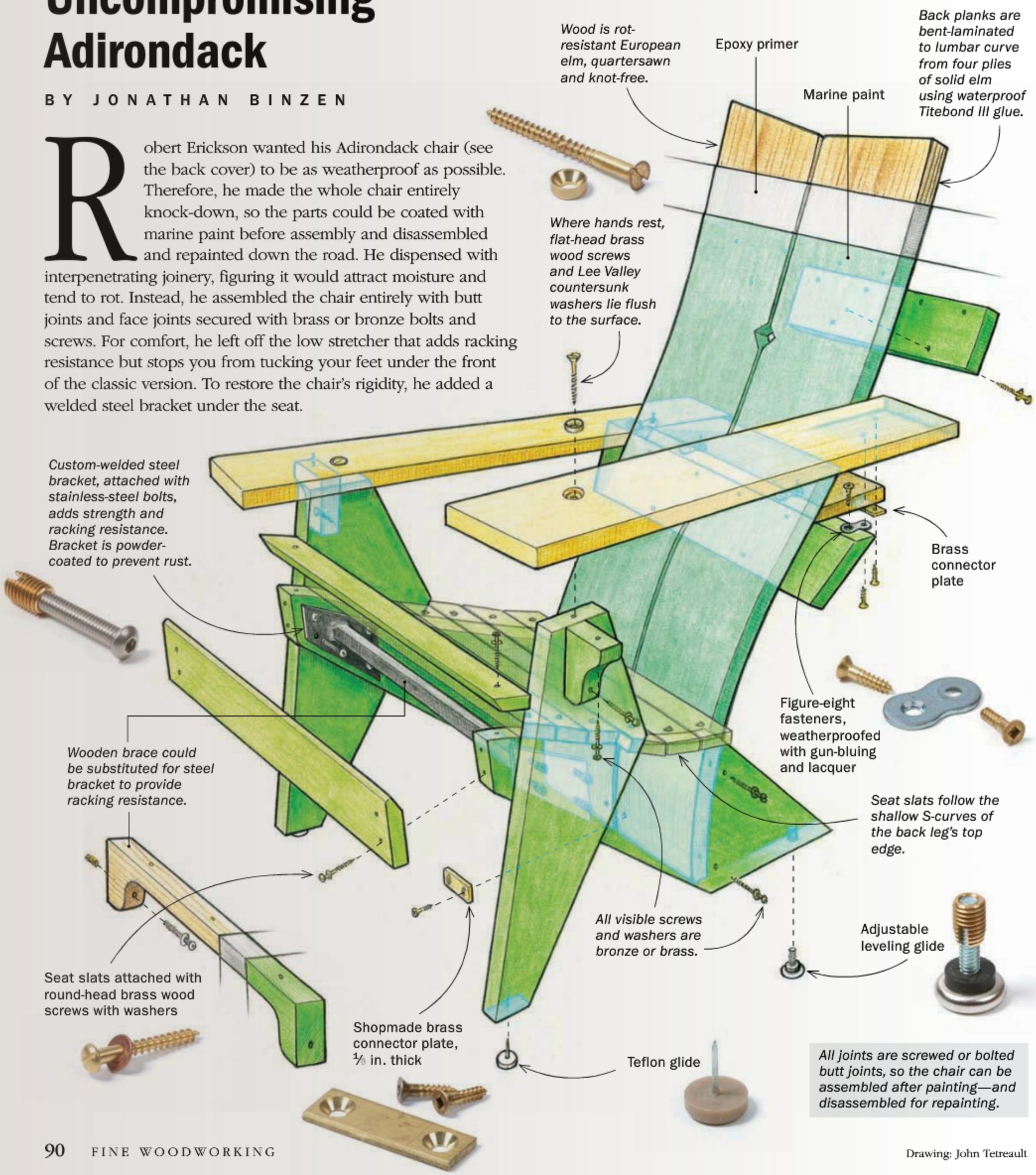
Uncompromising Adirondack

BY JONATHAN BINZEN

Robert Erickson wanted his Adirondack chair (see the back cover) to be as weatherproof as possible. Therefore, he made the whole chair entirely knock-down, so the parts could be coated with marine paint before assembly and disassembled and repainted down the road. He dispensed with interpenetrating joinery, figuring it would attract moisture and tend to rot. Instead, he assembled the chair entirely with butt joints and face joints secured with brass or bronze bolts and screws. For comfort, he left off the low stretcher that adds racking resistance but stops you from tucking your feet under the front of the classic version. To restore the chair's rigidity, he added a welded steel bracket under the seat.

BUILT LIKE A YACHT TO WITHSTAND THE WEATHER

Before assembly, Erickson paints all surfaces with two coats of epoxy primer and three coats of Awl Grip two-part marine paint. He assembles the chair only after the paint is fully cured.



All joints are screwed or bolted butt joints, so the chair can be assembled after painting—and disassembled for repainting.

Drawing: John Tetreault

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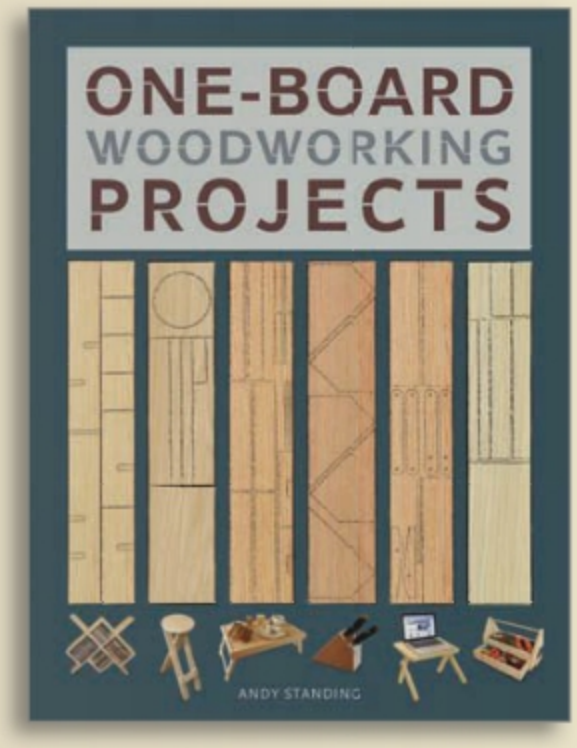

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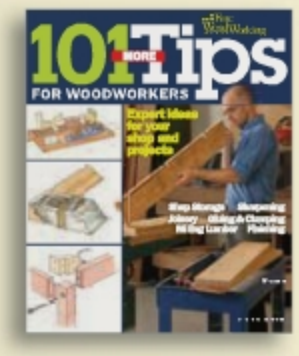

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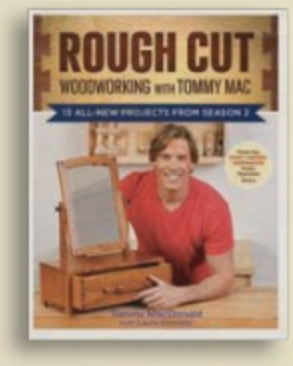

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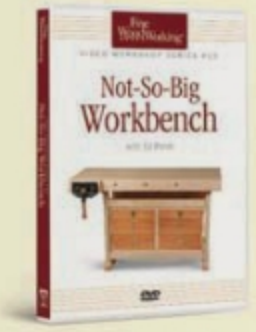

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Adirondack Unbound

Design by evolution. *California chairmaker Robert Erickson pushed the Adirondack in two different directions (left) before arriving at his current version (below), which blends the two.*

Robert Erickson built elegant indoor chairs for 40 years before he tackled that casual outdoor stalwart, the Adirondack. Erickson's chairs typically feature gleaming hardwoods, traditional joinery, and softly sculptural surfaces shaped to fit the body like a glove—none of which pertains to most Adirondacks. So Erickson knew right off that he wanted to rethink structure, comfort, and color. He also wanted a chair that could face the weather with impunity.

In his first prototype (top photo, left), Erickson worked out a design based on triangles and diamonds. To address the weather, he painted all parts before assembly and joined them with brass, bronze, and stainless-steel fasteners. For his second prototype (top photo, right) he reinterpreted the traditionally rectilinear Adirondack with a vocabulary of curves and added a sculpted solid-wood seat and aluminum legs (shaped entirely with woodworking tools). In the chairs he's built since, Erickson has married the straight lines of the first prototype with the lumbar-pleasing, bent-laminated back of the second. He's happy with the current version (above), but envisions still other directions for the enduring American classic.

—Jonathan Binzen

Top photo: Sugar Pine Studios
Bottom photo: Robert Erickson

How They Did It Turn to p. 90 for a detailed look at the anatomy of Erickson's comfortable, weatherproof Adirondack.

Audio Slide Show To see the wide range of superb chairs Erickson has made in his four-decade career, go to FineWoodworking.com/extras.