TAUNTON'S

Fine WoodWorking

Frame-and-panel done right, p. 26

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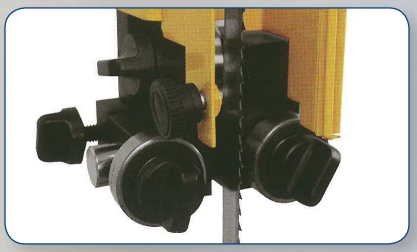

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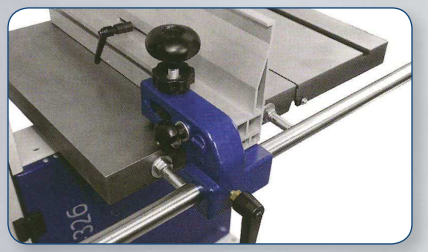

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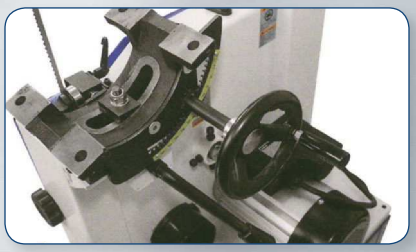

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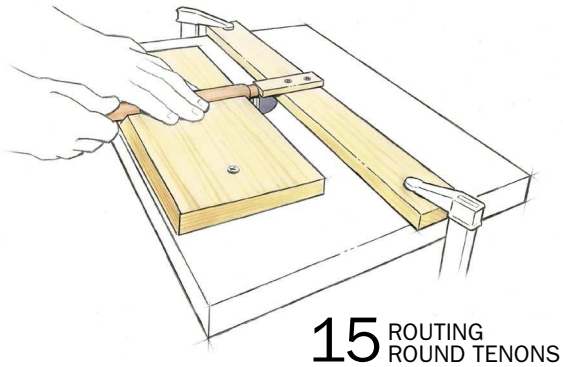

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Cover photo: Michael Pekovich

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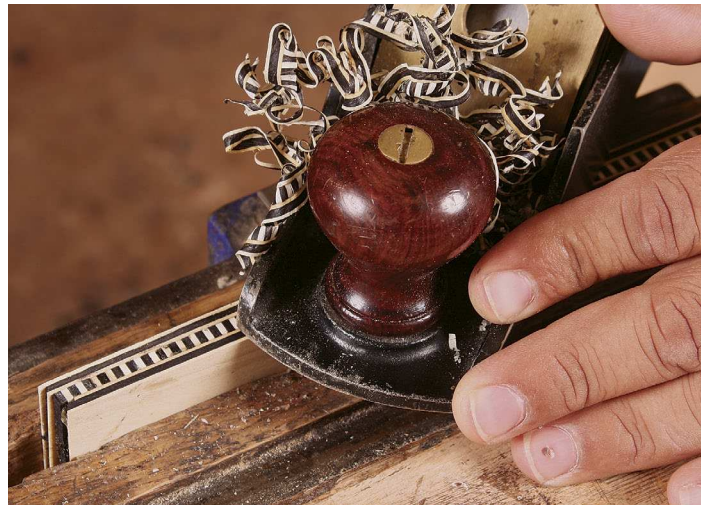

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on the web

THIS MONTH ON FineWoodworking.com/extras

Visit our website to access free online extras, available July 27. While you're there, don't miss our collection of free content, including tool reviews, an extensive project gallery, and must-read blogs.

VIDEO

Turn Your Planer into a Jointer

If you have a board that's too wide for your jointer, you can use a planer sled for flattening. Assistant editor Dillon Ryan shows you how simple it is to do.

VIDEO

Straight Talk on Straight Bits

Something as simple as a straight router bit can get confusing fast. Web producer Ben Strano helps you choose the right router bit for the job.

VIDEO

Can the Can(ned) Shellac

Canned shellac is convenient, but if you want more control over your finish you'll need to mix your own. In this video, executive art director Mike Pekovich shows you how easy it is to make a batch of shellac from flakes.

VIDEO

Double Tenons on the Bandsaw

In this issue, Tim Rousseau uses a tablesaw to cut the double tenons on his frame-and-panel cabinet (p. 26). In an excerpt from his Video Workshop, Rousseau shows you how to do the job with a bandsaw and a clever spacer block trick.

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VIDEO WORKSHOP

Beautiful Bandsawn Boxes

Michael Cullen's bandsawn boxes are quick to make, requiring no measuring, no joinery, and almost no planning. In this project series, Cullen takes you through all of the steps to make three boxes:

- a simple four-walled box
- a textured and painted saddle-lid box
- a textured two-walled box

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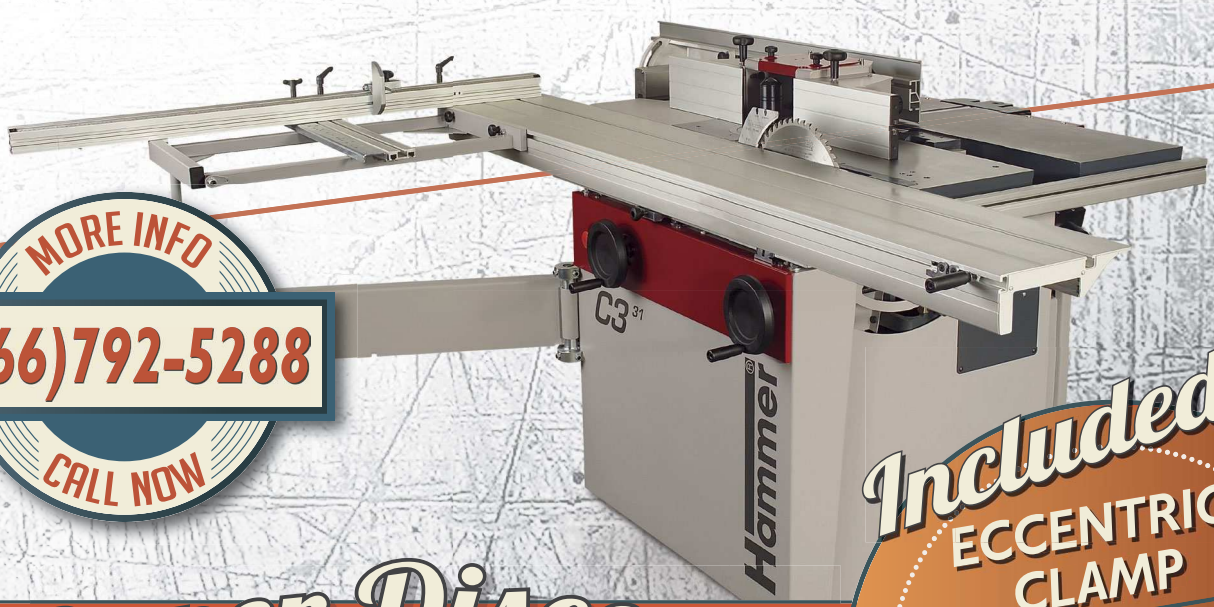

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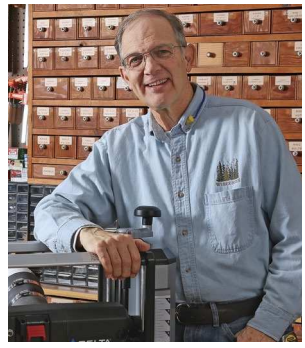
contributors

Fabian Fischer ("Build a Simple Stool") credits his passion and skill with hand tools to a few happy accidents. When he and some friends bought an old timber-frame cottage in a remote part of the Italian Alps, he was forced to do the restoration work without electricity. Then when he returned home to Germany, he discovered a neighbor who had been a master in the joiners guild for 50 years. Fischer spent many days with the retired craftsman. "Felix Klipstein showed me how effective and rewarding hand-tool woodworking can be."

Brian Hubel ("Bold Joinery for Casework") has been a professional furniture maker since graduating from high school. "My parents were self-employed, so I had a good idea what to expect. It's scary not having a regular paycheck but we have always planned for the rainy days, squirreling away what we could when business was good. Woodworking is hard work for very little pay, but the bottom line is that I love it and I am proud of what I make, therefore it's worth it to me." To see more of Hubel's work, go to BrianHubel.com.



Although an avid lifelong DIYer, **Jerry C. Forshee** ("Get Better Cuts with Your Planer") didn't begin serious woodworking until he took his first of many classes at Marc Adams School of Woodworking in 1997. Recently retired after a 44-year career at Indiana University, Bloomington, Forshee now has more time for his hobby. He especially enjoys making furniture for his grandchildren and his favorite charity auctions. Retirement also gives him more time to take and teach a few classes each year at the Marc Adams school, where he continues to develop his skills making furniture in his favorite styles of Shaker and Arts and Crafts.

Timothy Rousseau ("Frame-and-Panel Cabinet") lives in midcoast Maine with his wife and three sons. He divides his time between making furniture at his home shop and teaching at the Center for Furniture Craftsmanship in Rockport. His work has been shown in galleries throughout the Northeast, and has found homes across the country. Rousseau's style is a blend of traditional and modern, with a high emphasis on craftsmanship. He intends his furniture to be used in everyday living. When not making or teaching, Rousseau can be found working in the garden, or on one of his numerous solar projects.

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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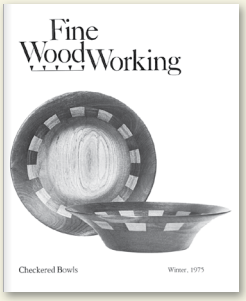
letters

From the Editor

VINTAGE COVER IS A REMINDER OF OUR ROOTS

It's hard to believe it's been 40 years since the first issue of *Fine Woodworking* landed in mailboxes across the country. That now-iconic cover served as a quiet introduction to the brand. There was no need to shout about our arrival. Instead, a simple picture of two bowls did the talking. That image, unmuddied by crowded lines of text, took center stage and encouraged thousands to see what was inside. We had unearthed and begun feeding a core group of passionate woodworkers, eager to devour every crumb they could about the craft.



Many charter subscribers have told me they miss those early days. Perhaps those old black-and-white covers remind them of simpler, slower times, before the 21st century urged them into the fast lane. To give those lifelong members a fond look back, and to give our newer subscribers a flicker of the past, we put together a vintage cover to wrap up our celebratory year. It's a classic case of "when old is new again."

This special cover is being sent to all of our subscribers. In some areas, however, you may see the regular cover treatment on the newsstands. Don't worry. Both subscribers and newsstand readers are getting the same inspiring content inside, despite the differences outside. If you have any comments about the vintage look, positive or otherwise, drop me a note at fw@taunton.com. I'm anxious to hear what everyone thinks.

Thank you all for helping us celebrate 40 years.

—Tom McKenna

Readers respond to wax article

The author of the article "Which Waxes Work Best?" (*FWW* #255) provided a very useful comparison of the various furniture waxes available.

I noticed that one wax I use frequently was not on the list—Kerf's Wood Cream. It is a very soft vegetable wax that is totally food safe. It goes on evenly and buffs out easily to a satin finish that brings out the chatoyance in the wood better than anything else I have used.

—DELBERT (DEB) FREEMAN, Grady, Ala.

I would recommend Beaute' Furniture Wax from the Roger A. Reed company of Reading, Mass. It has a creamy, buttery texture that applies easily and buffs out to perfection. It leaves no residue after application and is water and alcohol resistant. It can be mixed with oil colors to match or shift furniture colors.

—JOHN SHERIDAN, Portland, Ore.

I have been using S.C. Johnson paste wax since I began woodworking. It is inexpensive, readily available, and most of all, it works well. I know tools and products are a personal choice. It's nice to have options. It's also nice to have some clarity about these products.

—STEVE BUTLER, Uxbridge, Mass

It appears to me that the waxes that got top billing were the big name-brand waxes. I have been president of two American Association of Woodturners clubs in the Tampa area and I teach wood finishing and the final finishing of applying the wax. I look for a product that is food safe for all my bowls and platters. What I use on almost all my work is Odie's oil and their wax. First I apply 3 to 4 coats of the oil and then two coats of the wax. This will give an incredibly long-lasting finish.

My professional opinion is you used too much wax [when you tested the Odie's wax] and therefore the wood surface and mirror surface would result in a smeared, sticky surface as you note. A very small amount goes a long way.

—DAVID JOLLIFFE, Brooksville, Fla.

Love Andy Rooney

I really enjoyed the article by Andy Rooney (Looking Back, *FWW* #255). It was a pleasure to read that someone so esteemed had the same thoughts about woodworking as I do. Andy is missed. Keep up the good work.

—RANDY BANGERT, Cortez, Colo.

Elliptical tabletop

I am a retired architectural woodworker and I have made many "ellipsographs" (I always called mine an elliptograph)

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letters

DEEP APPRECIATION

I write to thank you, not particularly for any tip or project, but more generally for your presence over the years. My father started with *FWW* #1, and every month he received a new issue in the mail until this past April, when he passed away.

I cannot think of a room in the house without something Dad made. He made his four children's beds, desks, bookcases, and trophy shelves, as well as their cradle, a lamp stand in the TV room, the stereo cabinet in the living room, the china cabinet in the dining room, Mom's rolling pin and cutting board in the kitchen, and any number of other items large and small throughout the house.

My Dad was not a woodworker by profession. He got by with hand-me-down hand tools, an ancient lathe, and a radial-arm saw I think he got as a wedding present. He never had a tablesaw or jointer, and the bandsaw and drill press came very recently. Dad's basement shop was small and crowded. He barely had room to turn around. There is a hole in one of the lally columns because his lathe wasn't long enough to accommodate the bedposts he was turning, but he figured he could sink the tailstock in there (and it worked!).

In addition to the pieces, Dad passed on a love of woodworking to at least two of his children. My own first real project was Mike Dunbar's Six-Board Chest, right out of *Fine Woodworking*.

Dad had a stroke several years ago, and his rate of production had declined, but that's not to say he didn't keep producing new work. Mom reports that in his final week he suddenly got the urge to make little clamping blocks he'd seen in a recent *Fine Woodworking*. She tells of the real joy he felt upon completion, knowing he could make something useful and fine and good.

And so, thank you. I understand you don't publish *Fine Woodworking* for the thanks, and that my Dad paid for a subscription each year. Still, I've found we often don't realize the ways we've touched other people and enriched their lives. I'm sure everyone at *Fine Woodworking* has a job to do, and there are good days and bad days, like at every other job. Likely, on good days, you're content to be working in a field you like for decent pay that provides people with a nice "hobby," a pleasant way to pass the time. But it is most definitely more than that, and what *Fine Woodworking* has done over the years and continues to do is very greatly appreciated by those you have touched, even if you didn't realize you were doing it.

—John Power, Chicago, Ill.

for manufacturing elliptical window components.

Mine were exactly like the one described by author Chris Gochnour (Master Class, *FWW* #255), but I once learned the hard way what can happen if one or both of the guides slips out of its groove. After that incident I always added a weight to the top of the arm over the guides. A brick works very well.

—STEVE CHILDERS, Woodside, Del.

Thoughts on corner blocks

I just read Steve Latta's article "Learn from Antiques" (*FWW* #255), and while I agree with him on almost every point, I believe he is mistaken regarding the bracket corner blocks. Corner blocks are supposed to extend below the bracket so that the bracket does not touch the floor, protecting it from damage. The bracket used in the article is touching the ground, meaning the corner block has worn down and the damage is likely a result of the bracket touching the floor.

Corner blocks were typically installed cross grain so that the end grain, which is tougher, would touch the ground. This meant that the blocks would last longer. While stacked blocks look nicer, provide support, and prevent (supposed) grain direction problems, they inevitably wear faster and frequently fall off.

—ALEXANDER ARNOTE, San Francisco, Calif.

Love the magazine

I don't usually write anything to anyone, but the metal/wood article ("Marriage of Metal and Wood," *FWW* #255) really appealed to me. I loved that furniture. In general, the favorite part of each magazine is the gallery. Each piece is what dreams are made of.

I'm not a fine woodworker. I can hardly make rough items. I dream a lot.

—RHONDA ADAIR, Ursa, Ill.

Correction

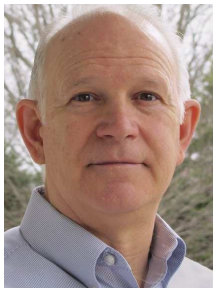
In our review of track saws (*FWW* #255), our author mistakenly noted that the Festool TS 55 REQ saw had only one depth-adjustment setting. The model actually has two: one for use with the guide track and one without.

workshop tips

EDITED BY ASA CHRISTIANA

Best Tip

Wheeled lever mobilizes shop carts



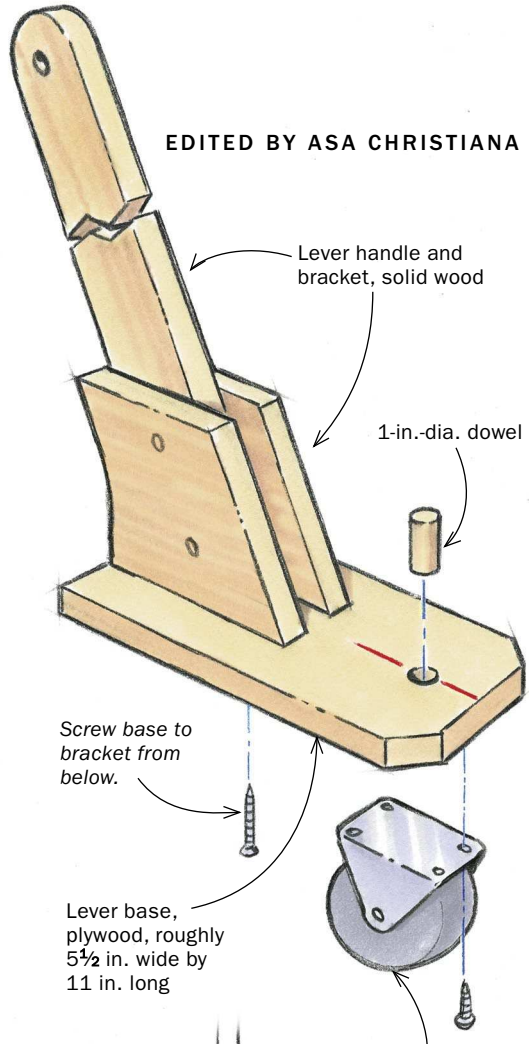
Craig Luthy credits his skills as a woodworker to magazines, books, and "the school of hard knocks." A software manager at John Deere, Luthy uses woodworking as "a break from the work-a-day world," and plans to do a lot more after he retires, just a couple of years from now.

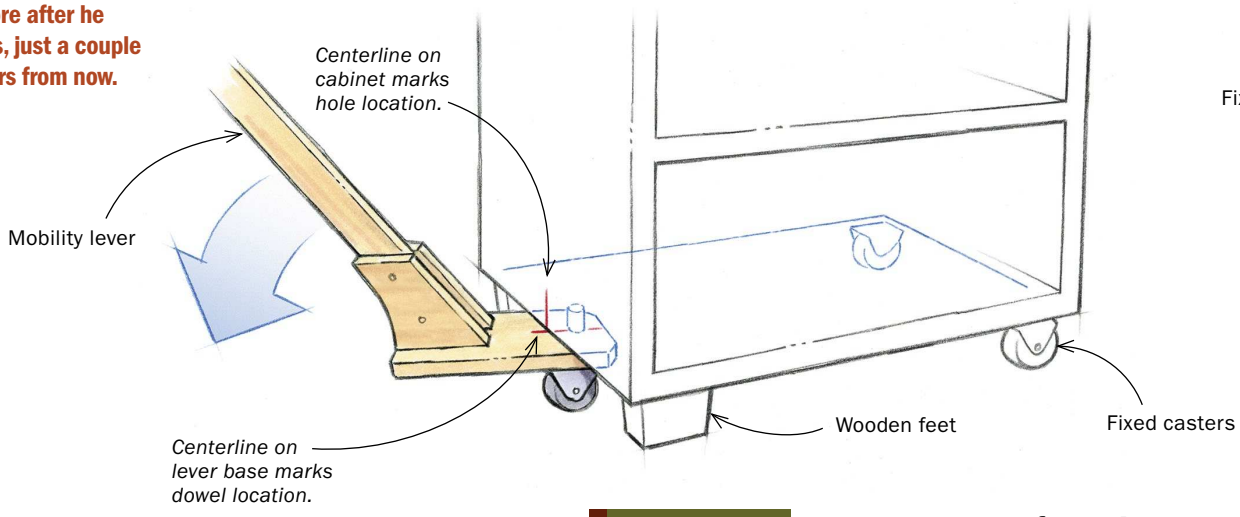
Like many amateur woodworkers, I use my garage as a shop, so tools and machines must be pushed out of the way when not in use. I bought commercial mobile bases for my tablesaw and bandsaw, but other tools sit on carts. To make them mobile, I came up with this inexpensive solution.

I put two fixed casters at one end of each cart and wooden feet at the other to keep the cart level. One more fixed caster goes on a mobility lever I built, which slides under each cart and steers it around the shop as needed. The lever hooks onto the cart via a dowel on the base, which fits into a corresponding hole in the underside of the cabinet. To help steer the dowel into the hole, I drew a line on the base of the lever and on each cabinet, marking the hole's location.

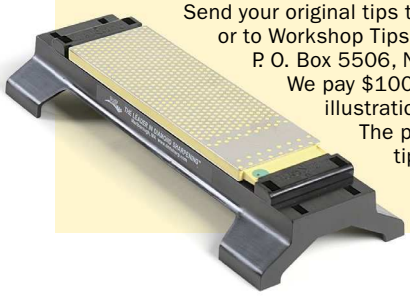
The carts steer from the back, like driving a forklift. They are extremely maneuverable yet very stable when I take the lever away.

—CRAIG LUTHY, East Moline, Ill.





A Reward for the Best Tip



Send your original tips to fwtips@taunton.com or to Workshop Tips, Fine Woodworking, P. O. 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 was a DMT DuoSharp sharpener with base.

Quick Tip

Use wood plugs for stripped screw holes

There are lots of fixes for stripped screw holes, and I've used many, but they seem like Band-Aid repairs, especially in end grain. When restoring the mahogany windshield frame on a classic wooden boat, I encountered stripped holes in the ends of the center post and needed a truly permanent solution: face-grain plugs. I drilled out the stripped holes to ½ in., and cut ½-in. plugs in face-grain mahogany. I filed a small flat on the side of each plug to allow excess glue to escape, and glued them in using a two-part epoxy. Then I planed them flush and drilled new pilot holes. The screws pulled tight and the repair has been rock-solid for 10 years. Since then I've used this approach for all stripped screw holes.

—RONALD CASSELL, Valley, Ala.

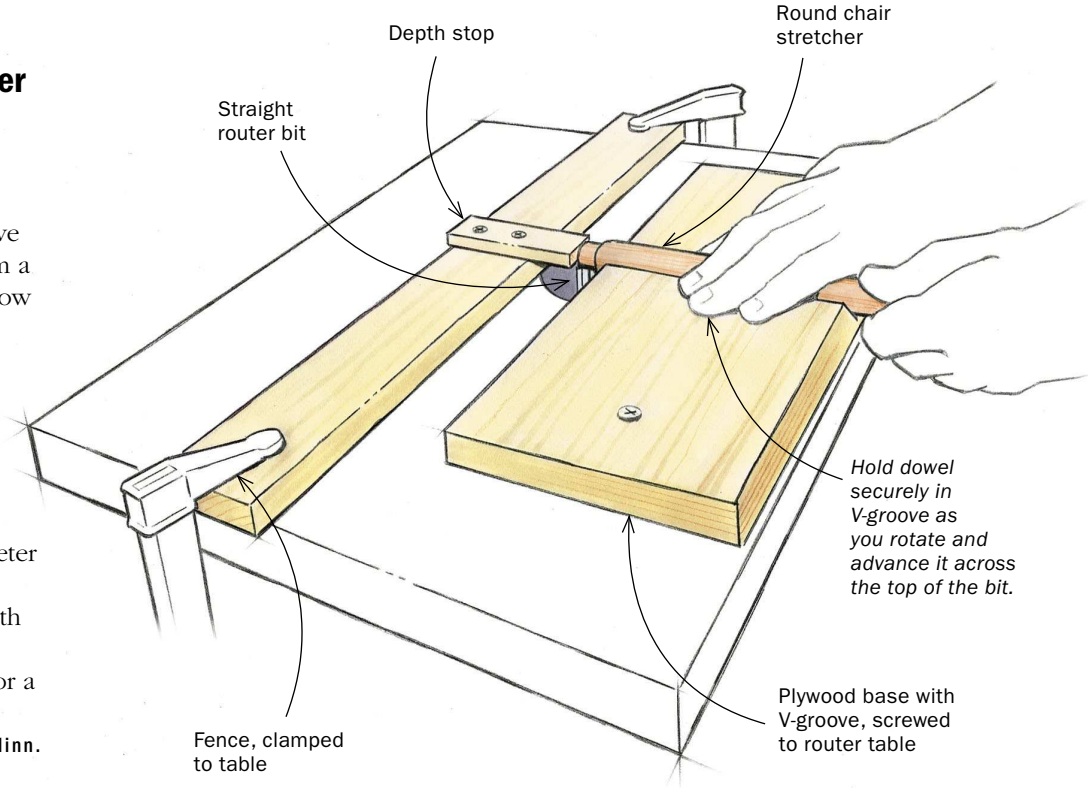
Drawings: Dan Thornton

Make round tenons with a router

When a tenon loosened and broke on a favorite stool in our house, I wasn't sure how to fix it. I don't have a lathe, and it looked difficult to accurately carve down the ends of an oak dowel to form a perfect round tenon. So I figured out how to do the job with my router.

I used the tablesaw to cut a V-groove in a piece of plywood, and attached that to the router table. I attached a depth stop to the router-table fence as shown, and inserted a straight bit in the router. The length of the tenon is set by adjusting the stop, and the diameter is determined by the height of the bit. Hold the dowel down in the groove with one hand as you rotate and advance it into the bit with the other. Go slowly for a smooth finish.

—JOHN BEAL, Excelsior, Minn.



Drill-press shelf holds parts and catches wood chips

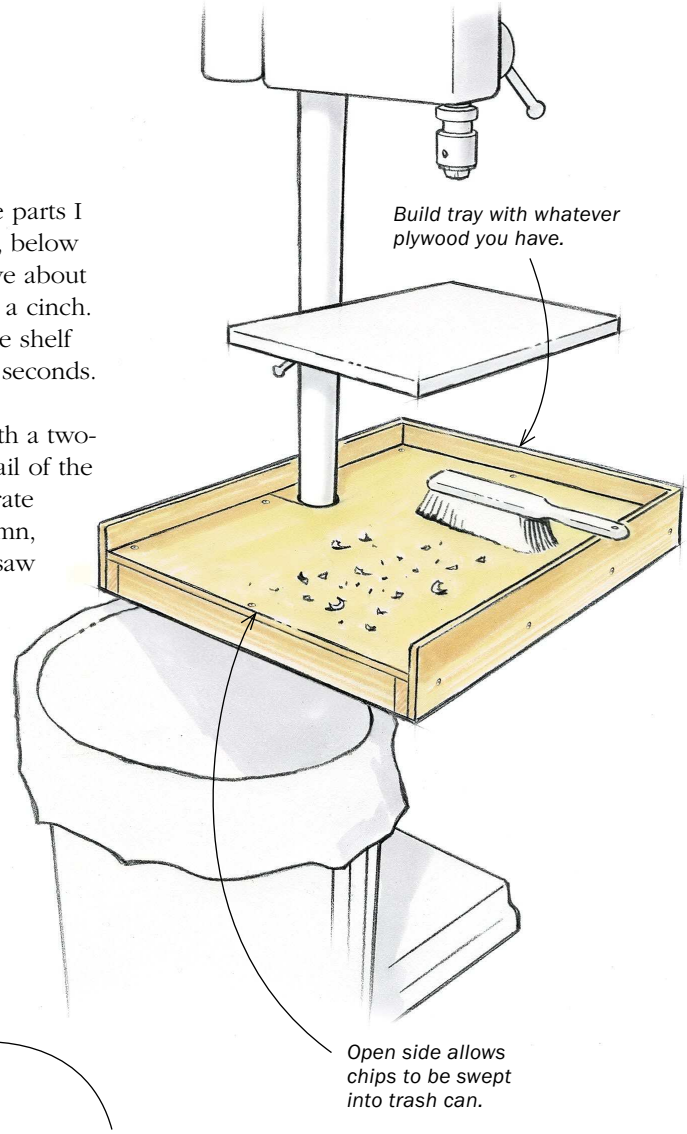
When using the drill press, I never have a good place to set aside multiple parts I am working on. So I made an adjustable shelf that mounts on the column, below the normal table, where I can place parts, bits, and accessories. What I love about it is that it also catches most of the chips from drilling and makes cleanup a cinch.

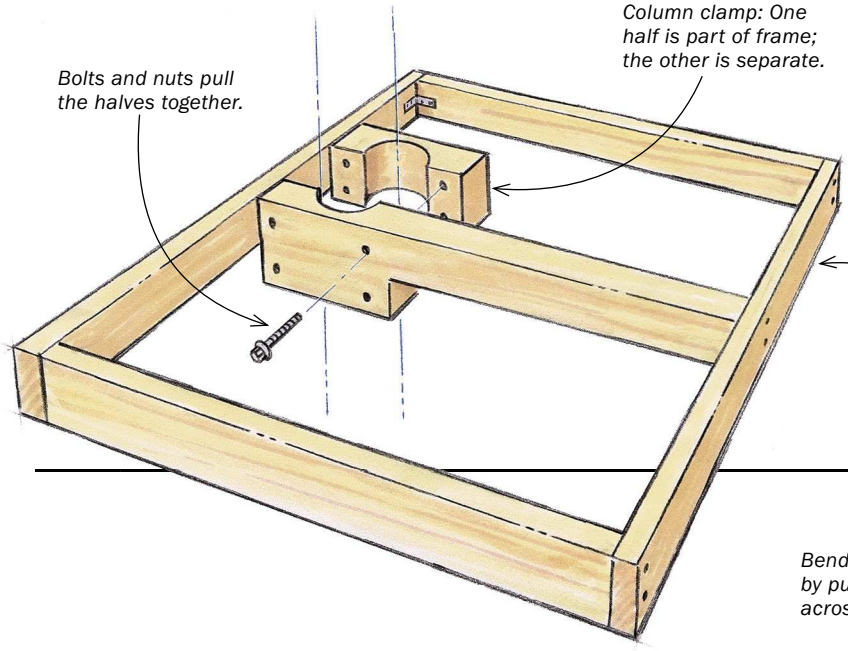
I left one side open, placed a trash can under that edge, and adjusted the shelf just above the can. Now when a job is complete, cleanup takes just a few seconds. No more dustpan.

To attach the tray to the drill press I made a simple hardwood frame, with a two-sided clamp that grabs the column. One side of this clamp is the central rail of the frame, screwed solidly to it. The other side of the clamp bracket is a separate part. To cut the big hole in these parts that fits around the drill-press column, clamp the parts together temporarily and use a circle-cutter or large hole saw on the drill press.

To fit the plywood tray around the column, you can simply jigsaw a notch in it, and then fill the back side of the cutout once the tray is in place.

—DAN MARTIN, Galena, Ohio

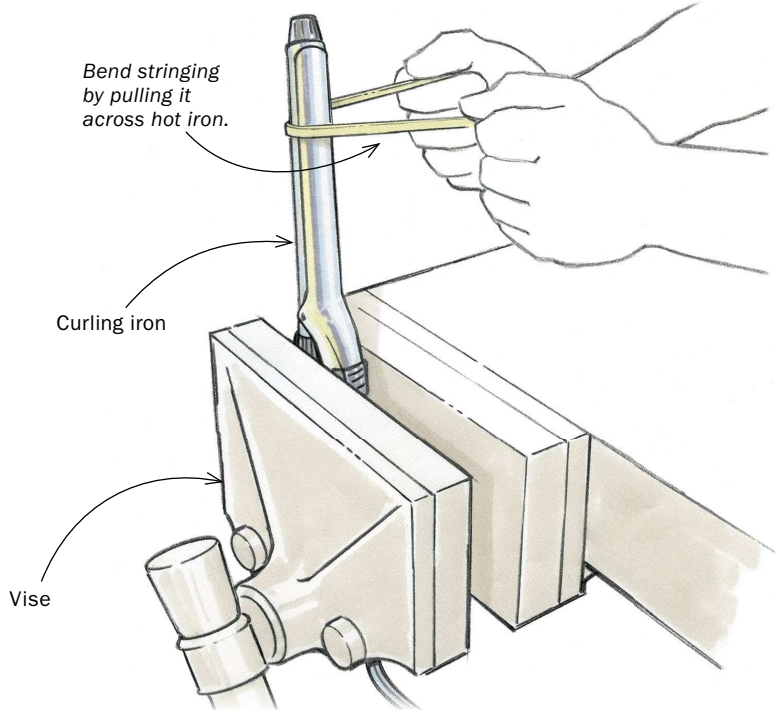


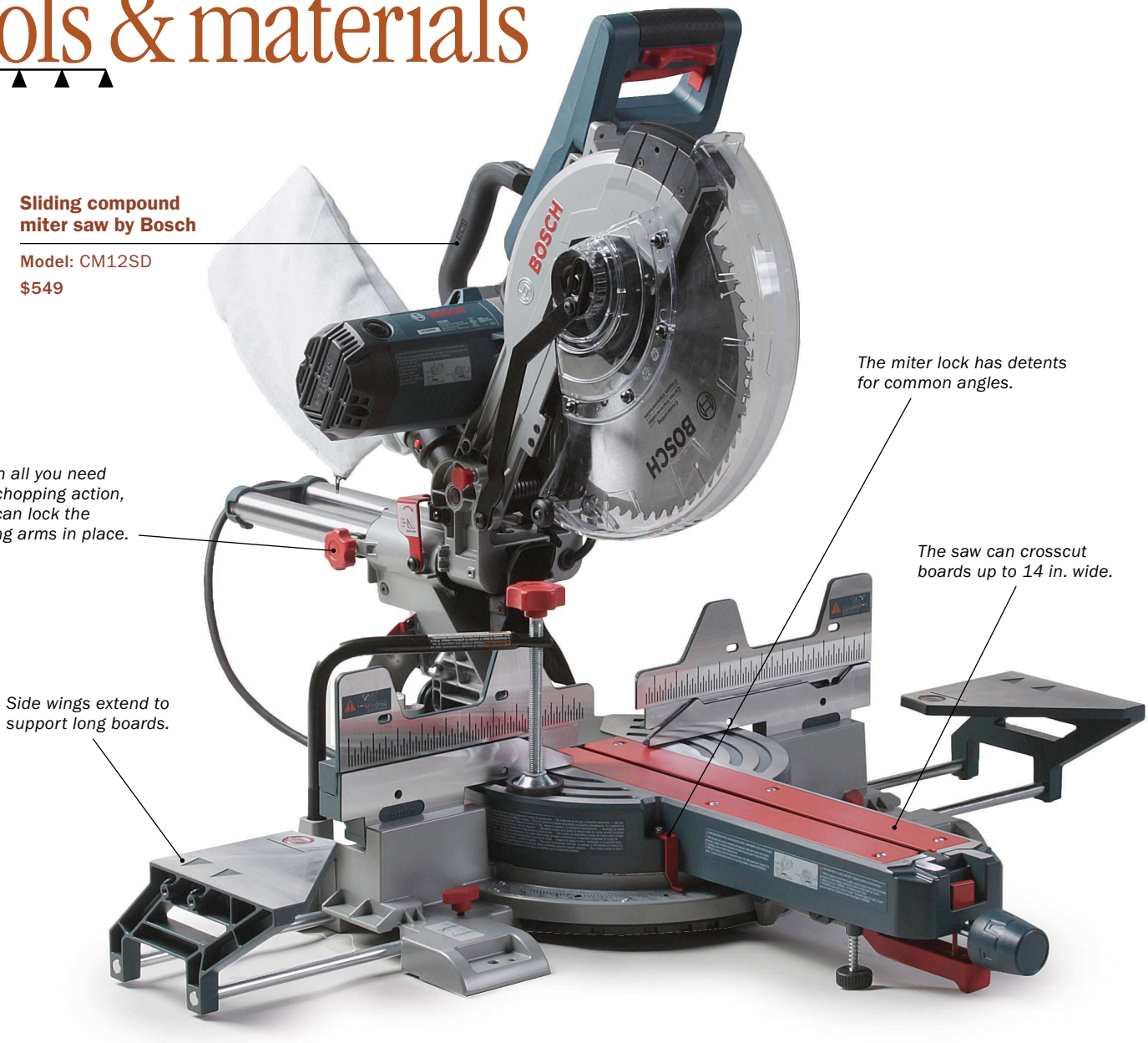


Curling iron puts smooth curve in stringing

When doing curved stringing, I lightly clamp a Teflon-coated curling iron in my vise and use it to bend the strings before gluing them into place. The curling iron works well even with double- or triple-layered string inlays, and it won't burn the wood. If you tape the ends of the stringing together as it cools down, it will hold its curve afterward.

—NANCY A. MALONEY, Buffalo, N.Y.





POWER TOOLS

Miter saw has the power and capacity to cut big boards

BOSCH'S NEWEST 12-IN. SLIDING compound-miter saw is a well-designed tool and a great improvement over my older miter saws. The saw has plenty of height capacity, allowing me to cut a 5½-in.-wide board standing on edge. It also can cut material 4 in. thick at its full width capacity of 14 in. Finally, it cut accurately at both 45° and 90° right out of the box.

This saw has plenty of power, cutting wide pieces of 8/4 and 10/4 ash with no trouble. To help support long boards, you can extend wings on the sides to increase the table's width to 39 in.

The miter lock, located at the front of the saw, is simple to use and has detents at 0°, 15°, 22.5°, 31.6°, and 45°. The saw can cut up to 52° to the left of the blade and 60° to the right. The bevel lock is located at the back of the saw, on the right side of the blade, but it is large and easy to reach from the front. A lock for the slide mechanism, located behind the fence on the left of the blade, came in handy when I was cutting narrow stock and didn't need the slide.

At 65 lb., the saw is heavy, so I'd recommend building a permanent spot for it. But you'll need a lot of room—42 in. of space front to back and between 25 in. and 40 in. side to side. (If placed against a wall, it needs a counter at least 30 in. deep.)

With just the bag in place, dust collection wasn't great. It was better after I took off the bag and hooked it up to my shop vacuum. I also found the saw to be loud. But the saw's ability to cut big boards accurately overshadows these problems, and I'd be glad to keep it in my shop.

—Kelly J. Dunton is a woodworker in Terryville, Conn.

Photos, except where noted: staff; opposite page (top right): Roland Johnson

POWER TOOLS

Pared-down router for table use

Motor only. *All you really need for a router table is a motor, some collets, and some wrenches. That's just what you get with the Portamate router motor.*

ROUTER LIFTS OFFER BIG ADVANTAGES over factory router bases. They make bit changing easy. Plus, they are easy to dial in for accurate cuts and hold those settings even under severe use. Some folks buy a big router kit for the table, and then use only the motor, leaving bases and other accessories collecting dust on the shelf. That's a waste.

Instead, get a router motor without a base or fence, like the one recently introduced by Portamate. It comes with a pair of collets (¼ in. and ½ in.) and a pair of good-quality offset collet wrenches with soft grips and hanging holes. It's a 3¼-hp (15-amp) motor with a 4¼-in. housing, which will fit many lifts. The motor has a speed range of 10,000 to 22,000 rpm, controlled with a rotary knob. A rocker-style power switch is located next to the speed control, a convenient grouping that's easy to find by feel beneath the router table.

I checked the runout of the arbor and found it was accurate to within 0.001 in., well within acceptable tolerances. I also ran a variety of heavy-cutting bits with the motor and found it has plenty of power, even at low speed. It's a great alternative to buying a complete router kit for your router table.

—Roland Johnson is a contributing editor.

Router motor by Portamate

Model: PM-P254

$230

POWER TOOLS

Affordable sander has high-end features

THERE ARE A LOT OF 5-IN. RANDOM-ORBIT SANDERS on the market, but DeWalt's latest model has some features that set it apart. The switch is perfectly located on top and at the front of the hand grip, right where your index finger naturally lands. The compact dust bag snaps on securely with a simple twist, but I wouldn't use it, because the dust port is larger than average (about 1¾ in.) and easily hooked up to my dust extractor. Finally, the 3-amp motor is plenty strong but not too loud.

The sander has an ergonomic rubber grip and a low-profile design that makes it less fatiguing to use for extended sessions.

The single-speed motor spins at 12,000 orbits per minute. There is a model with variable speed (DWE6423), but I've never found any advantage to sanding at slower oscillation speeds since the fastest speed generally produces fewer swirl marks and gets the job done more quickly. This is a nice orbital sander at a good price.

—Tony O'Malley is a professional cabinet and furniture maker in Emmaus, Pa.

Random-orbit sander (5 in.) by DeWalt

Model: DWE6421K

$59

Get started with your plunge router

BY JEFF MILLER

Upgrade your straight bit. *Normal straight bits (far right) are fine for many router cuts, but a solid-carbide, up-spiral bit (right) works much better for plunge cuts because it clears chips as you rout.*

Constant control. *You need to be able to reach the key controls without taking your hands off the handles. On this plunge router, the on-off switch is in one handle, while the plunge lock is easily accessible with the thumb of the other hand.*

The router is one of the most versatile tools in the shop. Of the two main types, the plunge model trumps the fixed-base variety, at least for me. It handles everything its more basic cousin can, adding the very useful ability to plunge in and out of the work on the fly. This means that in addition to grooves, dadoes, and edge moldings, you'll also be able to rout mortises, cut stopped grooves and dadoes, excavate grooves and recesses for inlay, and create a variety of decorative piercings.

As for choosing a plunge router, I recommend buying one with at least 12 amps of power. A smaller motor can bog down during heavier tasks like mortising. It's best to hold a router in your hands before buying it. You should be able to keep your hands on the handles at all times when working. That's why plunge routers have both the on/off switch and the plunge lock either on the handles or a finger's reach away. Each manufacturer takes a slightly different approach, so make sure you can easily stop the tool and lock and unlock the plunge mechanism while maintaining control.

How to make clean mortises

One of the tasks a plunge router does best is make smooth, accurate mortises for strong joinery. Making this challenging cut is a good place to introduce my approach to plunge-routing.

There are many ways to control a router for safe and accurate movement. For mortising, I generally use an edge guide, an accessory that attaches to the base and rides the edge of the workpiece, letting you rout in a straight line parallel to that edge.

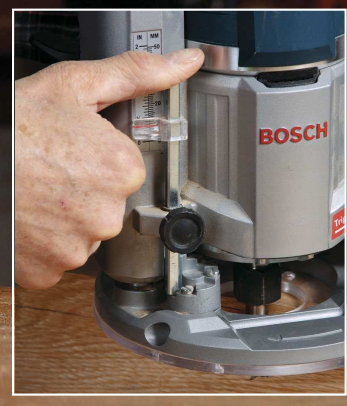
If the fence on your edge guide is shorter than 12 in., add a longer wooden fence to it. The extra length will make it easier to maintain contact with the workpiece throughout the cut.

Other than those situations where you're using the router as a fixed-base tool, such as when you are molding an edge with a bearing-guided bit, you'll

Photos: Asa Christiana; drawings: John Tetreault

MORTISING TEACHES THE BASICS

For best results, set the final depth, and then work down to it in a series of shallow passes.



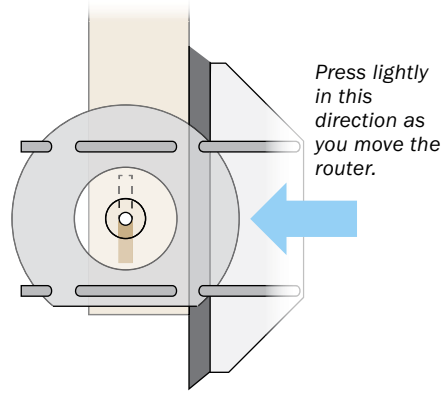
Simple way to set the depth of cut. *Mark the depth line on the outside of the workpiece, plunge the bit to the line, and then lock the plunge lever. Now lower the depth-stop rod against one of the stops on the turret below, and lock it. Finally, raise the bit and follow the steps below.*

Align the bit. *Miller lays out the mortises in pencil, and then adjusts the edge guide so the bit lines up with his layout lines.*

Go lightly. *With the bit just above the workpiece, turn on the router. Lower the bit roughly 1/16 in., lock the plunge lever, and make a light cut, stopping at the end line.*

PUSH AGAINST THE GUIDE

Put the edge guide on the same side of the workpiece as your body, and push against it to keep the router bit from wandering.



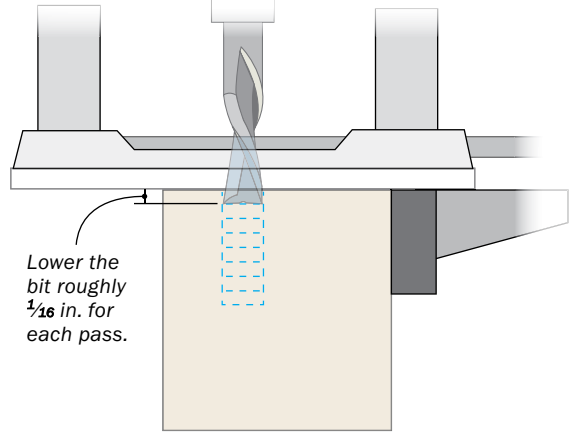
always want to start and finish a cut with the router bit raised out of the cut and locked. Think of this as "the upright and locked position for takeoff and landing."

Now to the plunge action. Routers cut much more cleanly with a series of light passes, as opposed to one deep one. That's why plunge routers have a system of multiple depth stops. The idea is to preset each stop, and switch from one to the other between passes. But I don't think the multiple stops are worth the trouble. For one thing, I find that the steps between stops make the router take too heavy a cut for my liking. Also, on most routers, you can't switch stops

The job goes quickly. *At the end of each pass, unlock the plunge lever and lower the bit by feel, roughly 1/16 in. each time. Make passes until the depth stop bottoms out.*

TAKE LIGHT PASSES

Don't overtax the router, and you'll get much less vibration and cleaner results.



USE A T-SQUARE JIG FOR DADOES

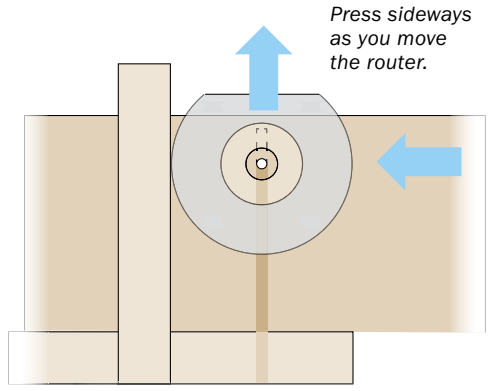
A simple right-angle cutting guide will make dadoes of all kinds, whether all the way across a workpiece or stopped short of the edge.

Setup is a cinch. *After using the jig just once, you create a slot in the fence that can be used to align the jig with layout marks.*

Two tips. *Use a series of light passes again. If you gang up the sides of a bookcase, you can rout two corresponding dadoes at once.*

PUSH AGAINST THE FENCE

Again, press lightly against the fence to keep the router from wandering.



Stopped cuts are simple. *For dadoes that need to stop before reaching an edge, just stop at a layout line and raise the bit out of the cut.*

without removing your hands from one of the handles, which is unsafe unless you first turn off the router. So I simply set the final depth of cut with any one of the stops, and then work down to it with a series of very shallow passes controlled by feel. The work goes faster, and the final results are better.

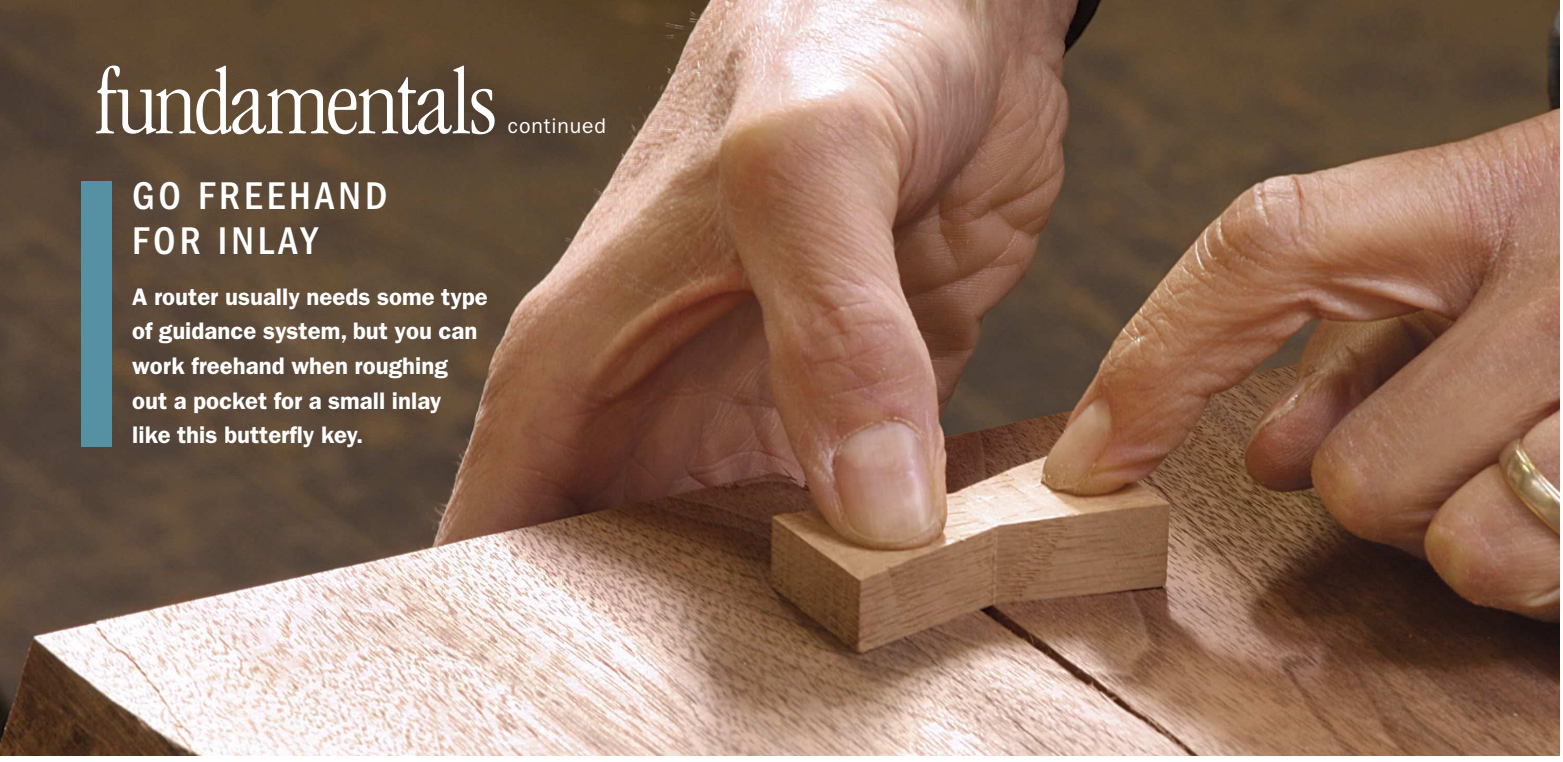
As for where to start and stop each pass, you can trust your pencil marks, or you can place stop blocks atop the workpiece.

T-square jig makes dadoes

To make a dado, which is a groove across a board or panel, an edge guide usually won't work. That's because most dadoes are too far from a parallel

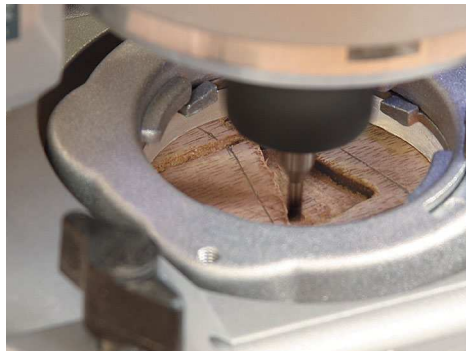
GO FREEHAND FOR INLAY

A router usually needs some type of guidance system, but you can work freehand when roughing out a pocket for a small inlay like this butterfly key.

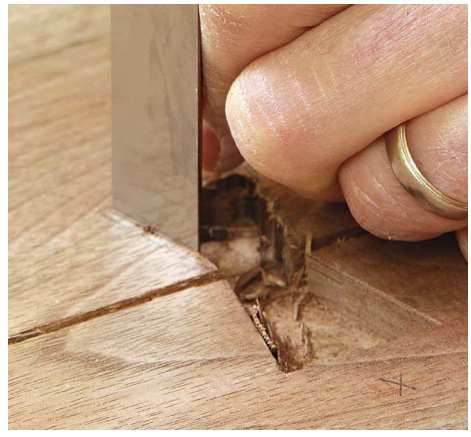


Stick the inlay on the surface. *Put a couple of small dots of yellow glue on the bottom and press it down firmly where you want it. Wait 20 minutes for the glue to set. Double-sided tape is also a good option.*

Now knife around it. *Start with a very light pass to establish the line, and then deepen it. Afterward, darken the lines with a fine pencil to make them more visible.*



Router removes the waste. *Pop off the inlay piece and begin routing in the center of the recess in overlapping passes, stopping 1/16 in. or so from the layout lines.*



Chisel work finishes the job. *Don't start chopping right in the scribe lines or the cavity will end up too big. Nibble away the waste, ending with a light chop in the scribe line.*

edge. The simplest approach is to use a shopmade T-square. Clamped to a board with its fence snug to the edge, the T-square jig provides a straight edge that guides the router base.

Choose a router bit that's the size of the dado you want. Start by clamping the T-square jig to a scrap piece and routing a slot in the fence. This will tell you where all future cuts will line up, as long as you use that same bit.

Now lay out the workpiece, and set the location of the T-square accordingly. Set the depth of cut and rout.

Rout freehand for a decorative inlay

Routing a shallow pocket for an inlay is one place where you can use the router without a guide system. The easiest method for laying out the cut is simply to stick the inlay to the workpiece temporarily, and scribe around it with a marking knife. Then you just pry off the inlay, set the depth of cut a little shallower than the inlay itself, and stay slightly inside the lines as you rout. Follow with a chisel as shown above.

There are other great ways to use your plunge router, such as adding a set of guide bushings that can be used with an endless variety of shopmade templates, but I'll leave those for another article. □

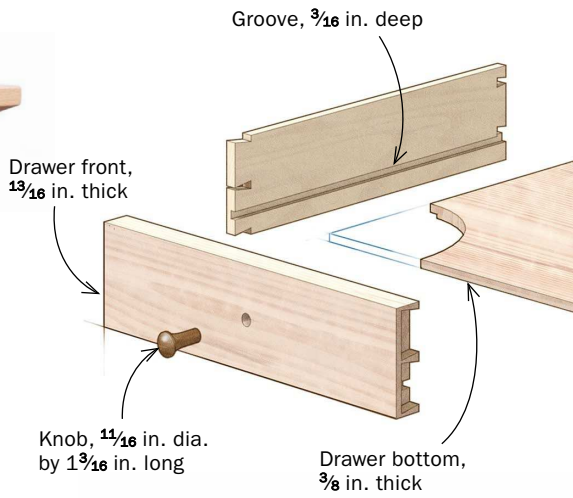
Jeff Miller makes custom furniture and teaches woodworking in his Chicago shop. Go to furnituremaking.com for information.

Inlay drops right in. *When the fit is good, apply glue and tap the inlay into place. Wait a day for the glue to fully dry, and then use a handplane to level the inlay with the surface.*

Frame-and-Panel Cabinet

Give your joinery skills a workout

BY TIMOTHY ROUSSEAU



I designed this cabinet to teach frame-and-panel case construction to students at the Center for Furniture Craftsmanship. What I like about frame-and-panel work is all the offsets between parts, which add shadows and details. All of that detail requires a lot of parts, and this small piece will give you a feel for building a complex case piece. I'll also show you a stress-free way to install knife hinges. Start by getting your stock prepped and milled.

Build the case frames

The first step is to cut the rail mortises in the legs. When that's done, cut the tenons on the rails.

I cut tenon cheeks at the tablesaw with a tenoning jig that rides on the rip fence and a pair of dado blades spaced to the tenon thickness. Once the size is dialed in, I get perfectly fitted tenons right off the saw.

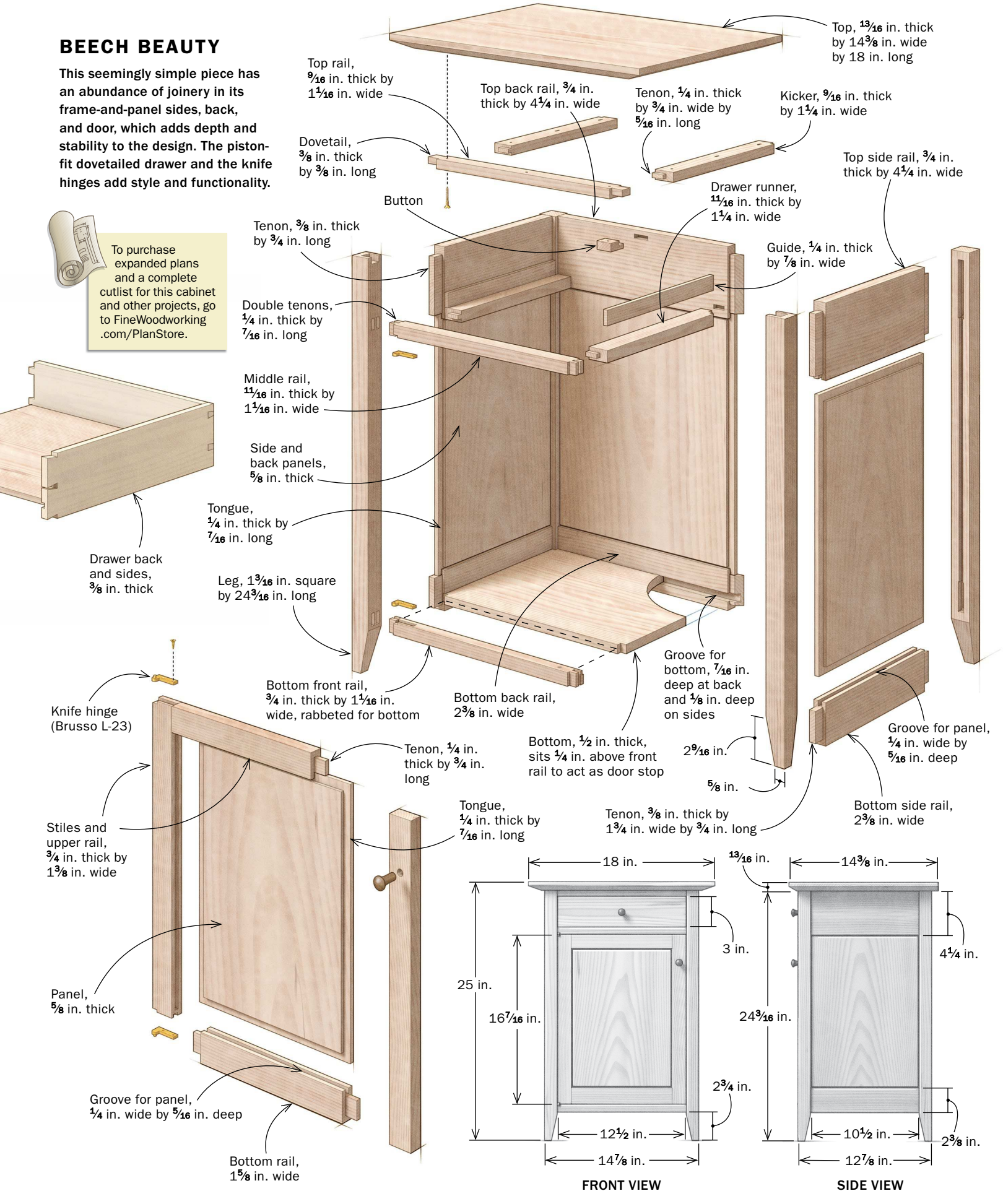
I cut the tenon shoulders at the tablesaw with a standard blade. But before doing that, I remove most of the waste at the bandsaw to prevent the offcuts from becoming projectiles. With the tenons all cut,

Photos, except where noted: Dillon Ryan

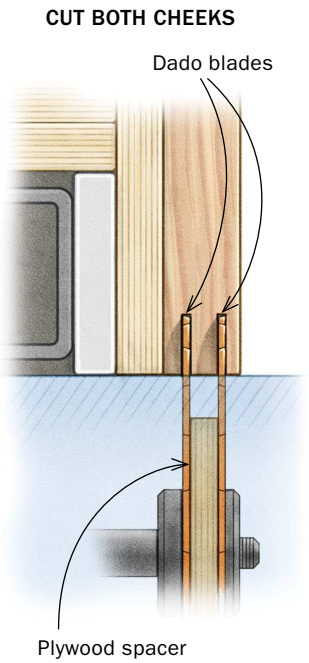
BEECH BEAUTY

This seemingly simple piece has an abundance of joinery in its frame-and-panel sides, back, and door, which adds depth and stability to the design. The piston-fit dovetailed drawer and the knife hinges add style and functionality.

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



Drawings: John Hartman



Tenons at the tablesaw. *Rousseau cuts the cheeks at the tablesaw using the two outer blades from a dado set with a plywood spacer between them. He uses dado shims to dial in the cut for perfectly sized tenons.*

I miter the tenons on the side and rear rails where they meet in the rear legs.

With the rails fitted to the legs, the next step is to cut grooves for the panels. I use a wing cutter in the router table. Start with the leg grooves, setting the height of the bit so that it's centered in the mortises. Add a zero-clearance fence to control blowout. Run grooves from mortise to mortise in each leg face.

To mark the side and back rail grooves, insert a rail into a leg and transfer the groove location to the rail with a knife. Then readjust the cutter height, add a fresh zero-clearance fence, and groove the rails.

With the leg joinery done, taper the feet at the bandsaw and clean up the sawmarks with a handplane. Now it's time to focus on the connections at the front of the case.

Handling the rails

The front rails connect to the legs in two ways. The top rail is dovetailed into each leg and the lower two rails are double-tenoned into the legs. The double-tenon joinery method I use was covered in "Float the Top" (*FWW* #229).

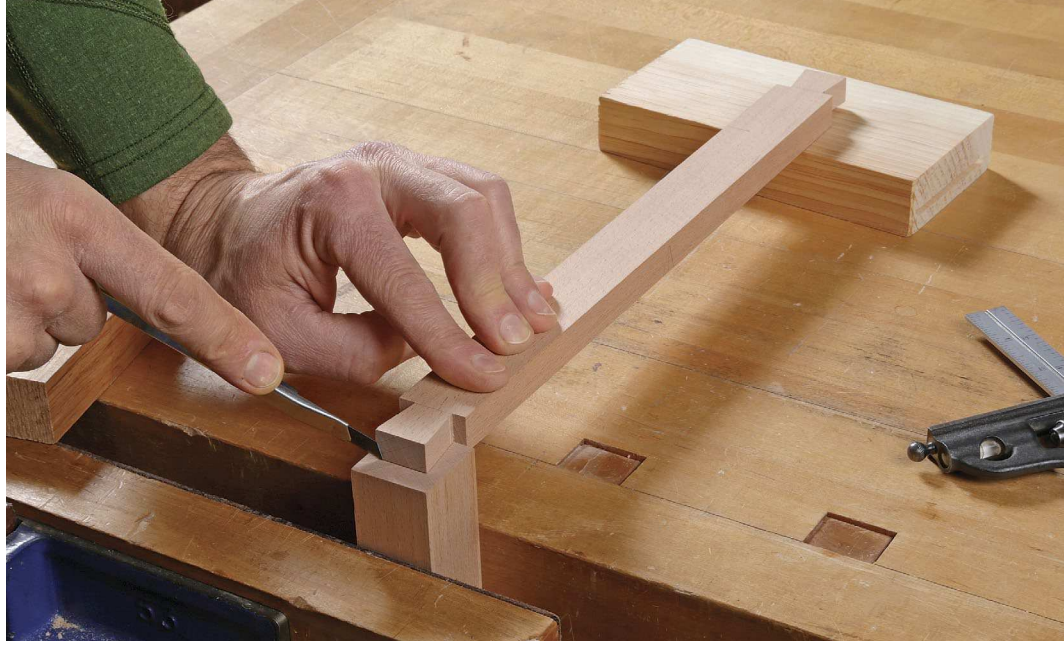
I cut the dovetails in the top rail on the bandsaw. I also cut a shallow rabbet under the tail so I have a shoulder to register against the leg. To get the shoulder-to-shoulder length of all three front rails, mark them directly off a rear rail. This will keep the case square. To cut the sockets,

Mitered where they meet. *The tenons on the upper and lower rails are mitered where they intersect in the rear legs. Rousseau cuts the miters at the tablesaw.*

Groove the rails first. *To accept the panel, the rails are grooved with a wing cutter at the router table. A piece of thin brownboard, used as a zero-clearance fence, keeps the bit from tearing out the piece.*

Now groove the legs. *To cut the grooves in the legs, start by marking the fence with the position of the cutter. Place the cutter into the mortise for the rail tenons—which is wider than the wing cutter—to start the cut. End the cut inside the opposite mortise and turn off the router before removing the workpiece.*

Take care of the feet. *Cut the tapered feet at the bandsaw. A simple jig ensures consistent cuts.*



Top rail gets dovetailed. *Although the two lower front rails are attached to the legs with double tenons, the top rail is dovetailed in. The dovetail is shouldered on the underside, which makes it easy to register the piece against the leg for marking.*

transfer the tail to the leg, then saw down the lines as far as you can. Drill most of the waste and pare with a chisel to fit the joints. Cut the mortises for the lower rails, then cut and fit the tenons.

Size the panels and fit the bottom

With the bones of the case fitted, the next step is the panels. When cutting the panels to final dimension, be careful to note the season and adjust the fit for expansion and contraction. Cut a rabbet around each panel at the router table with a rabbeting bit and a zero-clearance fence. I use a short 1¼-in.-dia. router bit made by Whiteside (No. 1304).With the sides and back panels fitted, move on to the case bottom.

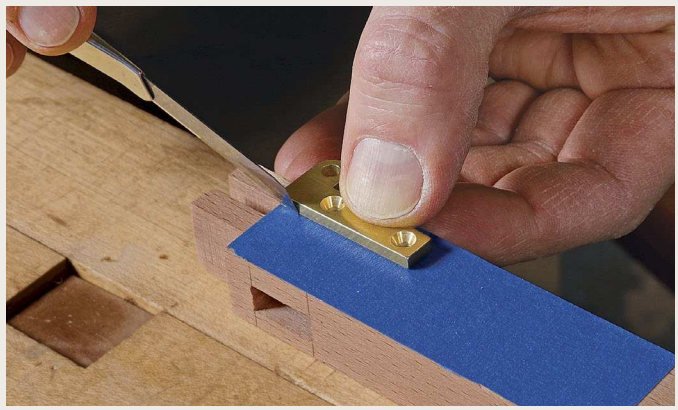
The bottom is held by grooves in the lower case rails and a rabbet in the lower front rail. I cut the rabbet so that the bottom will sit slightly proud, creating a solid stop for the door. Make the rear rail's groove deeper to allow room for seasonal movement.

To mark for the rabbet in the lower front rail, assemble one side rail and the lower front rail into a leg, and transfer the groove from the side rail to the front rail. After cutting the grooves and rabbet, you must notch the bottom to fit around the legs. Mark the notches from the dry-fitted case to get a perfect fit. Now cut the mortise-and-tenon joints for the runners and kickers. To cut the mortises in the rear rail, I drill out most of the waste at the drill press and then pare to the line with a chisel. There's no joinery at the back of

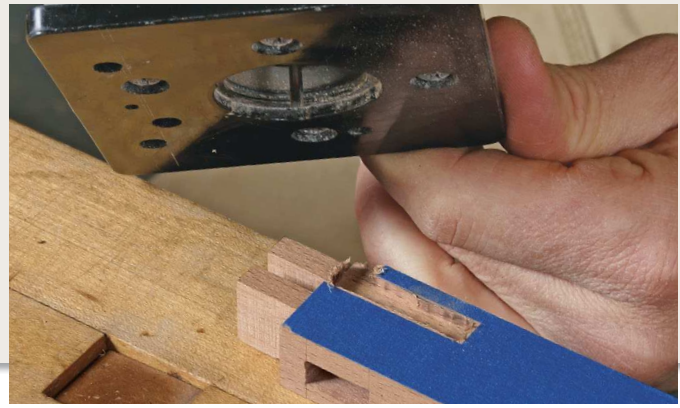
TIP

Mortise for the knife hinges before assembly

Knife hinges are a simple yet elegant way to hang a door. Making sure the mortises for these hinges are cut accurately can be daunting, but here's an easy way to get crisp, tight-fitting mortises with just a bit of tape.



Cut through the blue tape. *After placing double-sided tape on the back of the hinge and pressing it firmly in place on the rail, knife around the hinge. When the hinge is pulled off, it will lift the cut piece of blue tape, leaving a perfect outline of the mortise.*



Rout out, then pare. *Remove the majority of the waste with a trim router and ⅛-in. spiral bit. Clean up the shoulders with a chisel.*

Hinge photo: John Tetreault

BRING THE CASE TOGETHER

Sides first. *In a multi-panel case, it's important to tackle the glue-up in stages. Start by gluing up the individual sides, making sure they're square and the panel is centered in the frame. To make things easier later, finish the panel edges (above) and frame grooves before gluing things together.*

the kickers, so the top rail assembly can drop into place after the case is glued. The runners and kickers also get notched to fit around the leg. To finish the drawer pocket, drill the screw holes for the top in the kickers and top rail.

Mortise for the knife hinges

Installing knife hinges can be tricky. But I use a cool method for marking the mortises that makes it easier to see where to cut.

Start by placing a piece of blue tape where the hinge will go, then use double-sided tape to attach the hinge in its exact location. Knife around the hinge and remove the hinge along with the blue tape beneath it. You'll be left with a perfect outline of the mortise.

Using a laminate trimmer with a ⅛-in. straight bit, rout out the bulk of the mortise. Get as close as possible to the blue tape and finish squaring the edges with a chisel. When you've cut the hinge mortises in both rails, it's time to get out the glue.

Plan the glue-up carefully

Before going through a dry run of the glue-up, apply finish to the panel tongues and the frame edges. Finishing these parts now will eliminate the hassle of getting finish into the crevices later. When the finish

Fill in between the sides. *Once the sides are dry, join them with the case bottom, lower front rails, and the rear panel and rails. The dovetailed rail at the top is only dry-fitted at this stage (left). While it's still in the clamps, check the case for square (above). If the case needs to be adjusted, the clamps can be tilted slightly to apply pressure to rack it back into square.*

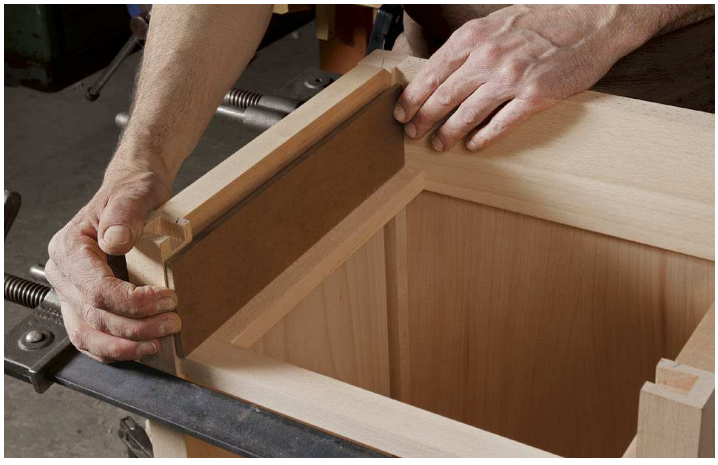
is dry, walk through the glue-up without the glue. Once you feel confident, glue up the sides first. Check each side frame for square and be sure the panel is centered in the frame. A small dab of glue in the center of the top and bottom rail groove will keep the panel in position after glue-up.

With the two sides dry, glue the remainder of the case together. This includes the rear rails, the rear panel, the bottom panel, the lower two front rails, and the runners. Again, a dry run is very helpful.

In this wave of the glue-up, don't glue in the top dovetailed rail, just set it in dry.

ASSEMBLE THE WEB FRAME

Stick clamps. *To get pressure on the drawer guides, Rousseau uses spring sticks—thin, flexible pieces of wood cut slightly longer than the width of the web frame.*



Keep the pocket parallel. *Two strips of waxed Masonite ripped to the exact height of the drawer opening keep the kickers parallel to the runners during assembly for a perfectly square drawer pocket.*

Seat the rail and kickers. *After the tenons on the ends of the kickers are glued into the mortises on the dovetailed top rail, put the whole assembly in place on top of the waxed spacers.*

Make sure the clamps are parallel to the rails; otherwise, it's very likely they'll rack the case out of square. At this point, make sure all of the joints are tight.

With everything together, check for squareness along the case front, back, and top. I use a tape measure on the outside dimension, or a folding ruler with a slide on the inside. Once the case is square, clean up any squeeze-out.

Finish the web frame

The next step is to take care of the drawer pocket. Before the dovetailed rail and the kickers get glued in, glue in the guides, which ensure that the drawer slides in straight. They're simply two pieces of wood planed down to fill the gap between the leg and the side rails. Dial in their fit so they're flush to the front leg, and glue them in with a couple of spring sticks (see top photo, above). Now, glue in the kickers. To make sure they're parallel with the

Lock it in place. *A handful of clamps is enough to get a good bond between the kickers and the side rails. Be sure to clamp along the dovetailed top rail as well.*

Get the door together. *The door is built just like the sides of the case—mortise-and-tenons for the frame and a groove along the inside for the panel.*

Size for the reveal. *The door should be built slightly larger than the opening, and then fitted to have consistent reveals top to bottom and side to side.*

runners, make two Masonite spacers for them to register against. The dovetailed top rail and kickers are glued and clamped into place.

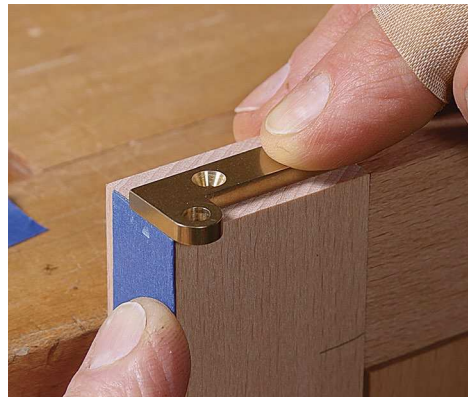
Fit the door, drawer, and top

The frame-and-panel door is built like the other panels. It's important to make the door slightly larger than the opening so it can be trimmed to fit. Again, pre-finish the panel and then glue it up.

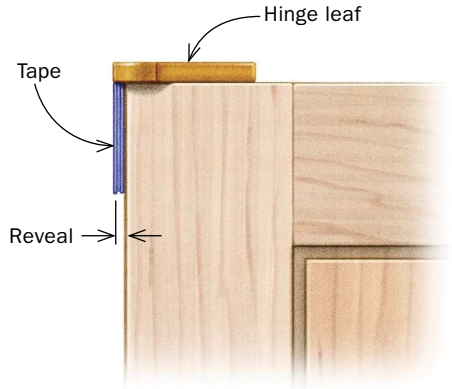
Once it's dry, use a handplane to fit the door to the opening. In my experience, most cases are not perfectly square. But the eye is drawn mostly to the reveal around the door, so if the door is planed to create an equal gap, no one will ever know. The size of the washers on the knife hinges equal the reveal size.

While the hinge mortises in the rails butt right up to the legs, the door-side hinges must hang over the edge of the door to create a reveal. To set the overhang, use a shim made of layers of blue tape to offset the hinge mortise location.

Cut the mortises in the door and fit the hinges. The brass screws supplied with the hinges break easily. To avoid this, I always pre-drill the hole and then cut the threads



Space out the door's hinge mortise. *To get a reveal on the hinge side of the door and prevent binding, use a folded piece of blue tape to guide how far the hinge should overhang the edge of the door.*



with a steel screw. For added security, I wax the brass screws before final installation. Once the door is installed, you can make any adjustments to that last reveal between the door and leg.

The drawer has half-blind dovetails on the front with through-dovetails at the rear—fairly standard construction. I build all my drawers slightly oversize in width and then handplane them for a piston fit.

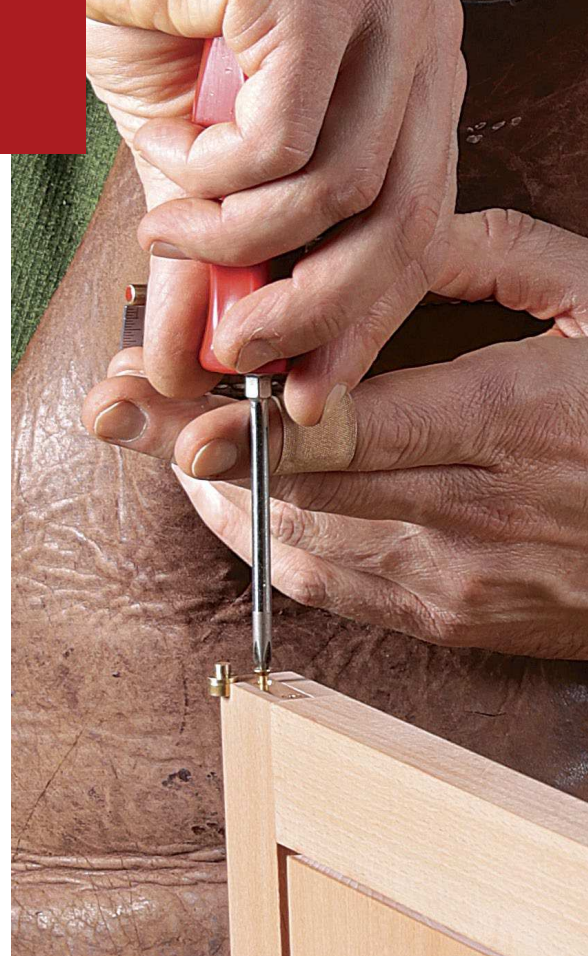
The top of the case is beveled on the underside of the front and sides to lighten its appearance. I cut the bevels on the tablesaw using a tall fence with the blade at an angle. The top is screwed to the case via pre-drilled and slotted holes in the kickers.

Choosing the right finish

The European beech I used for this cabinet really called for a finish that wouldn't alter the wood's tone. For this piece, I wiped on Osmo Polyx hardwax oil. After that, I waxed and rubbed out the finish with a piece of burlap. □

Timothy Rousseau is a furniture maker in Appleton, Maine, and a regular instructor at the nearby Center for Furniture Craftsmanship.

HANG THE DOOR



Hinges in order. *Install the hinge halves in the case first (left), then on the top of the door (right). Make sure the threads in the case and door are drilled and pre-cut with a steel screw before driving in the brass screws.*

Slide it into place. *To get the door in place, start by putting the upper hinge pin into the case. Then slide the lower hinge half into the mortise in the bottom of the door. Now, adjust the final fit of the door and set the ball catch (9-mm ball catch, No. 241.86.105, hafele.com) before screwing the hinge in place.*

Fast Shellac Finish

Build an attractive finish in three easy steps

BY MICHAEL PEKOVICH

Shellac is a finish that a lot of woodworkers shy away from. If you've ever tried to brush it on straight from the can, you probably didn't like it very much. And if you've read an article on the fine art of French polishing, you're forgiven if you were left feeling a little intimidated.

The truth is that shellac is a great fast-drying finish that's easy to apply and perfect for small projects and last-minute gifts. It dries quickly between coats and lets you build up the finish gradually so you can really dial in the sheen you're looking for. I have a very simple technique that yields a nice satin finish that's friendly to the touch in about 30 minutes.

The key to success is thin layers, but it all starts with surface preparation. Any mill marks, tearout, or sanding scratches will show up in the final finish, so getting a flat and smooth surface is a must. For open-pore woods like oak, sand to

Photo, this page: Michael Pekovich

Article Extra
See how to mix your own shellac from flakes.

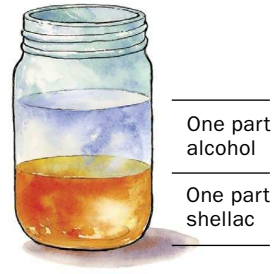
at least 400 grit; for closed-pore woods such as cherry and maple, sand to 600 grit.

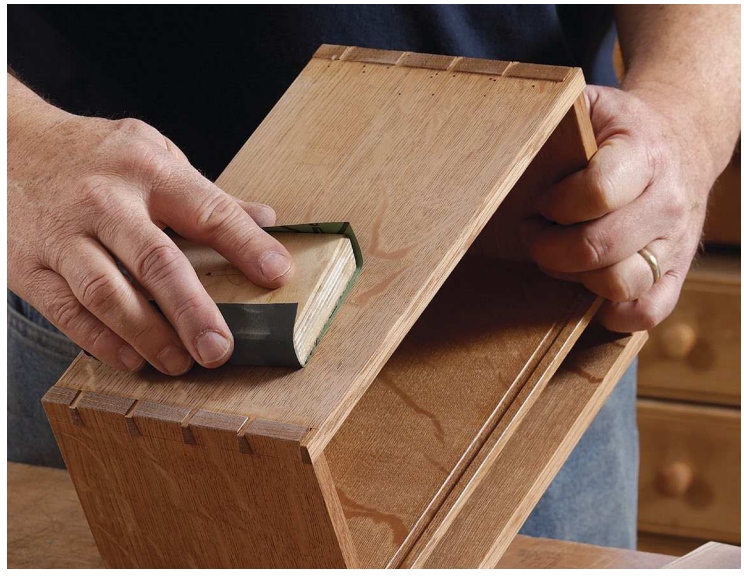
Premixed must be remixed

One of the funky things about using shellac is that it's not ready to use straight from the can—it needs to be diluted. Undiluted, the shellac will be prone to runs and drips, and will take longer to dry. Diluting, or cutting, the shellac remedies these issues. Fortunately, getting the right mix ratio from canned shellac isn't difficult. I prefer

STEP 1 SEAL AND SAND

Thin the shellac for easy application. *A one-to-one ratio of SealCoat, a dewaxed blond shellac, and denatured alcohol lets you wipe on thin coats that dry quickly.*





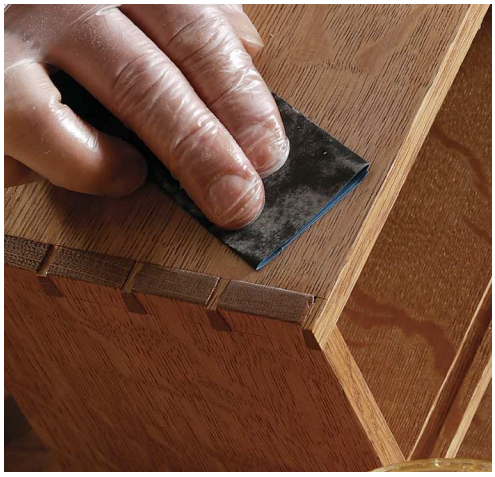
Start with a good base. *The first coat, called the washcoat, seals the fibers and raises the grain. This coat will get sucked into the wood and dry quickly. After the washcoat is dry, use the highest-grit paper that you used for prep to knock down the raised grain.*

Photos, except where noted: Dillon Ryan; drawings: Dan Thornton

STEP 2 BUILD THE FINISH

TIP **PREFINISH AS NEEDED**

Shellac dries fast, so you can finish parts without slowing down assembly. This means you can prefinish components like these dividers that would be hard to reach after glue-up.



Even, straight wipes. *One of the benefits of this technique is the ability to build up the finish in thin coats. Apply the shellac in straight, slightly overlapping passes (above) and don't go over any areas again until the coat is dry. As your finish builds, smooth any rough spots or areas of raised grain with a light scuff of fine sandpaper (right).*

SealCoat from Zinsser, a light-colored shellac with the wax removed. Wax occurs naturally in shellac, but removing it increases the clarity, durability, and moisture resistance of the finish as well as allowing other finishes to adhere to it. To use SealCoat, simply dilute it 1:1 with denatured alcohol.

Build the finish in thin coats

I wipe on the shellac with a clean cotton cloth. The diluted mixture will dry fast, so drips and runs shouldn't be a problem. Store the rag in a closed container to keep it from drying out and you can use it indefinitely.

No matter how smooth the surface was after sanding, it will probably feel rough after the first coat. The initial coat performed the important task of saturating the wood fibers and locking them in place. A quick sand with your final smoothing grit should return

Stop before the finish gets too thick. *Pekovich applies coats until the surface is just a bit glossier than he wants in the finished product. This will ensure adequate protection without building too thick of a film finish.*

STEP 3 POLISH WITH STEEL WOOL AND WAX

Smooth and wax in one step. *The steel wool and wax combination levels any dust particles and produces a satin finish that's friendly to the touch. Wet the steel wool with some mineral spirits and then dip it into the wax. This will make it easier to apply a thin, even coat. Once the wax has dried, buff out the piece with a clean cotton rag (right).*

the smooth surface. With the fibers locked in place, the surface should stay fairly smooth through the rest of the finishing process.

Shellac is a solvent-based finish, which means wiping on a coat will partially dissolve the coats you've already applied. Don't wipe back and forth over wet surfaces or you'll run the risk of lifting off the finish as you're trying to build it up. Instead, wipe it on using straight, slightly overlapping coats, and wait for the surface to dry before applying additional coats. This might sound time consuming, but it's not. By the time you finish coating all the surfaces of a project, the first surfaces should be dry enough for the next coat. After three or four coats, the finish will stay sticky longer and dry more slowly. At this point, hold up for 10 minutes or so, which should be enough time for the finish to cure.

Before continuing, check for rough areas from raised grain or dust, and scuff-sand these spots with fine sandpaper as necessary. After another coat or two, you should be close to having enough finish on the project. Even though I'm aiming for a satin finish, I apply enough coats that it's slightly glossier than I'd like. The finish at this point might be a little streaky or have a slightly uneven shine, but that's OK. The last step will even everything out.

Finish with steel wool and wax

The final step is to rub out the finish by applying paste wax with fine steel wool. This should remove any roughness, but if you find any problem areas, hit them with 600-grit sandpaper. To make the wax easier to apply, dip the steel wool in mineral spirits first. This will dilute the wax for smoother application. Finally, buff the surface with a clean rag. □

Michael Pekovich is a furniture maker, instructor, and FWW's executive art director.

TIP ADD PROTECTION WHERE YOU NEED IT

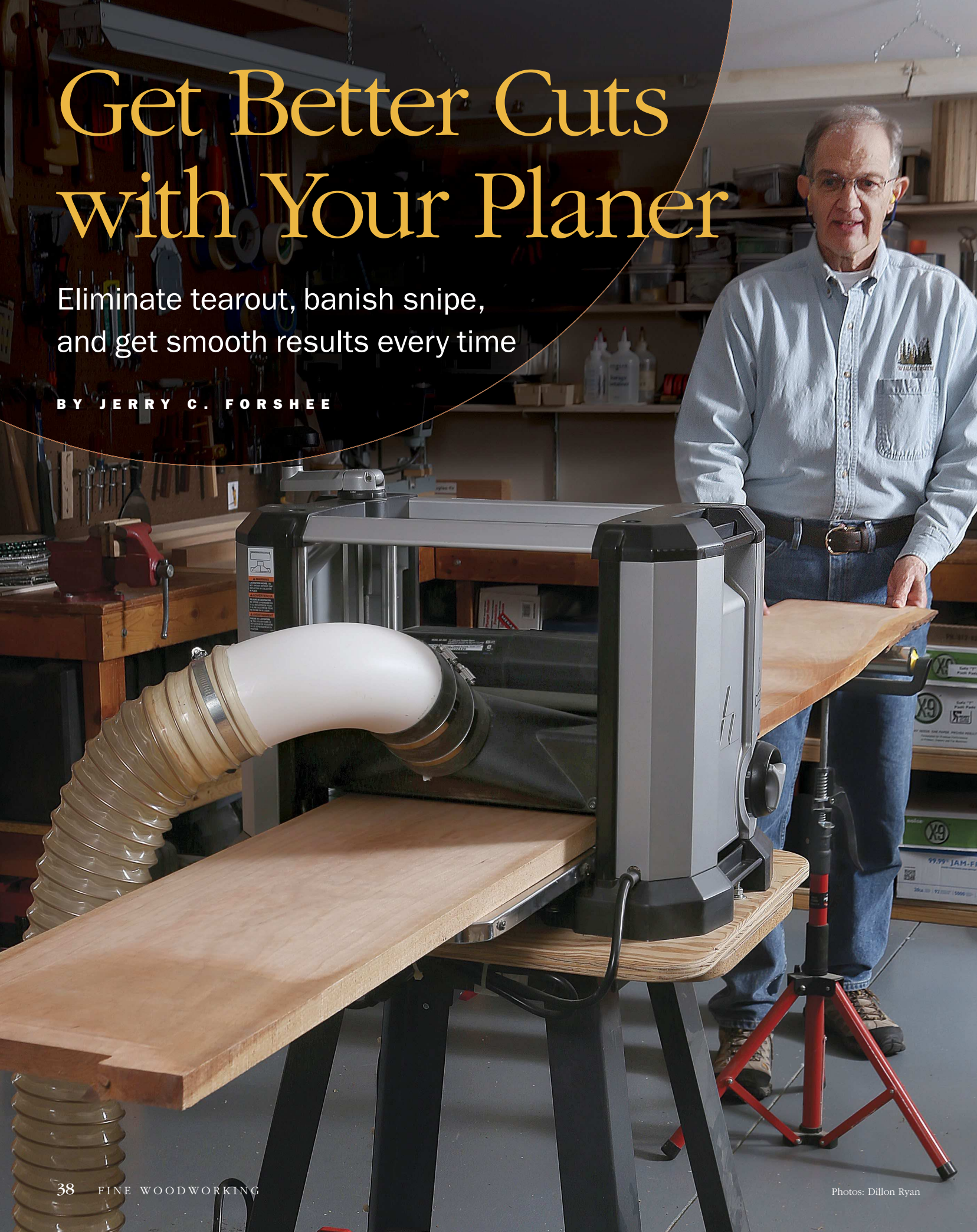
In places that will see wear or moisture, a coat or two of wiping varnish will help protect the surface. The additional peace of mind doesn't take much more time.

Photo, this page (bottom right): Michael Pekovich

Get Better Cuts with Your Planer

Eliminate tearout, banish snipe, and get smooth results every time

BY JERRY C. FORSHEE



Photos: Dillon Ryan

Precisely prepared stock, with a smooth surface and consistent thickness, is the foundation of quality woodworking. The planer is essential to that process.

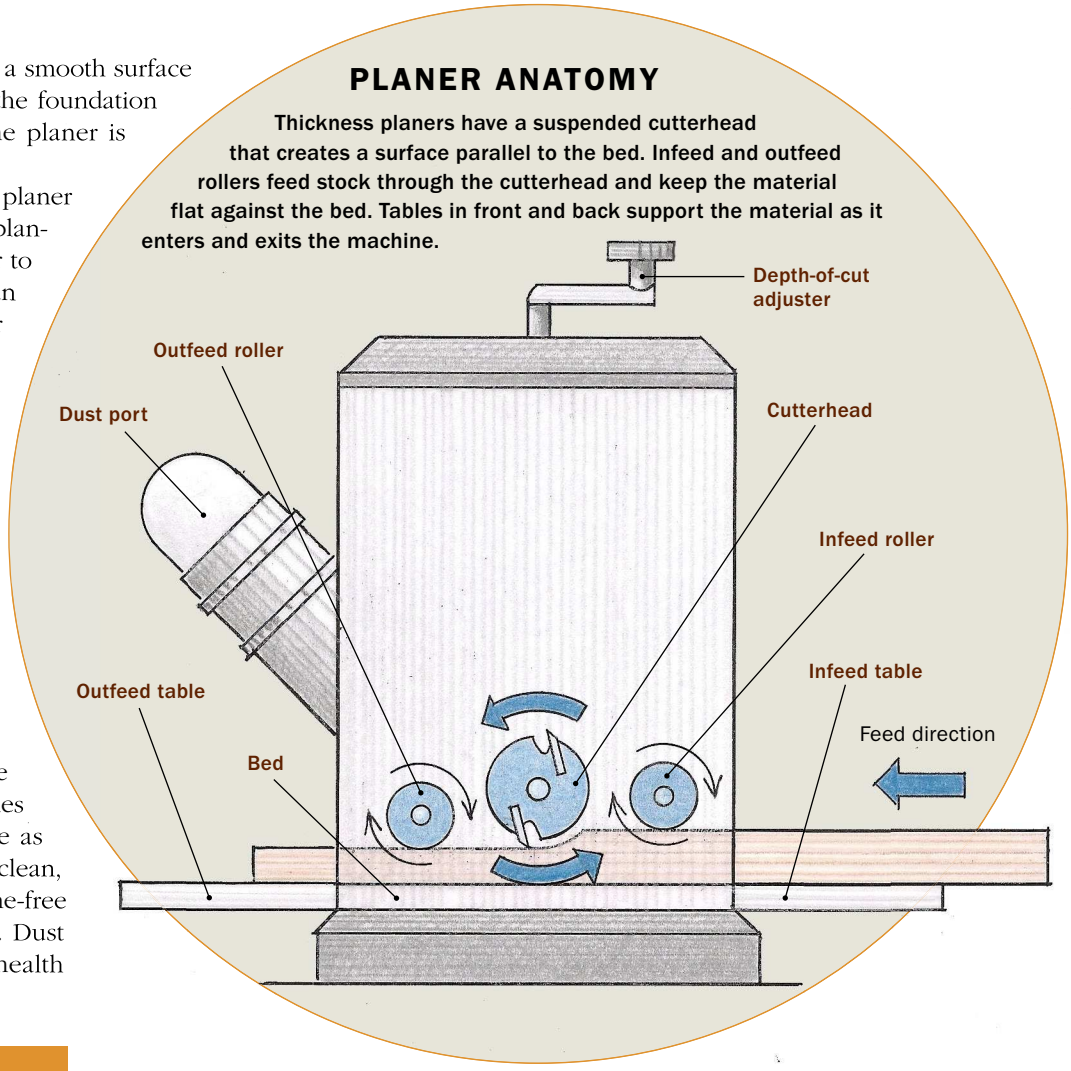
It's important to understand that a planer does not flatten wood. Instead, the planer works in tandem with the jointer to flatten and square stock; neither can do the job of the other. The jointer is used first to surface one face flat, and the planer creates an opposite face smooth and parallel to it.

Set up your planer for success

Like other woodworking machines and tools, a planer must be well-tuned to do its job properly. Keep the knives clean and sharp, and change them when the planed stock's surface becomes irregular or grooved, when chipout becomes significant, and when the feed rate becomes noticeably more sluggish. The infeed and outfeed tables must be flat and in the same plane as the bed, and they must be smooth, clean, and treated with wax or dry, silicone-free lubricant for a low-friction surface. Dust collection is critical for personal health

PLANER ANATOMY

Thickness planers have a suspended cutterhead that creates a surface parallel to the bed. Infeed and outfeed rollers feed stock through the cutterhead and keep the material flat against the bed. Tables in front and back support the material as it enters and exits the machine.

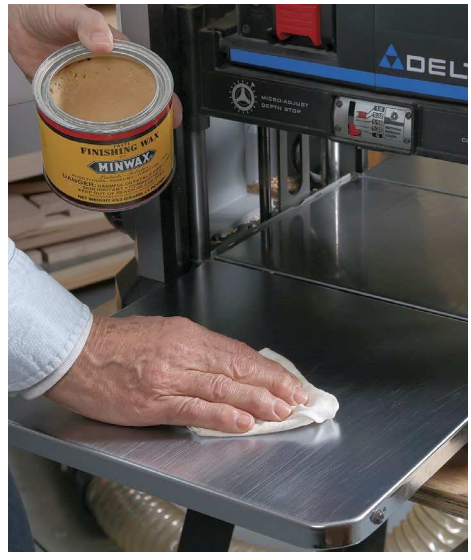


Jointer before planer

The planer doesn't flatten a board; it creates a surface that's parallel to the surface riding against the bed. One side of the board must be flattened at the jointer first. That flat face is the surface that rides against the bed.

Keep it clean and waxed

Use dust collection. *The chips created by the planer are not only hazardous to your health, but they also can get trapped under incoming stock and cause an irregular cut with poor results.*



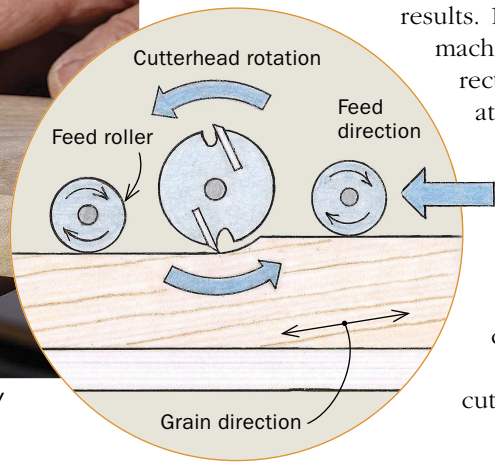
Make surfaces slick. *Wood passing under the rollers applies a considerable amount of friction and pressure to the bed and tables. Applying wax to those surfaces will prevent things from bogging down.*

Drawings: Vince Babak

Tips for tearout-free planing

A planer's job is to create a smooth surface. But for many woodworkers, tearout is a common problem. Here are a few simple tricks that will help you minimize or even avoid tearout completely.

GO IN THE RIGHT DIRECTION



Pay attention to grain. *The simplest way to avoid tearout is to carefully orient the grain before you feed any material into the planer. The grain should always be heading downhill into the machine.*

protection and ease of cleanup. It also can affect the quality of the cut, because unevacuated chips can dimple the face of the workpiece or get under the piece and cause an irregular cut.

Back to basics

While the planer seems to do the work for you, there are a few tips to help you get the best results. Before you turn on the machine, identify the grain direction of the board. Look at the edge of the board and position it so that the grain runs downhill into the planer. Plane in the wrong direction and the machine will leave a rough, chipped-out surface.

Also, limit the depth of cut to 1/16 in. or less. This

TAKE A LIGHT CUT

Lighter is better. *Set the depth of cut for less than 1/16 in. to reduce the likelihood of tearout. This is especially important on wide stock, which can bog down the smaller motors on benchtop planers.*

SKEW THE BOARD

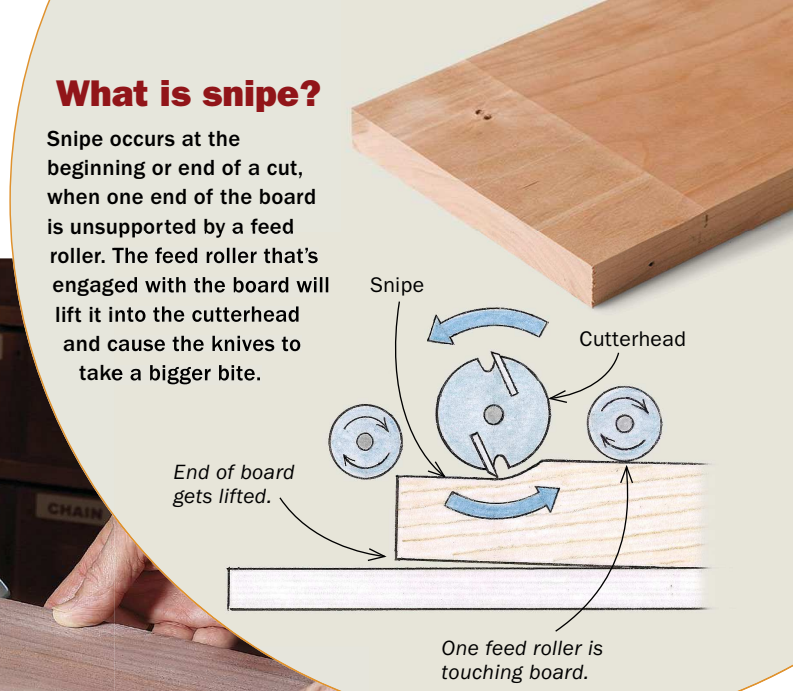
Angle it through. *For boards with tricky grain, feed the board at a slight angle. This creates a shearing cut across the grain that reduces tearout.*

How to minimize snipe

Snipe can ruin stock, so take steps to deal with it before sending material through the planer. Thankfully, it's not impossible to work around.

What is snipe?

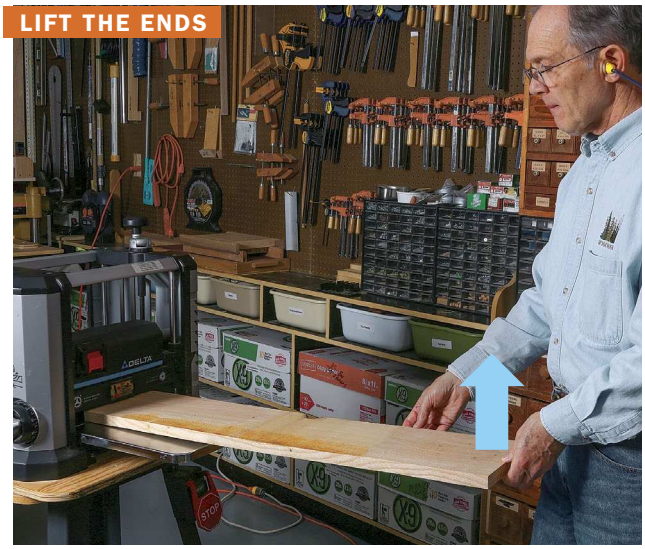
Snipe occurs at the beginning or end of a cut, when one end of the board is unsupported by a feed roller. The feed roller that's engaged with the board will lift it into the cutterhead and cause the knives to take a bigger bite.



GANG UP THE PARTS

Make a train. *Running separate boards through the planer directly behind one another eliminates snipe from the boards in the center.*

LIFT THE ENDS



On the way in. *As the board enters the planer, its leading end is not supported by the outfeed roller. Lifting the trailing end keeps the leading end planted against the bed.*

And the way out. *The same applies for the board as it exits the planer. Lift the leading end to keep the trailing end from rising into the cutterhead.*

makes tearout less likely and reduces wear and tear on the motor. After setting the depth of cut, tighten down the cutterhead lock if present.

When planing, don't always feed boards into the center of the bed. Use the entire width of the cutterhead to even out knife wear and get a lot more life in between knife changes. Feed boards with difficult grain into the planer skewed at an angle, which helps create a cleaner shear cut across the grain.

Once both faces are parallel, remove material equally from both faces by flipping the workpiece, end for end, between passes to keep proper grain orientation. This removes material equally from both sides, which helps the board remain flat.

Tips for avoiding snipe

We've all seen snipe—that ugly gouge on the leading or trailing end of the board. It happens when the stock is not supported by both the infeed roller and the outfeed roller at the same time (see drawing, above right).

One of the simplest ways to avoid snipe is to lift up on the trailing end of the board as it enters the machine and then on the leading end on the outfeed side as it exits. This keeps the end of the board that is not supported by the opposite feed roller flat to the bed. You also can start with a workpiece that is extra long and then cut off the snipe at each end. Or, snipe

Planing narrow and short stock

Edge-planing narrow stock or trying to face-plane stock that's too short isn't just difficult, it can be dangerous. Avoid accidents with these techniques.

GROUP NARROW PARTS

Planing on edge. *When you need consistent and dead-accurate widths for multiple components, edge-planing gives great results. As he feeds the parts into the planer, Forshee holds them firmly to keep them upright and together in the center of the bed (above). He then transfers his grip to the outfeed side (right).*

LENGTHEN SHORT STOCK

Add some runners. *For stock that's too short to plane, glue hardwood runners to the edges. This effectively increases the length of the board so that it can be grabbed by both feed rollers, as well as keeping snipe from the short length of material.*

can be reduced by feeding boards through the planer butted end to end. This keeps the feed roller tension equalized. This "planer train" technique can also be used to control shorter stock.

Edge-planing stock

Stock that has already been milled to have parallel sides and relatively smooth edges can be planed on edge to fine-tune the width and yield smooth edges.

If you are going to try this, the maximum width of the stock should be equal to, or less than, five times the thickness of the stock. For 1-in.-thick stock, the board should be 5 in. wide or less. This keeps the stock from being pressed over and out of square by the feed rollers. When I plane stock this way, I feed it through in small bundles (see photo, above left). This helps keep the boards upright and feeding at the same rate. Also, always use the centermost portion of the planer. On some planers, the feed rollers are spring-loaded on the ends and can cause the stock to tip. □

Jerry C. Forshee is a furniture maker in Bloomington, Ind.

Shim the stock flat. *While on the sled, use shims to stop the board from rocking.*

Keep the shims in place. *To keep the shims from shifting while the sled is inside the planer, use hot glue. A single, thick bead where the shim and board meet is usually enough to hold it down.*

Flatten stock that's too wide for your jointer

The planer isn't a jointer, but when you need to flatten stock that's too wide or wild for your jointer, the planer can get the job done safely and fast.

Trim the shim. *Cut the shims with a handsaw, making sure they're well inside the edge of the sled to avoid any hangups as the sled passes through the planer.*

While the planer and jointer are best used as a team, sometimes a board is too wide, too heavy, or just too cupped and bowed to be flattened efficiently on the jointer. The solution is a simple planer sled that's reusable and easy to set up in minutes.

The sled is a sheet of ¾-in. plywood or MDF, just narrower than the capacity of the planer and as long as you need it to be. A short hardwood cleat glued at the trailing edge keeps the sled and the stock on it moving at the same pace.

Setting up the sled is easy. Put the stock on the sled with the end against the cleat. Use wood shims to stabilize the board from rocking and then under any spots where the board is off the sled. It's best to keep stock removal even across the board, so don't over-shim on one end or side but rather spread out the difference over the board. Once the shims are in place, attach them with hot glue. Then trim the shims so that they don't overhang the sled sides.

Just like normal stock, run the stock and sled through the planer and take light passes until the top face is flat. Then remove the stock from the sled, flip it over, and plane the opposite face.

Flatten it slowly. *Feed the sled and board through the planer, taking light cuts. When one face is flat, remove the board from the sled and plane the opposite face flat and parallel.*

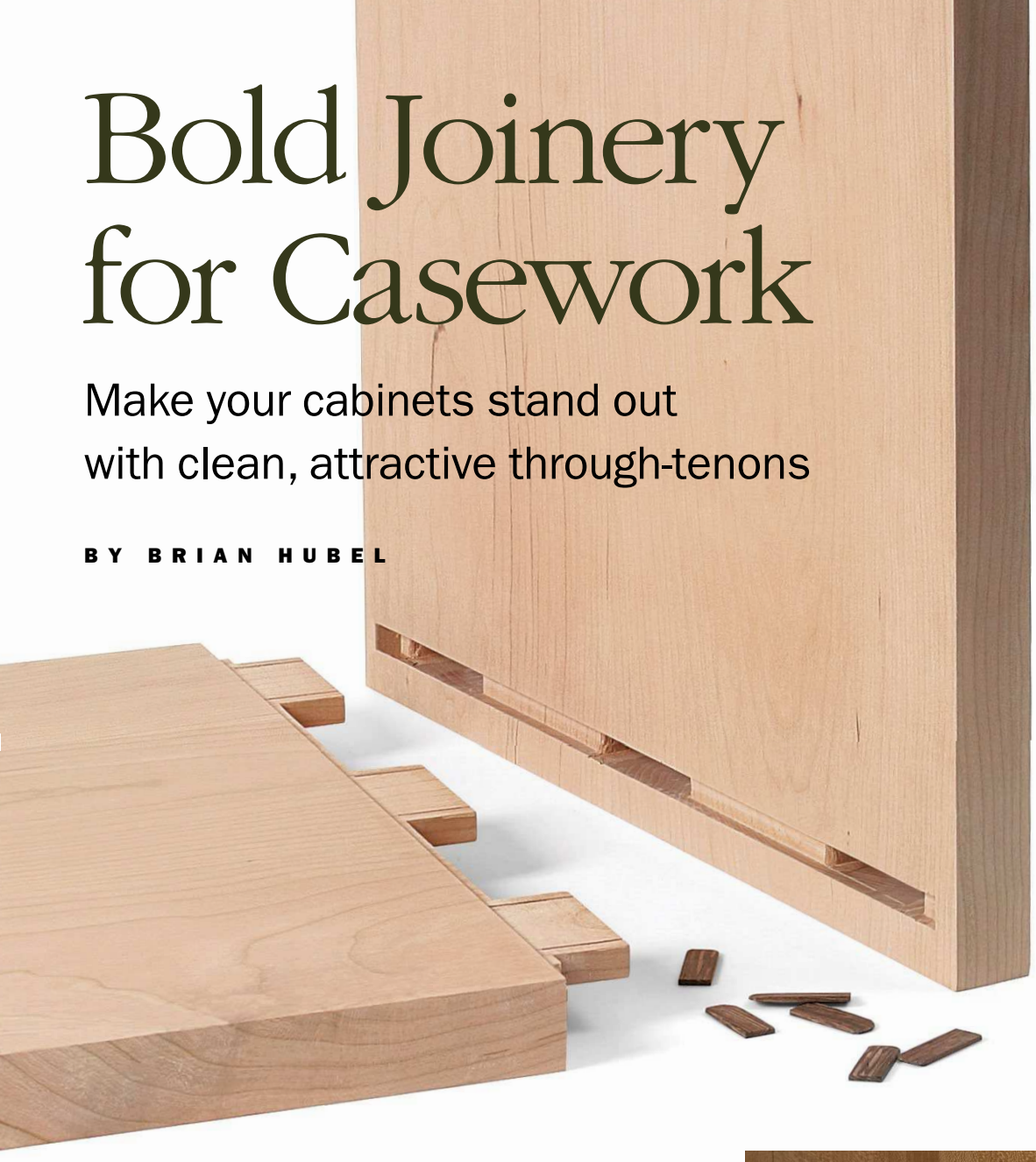
Article **Extra**

Watch the planer sled in action

Bold Joinery for Casework

Make your cabinets stand out with clean, attractive through-tenons

BY BRIAN HUBEL



I use exposed joinery to call attention to the effort, accuracy, and care that goes into furniture making. But it's also a form of expression and an opportunity for design.

For boxes and cases, dovetails certainly fill the bill for some woodworkers. But I prefer to use multiple through-tenons at the corners, which provide a more modern look and feel. For decorative effect, and also to close any small gaps, I often insert thin splines into the ends of the tenons.

This joinery is robust and attractive, but it can be unforgiving. Mistakes are not easily concealed. To do it accurately and fast, I came up with two simple router jigs, one for the mortises and another for the tenons.

Router jig guides the mortising

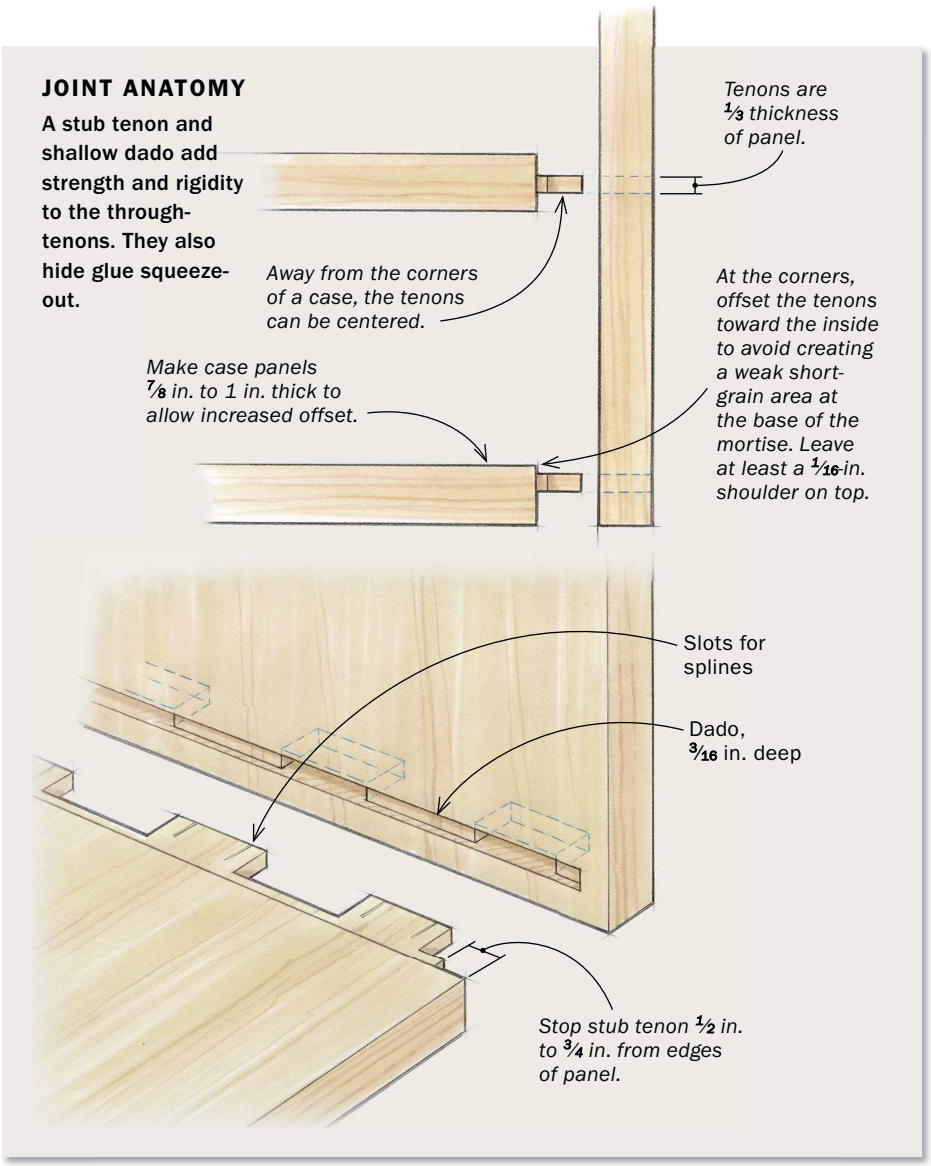
One of the great things about this technique is that you have to lay out the mortises only once, on one of the case panels. The number and layout of mortises is mostly personal preference, but to prevent cup or twist, they should start ½ in. to ¾ in. from the front and

Elegant and versatile. *A row of through-tenons looks handsome on the corners of a case and, unlike dovetails, also works for overhanging tops and interior partitions.*

Top left photo, this page: John Tetreault

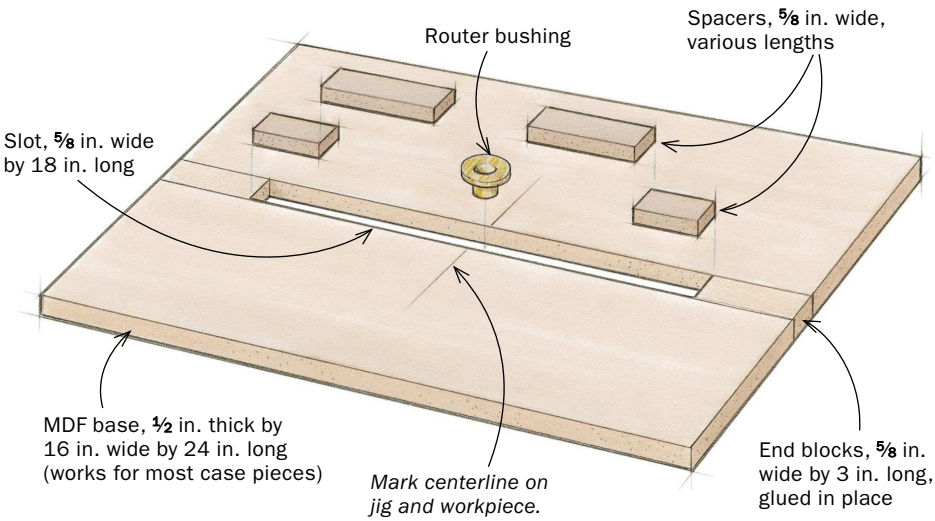
JOINT ANATOMY

A stub tenon and shallow dado add strength and rigidity to the through-tenons. They also hide glue squeeze-out.



JIG CUTS BOTH THE DADO AND THE THROUGH-MORTISES

The jig guides a ⅝-in.-dia. bushing and a ⅜-in. router bit along a straight path. A series of spacers drop into the long slot to limit the travel for the long dado and the individual mortises. The spacers are simply pieces left over from building the jig. When cutting them to length, be sure to factor in the bushing offset, and label them all to avoid confusion.



Drawings: Dan Thornton

MORTISE JIG COMES FIRST

Form the long slot by gluing pieces together, rather than attempting to rout it accurately. That makes it easy to drop in snug-fitting spacers.

Match the spacers to the bushing. *Saw or plane long spacer strips to the same thickness as the bushing. You want the bushing to slide freely in the slot without slop.*

Simple glue-up. *Glue in the end strips, feeling with your fingers to be sure the pieces are aligned. After the glue dries, scrape and sand off the squeeze-out.*

Add a fence. *Mark a line on the underside of the jig to indicate the end of the panel. Tack down a fence along that line.*

Mortises

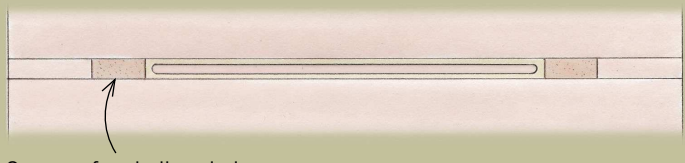
START WITH A SHALLOW DADO

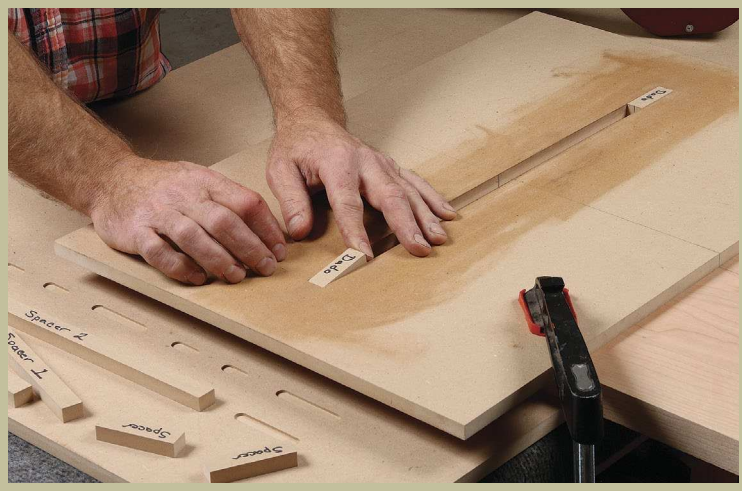
Use an upcutting spiral bit and dust collection to keep dust from packing the slots. The dark stain on the jig is wax for easy routing action.

Mark centerlines. *The jig and all of the workpieces need centerlines for alignment. Notice that Hubel has also laid out the actual mortises on the first workpiece (above). Use the centerlines to position the jig side to side (right). The fence takes care of the rest.*

ADD SPACERS FOR ANY ARRAY

Cut individual spacers from the same long strips you made earlier, and they will press snugly into place in the template slot. Factor in the offset at the ends of the mortises when cutting the spacers to length.





Long dado first. *Pop in the pair of end spacers (above), set the depth, and rout the dado in one pass (right). Dust collection is a must to clear chips that could get compacted and interfere with the router's travel.*

back edges of the panels. Also, keep in mind that several smaller mortises and tenons will be stronger than one or two oversize ones because of the increased glue surface.

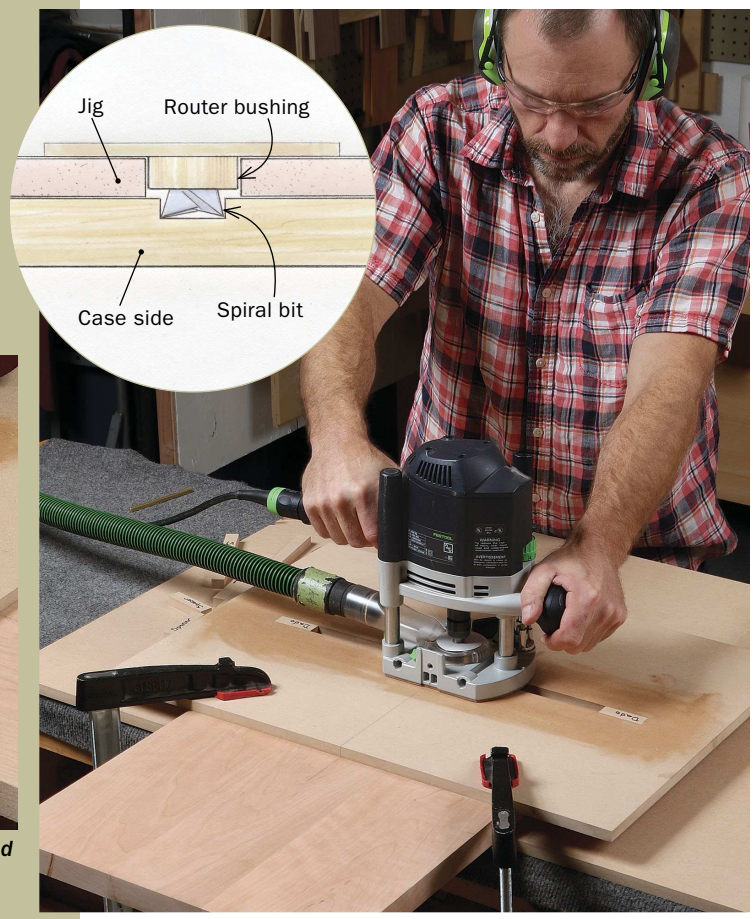
To cut the mortises I use a jig that works with a ⅝-in.-dia. guide bushing and a ⅜-in.-dia. spiral upcutting bit (see drawing, p. 45), though other combinations would work. The jig has a long guide slot that lets me rout not only the shallow dado but also the individual mortises. I use small, tight-fitting spacers that drop into the slot to limit each cut.

Carefully mark the center of the slot both horizontally and vertically. You'll use those marks to align the jig on the first workpiece, which also should have the layout marks on it. Mark a line on the underside of the jig where the panel ends. Then attach a fence along that line.

After cutting the spacers to length, you can lay out the first workpiece and start mortising. Mark a centerline on the workpiece, and align the jig's centerline with that, while pulling the end of the panel flush against the fence. Clamp down the jig in that position. With the dado spacers in place, first rout the long dado. Then use a combination of the other spacers to rout the through-mortises. I square up the ends of the mortises later during the fitting process.

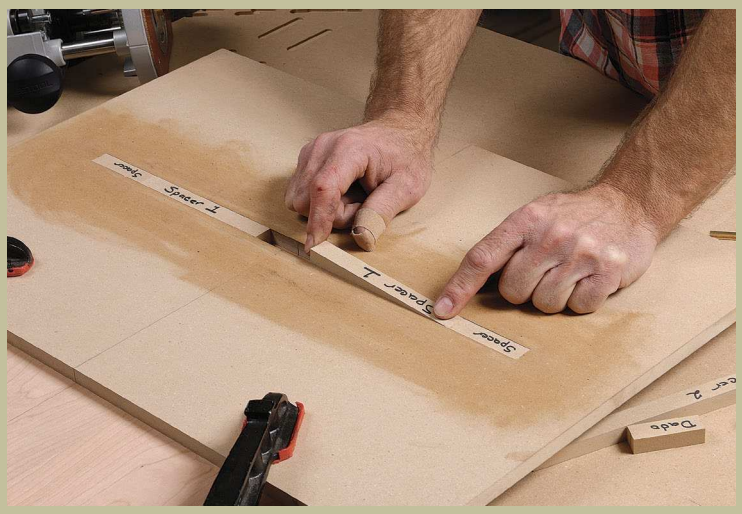
Rout the tenon using a jig

Cutting a row of multiple through-tenons to match a row of mortises is usually very tricky, but my tenon jig delivers

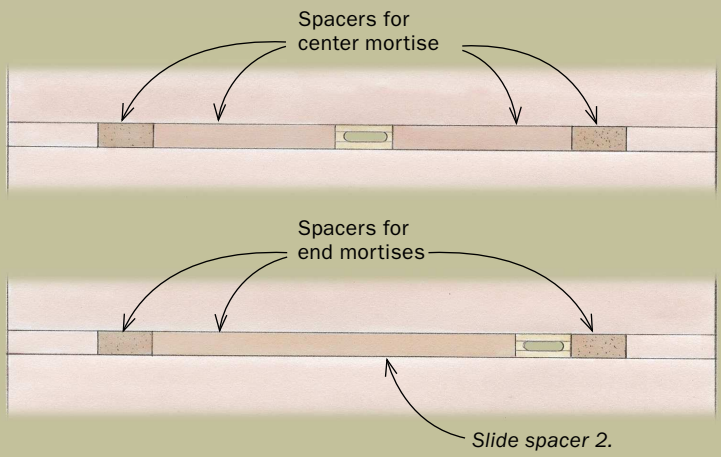


Photos, except where noted: Asa Christiana

THEN TACKLE THE THROUGH-MORTISES



Now the mortises. *Pop in the various spacers needed (above) to rout each through-mortise, taking a series of shallow passes (right). Place a backer board underneath the workpiece to prevent blowout.*



a great fit with no fussing. First you use the jig with a bearing-guided router bit to form the tenons, making them a bit wider than the existing mortises. You use it again later to mark the ends of those mortises, so you can chop them to the same width as the tenons for a perfect fit.

To lay out the tenon jig, start by turning over one of the mortised panels so that you are looking at the outside face, and mark tenon lines just outside the mortises. Move a combination square from side to side to make the tenon layout symmetrical. That way you never have to worry about which way you attach the jig to the workpiece. Now transfer those same combo-square settings to the jig.

Draw the full tenon layout on the jig, including the shoulders and the shallow stub tenon that will fit the ends of the dado. I leave the stub tenon a little short so that it won't stop the joint from closing, but I add about 1/32 in. to the tenons so they will protrude slightly and can be trimmed flush. To cut out the jig, I use a dado set on the tablesaw with a miter gauge and stop block.

With the template complete, use it to trace the tenons, then cut out most of the waste with a bandsaw. Next, place the jig under the panel, clamp both to the benchtop, and use a 1/4-in. spiral flush-trimming bit to chase the jig, forming perfect tenons with just a few small rounded inside corners to clean up later.

With the tenons shaped, I go back to the dado setup on the tablesaw, running the tenoned panels on their sides to cut rabbets that form the tenons' shoulders and define their thickness. Don't forget to account for any offset joinery.

I usually get the tenon thickness very close to fitting right off the tablesaw, and then fine-tune it with a shoulder plane. After the rabbet work is done, I square up the inside corners of the tenons with a chisel.

Tenon jig dials in the mortises, too

The thickness of the tenons should be dead-on at this point, with the tenons a bit wider than the mortises. This is where the tenon jig appears again, guiding you as you square and widen the mortises for a perfect fit.

Orient the mortised panel so that the show face is up, and erase the lines you drew before. Position the tenon jig on the panel with its edges aligned flush. Use a sharp pencil to trace the edges of

Tenons

MAKE THE TENON JIG

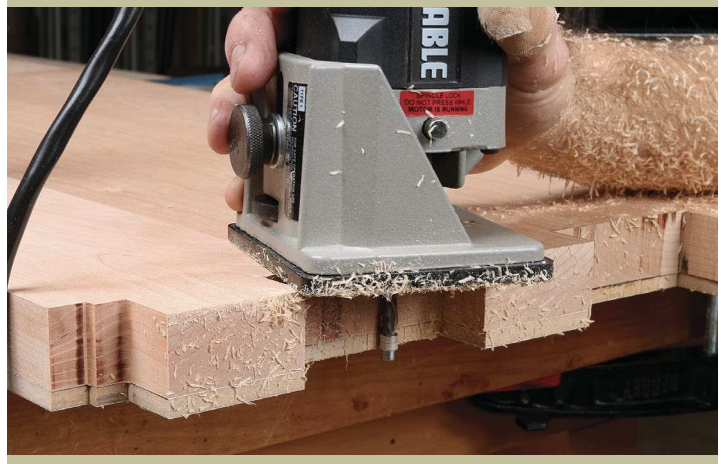
This ¼-in.-thick MDF jig, cut to the width of the workpiece, guides a router to form the tenons. It also serves as a guide to fit the tenons.

Mark the tenons. *Make the tenons on the jig just wider than the actual mortises. Flip the square from side to side to make the array symmetrical. When marking the tenon shoulders, don't forget the little haunches where the stub tenon ends.*

Cut out the template. *Use a dado set, supporting the workpiece with a miter gauge. Use a backer board to control blowout, and a stop to ensure the tenons are symmetrical from side to side. Leave your pencil lines to be sure the tenons end up wider than the mortises.*

TENONING GOES QUICKLY

Trace the outline and saw the waste. *Position the template carefully and run a sharp pencil around it. Then use a jigsaw or bandsaw to remove most of the waste.*



Pattern bit takes over. *Clamp the template in place and let a pattern bit form the tenons perfectly, leaving only small curves in the corners (above).*

Dado the shoulders. *Use the dado set again to form the cheeks and shoulders of the tenons, starting on the outside of the joint. Use the rip fence as a depth stop. Last, use a chisel to square the rounded areas left by routing.*

the template tenons. These are the lines you'll be working to as you square each mortise.

You can square the mortises with bench chisels, but I do it with a ⅜-in. hollow chisel that I dedicated to the job. It chops a square end in one step. Try to keep the chisel at 90°, though a slight undercut is OK. And when you pull the chisel out of the mortise, be careful not to pull up fibers at the edges.

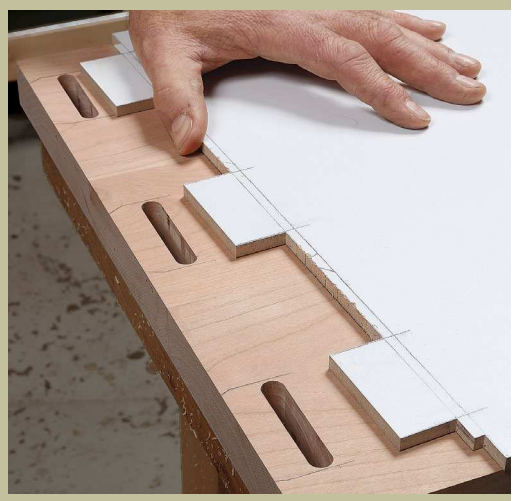
After chopping, I do a partial dry-fit to see how close the fit is. The goal is a joint that comes together squarely and tightly with almost no gaps, requiring only light taps with a dead-blow mallet. Typically I need to shave only a slight amount of material from the tenons using a chisel or a file.

Splines polish off the look

After a successful dry-fit, the last step before assembly is getting ready to wedge the joints. I use a handsaw to cut kerfs in the ends of the tenons. While too much wedging pressure will split

JIG HELPS WITH THE MORTISES, TOO

As you square the ends, widen the mortises to fit the tenons.



Mark new lines. *Use the template to mark new lines on the outside faces of the mortised panels. They should fall just outside the mortises.*

Square the mortises. *Hubel dedicates a ⅜-in. chisel from his mortising machine to this job.*

FAUX WEDGES FINISH THE JOB

After a full dry-fit and any tenon adjustments, Hubel usually adds thin splines for decorative effect. They can also fill small gaps, but too much wedging action is dangerous at the end of a panel.

Saw kerfs. *If no wedging action is needed, Hubel only goes about ¼ in. deep. To fill small gaps, Hubel saws almost to the shoulder and uses slightly thicker splines.*

Assemble and wedge. *Hubel puts glue in the mortises and dado, draws the joint together, and then removes the clamps temporarily to drive in small, flat splines.*

Plane and sand. *A block plane and sandpaper bring the tenons and splines flush for a modern yet timeless look.*

the panel, I sometimes leave the splines a little bit fatter than the sawkerf to push out the ends of the tenons and close gaps. In those cases, I cut the spline kerfs down to the tenon shoulder if necessary. Otherwise, ¼ in. is deep enough. There are a variety of ways to make small splines, but be sure to form a small chamfer on the leading edges to make them easier to drive in.

When possible I assemble one corner of the case (or intersection with an interior partition) at a time. I use notched cauls to work around the slightly protruding tenons. I use the cauls to pull the joinery tight, remove them to drive in the splines, and then quickly clamp the cauls back in place.

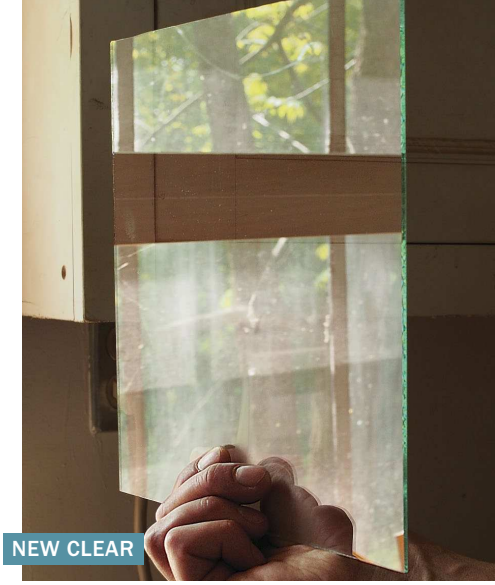
Once things have time to dry, I clean up any squeeze-out, plane the protruding tenons flush, and finish up with sanding. The look of the clean, polished tenons always makes me feel good. □

Brian Hubel is a professional furniture maker in Colorado Springs, Colo. (BrianHubel.com).

Use Vintage Glass for Cabinet Doors

Old panes bring vibrancy to new furniture

BY STEVE LATTA



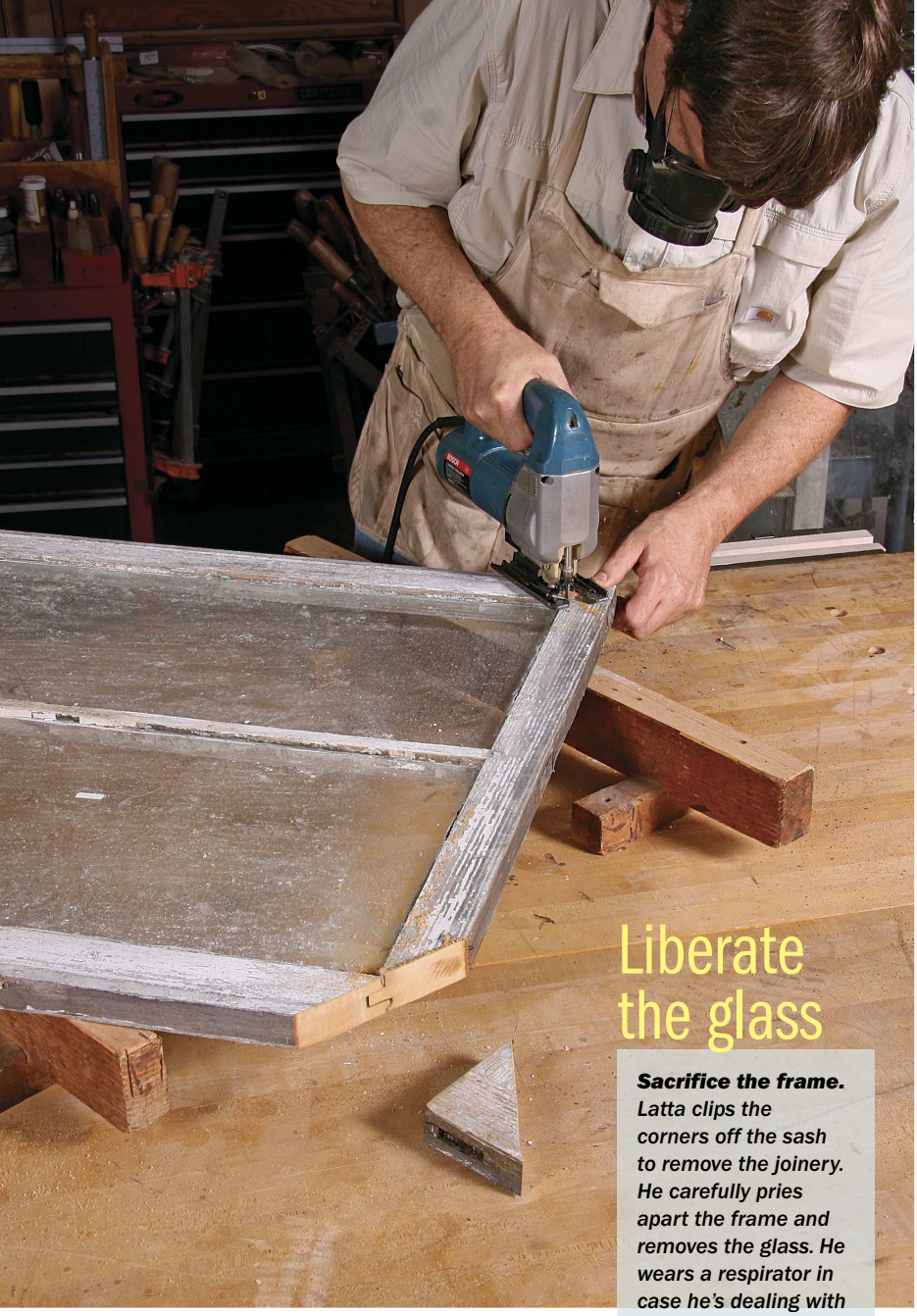
Reflections tell the tale. *An outdoor scene reflected in three types of glass shows the difference between a clear new pane, new-made antique-style glass, and vintage glass, with its subtle waves and distortions.*

You took great care when you selected the wood for your new cabinet, and then you poured yourself into the milling, joinery, and assembly. Now that the divided-light doors are built, what will you do about the glass?

Glass purchased from the hardware store is sterile and lifeless; it takes more away from your piece than it contributes. Vintage glass, by contrast, has a vitality that adds something extra to the finished piece. Old processes of making window glass produced panes with ripples and bubbles and varying thickness, and it is these blemishes that make old glass so vibrant. Old panes reflect and refract light unpredictably, creating glints and shadows that make it a pleasure to open a door. In this article, I'll tell you where to get old glass, how to salvage it from window frames, and how to work with it.

Glass forager. *Great old glass for your next glazed cabinet is as close as the nearest flea market, antique store, or architectural salvage company.*

Photos, this page (right column) and opposite: Michael Pekovich



Liberate the glass

Sacrifice the frame. *Latta clips the corners off the sash to remove the joinery. He carefully pries apart the frame and removes the glass. He wears a respirator in case he's dealing with lead-based paint.*

In search of old glass

The search for old glass is part of the fun of using it. Antique stores, junk shops, and flea markets often have old windows, and I typically pay between $15 and $25 per sash. Architectural salvage companies are another good source and often have a broader selection. Once you're on the lookout, you'll also notice windows on the side of the road waiting for the garbage truck—this may be less predictable, but you can't beat the price. My current favorite source is a local company that installs replacement windows. They had hundreds of old sashes out in the weather, leaning up against their building, and they told me to take whatever I needed, no charge. Nice!

When you're on the prowl for glass, bring along paper towels and glass cleaner so you can see what you're getting. Once you have the panes clean enough to get a reflection, make sure the glass has a nice ripple by looking at it from an angle. Raking light can help reveal the character of the glass as well. Every now and then you'll get some bubbles in the glass. These are simply gorgeous, but much less common than a good ripple.

Roughly speaking, the older the glass the better. Most window glass made in the last 60 years or so—called float glass and made by pouring liquid glass onto a bed of molten tin—is perfectly flat, perfectly free of blemishes, and perfectly boring. Prior to that, most window glass was made by first creating a large glass cylinder, closed at both ends. The ends were removed and the remaining sleeve of glass was slit along its length, reheated, flattened, and then cut into panes. Before the 20th century, a blowpipe was typically used to make the cylinder, producing panes that were full of character. The blowpipe technique was supplanted by a mechanized method of pulling a cylinder of

Photos, except where noted: Jonathan Binzen

Clean it

Careful cleanup. *Using a scrap of low-pile carpet as a cushion, Latta removes the old glazing compound with a razor blade, then thoroughly cleans the glass.*

Cut the glass to size

Mark, score, snap. *Cutting old glass is no different from cutting new. Latta marks it with a Sharpie and scores it with a glass cutter guided along a straightedge. His Master Force straightedge (menards.com) has a rubbery strip underneath to keep it from slipping on the glass.*

glass; the resulting panes were more uniform, but still showed some ripple and irregularities.

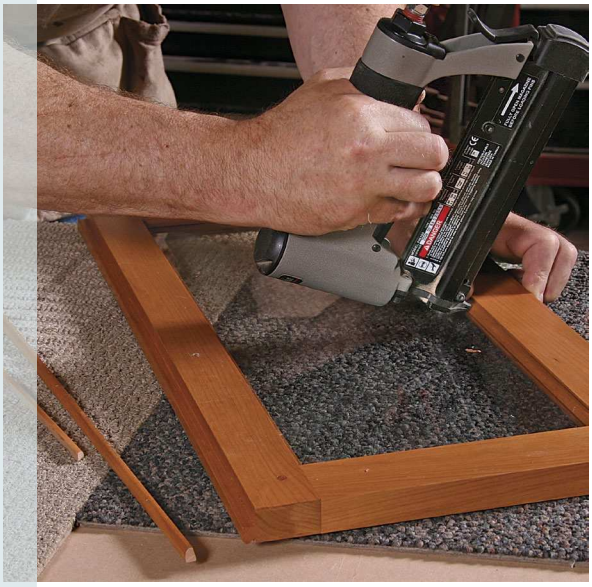
Check all the panes in a sash. You don't want to buy a nice old six-light sash and get home to find that one or two of the panes are originals and the rest are recent replacements. Not all replacements are useless, however. In one large, twin-light sash I found, I could tell that both panes were old glass. When I got them out of the frame and cleaned, however, I discovered that one pane was older than the other. One had a brown tint, the other green; they differed in thickness and one had more ripple. Still, they were both very desirable, and I used them in the same cabinet.

Occasionally you'll find a pane with good ripple but with some clouding that simply will not come off. I'll

Two installation options

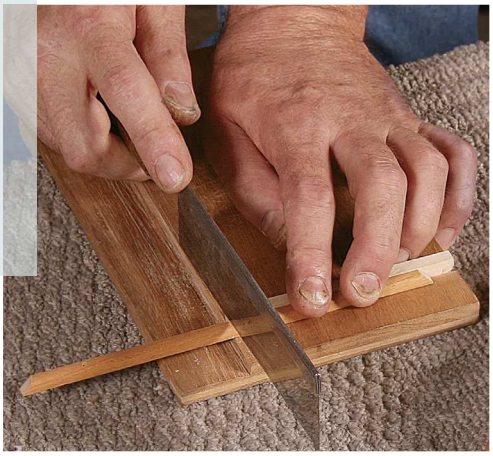
Solid wood retaining strips

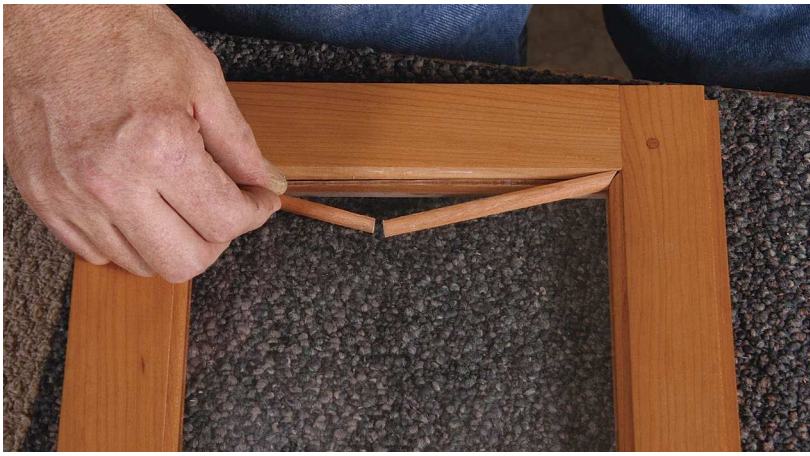
Silicone seats the glass. *Whether he's using glazing compound or wood strips to secure the glass, Latta starts by tacking the pane in place with a few spots of silicone glass sealant (above).*



Fit four sides, fix three. *Latta cuts the miters on all four strips, then tacks all but the bottom piece in place with a brad nailer (right).*

Bisect the bottom. *To make the strips easier to remove in the future, Latta cuts the bottom strip in half with a thin-kerf razor saw. Then he tacks the two halves in place.*





sometimes use a clouded pane anyway, if the cabinet I've built has a dark interior; but if it is a light contemporary piece where the blemish might show, I won't.

Retrieve and cut the glass

To harvest the glass from an old window, I first cut the corners off the frames, removing the joinery that holds the window together. Then I gently pull the stiles and rails apart and take the panes out. Once the glass is removed from the frames, clean it before cutting. The old glazing compound usually comes off readily, and I use a razor blade to remove the residue. If the glazing is stubborn and your glass is large enough, you can simply cut the edges off, glazing and all.

To cut the glass, I use a glass cutter and glass running pliers, available at the hardware store for under $10 each. Old glass cuts like new glass, except that it is a little more fragile and tends to have a greater failure rate. If I need 16 panes for a set of bookcase doors, I'll make sure I have five or six extra panes on hand.

With a Sharpie, mark a couple of points to establish your first cut line. Moisten the cutter wheel with light oil and, using the cutter and a straightedge, score the pane in a single pass. Tap along the underside of the score line with the ball at the end of the cutter. Then use glass pliers to snap off the waste piece. Next, cut a perpendicular edge. Then fit the glass into a corner of the opening to mark the other two edges.

Installation

When the pane is cut to size, tack it in place using tiny dabs of clear silicone. You don't need a whole bead; just a few dabs will hold it securely. Once the silicone sets, you can use either solid wood retaining strips or glazing compound to finish the installation. □

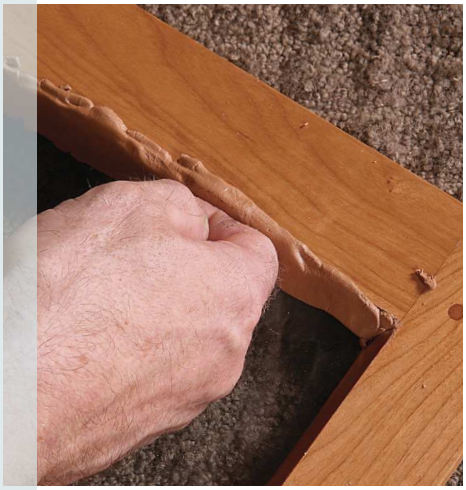
Contributing editor Steve Latta scavenges for old glass in Lancaster, Pa., where he teaches at Thaddeus Stevens College.

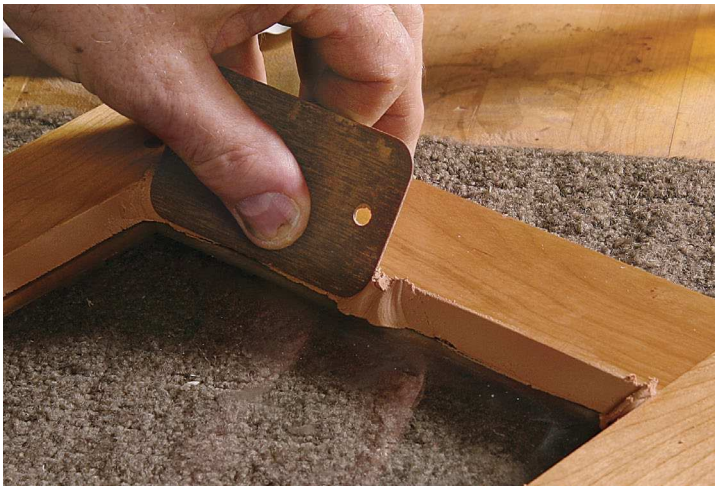
Glazing compound

TINT THE COMPOUND

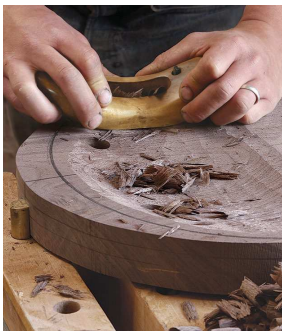
Latta colors the glazing compound to match the cherry door frame, combining various hues of universal tinting paste—burnt sienna, burnt umber, and ocher (1,2). The tints thin the compound, so Latta adds calcium carbonate, or whiting (3), to thicken the mixture.

Pressed in place. *After kneading the glazing into ropes and pushing it into place with his fingers (right), Latta uses a laminate sample to press it home (far right). He uses a chisel moistened with jojoba oil to produce the final, clean bevel on the glazing (below).*





Build a Simple Stool


Fast, fun approach to making a comfortable, casual seat

BY FABIAN FISCHER

My woodworking career started seven years ago, when I purchased an old timber-frame house with a group of friends in a remote part of the Italian Alps. While restoring its roof and interior without electricity, I discovered the joy of hand tools.

When I got back home to Freiburg, Germany, I was eager to start building furniture using the hand skills I had learned. As luck would have it, my neighbor was a master joiner. He got me started, showing me a traditional way to build strong, beautiful chairs from rough lumber. Since then I've built at least 80, refining the process each time.

My approach is not complex. I simply fit parts and determine angles as I go. The work is about giving each piece its own character, and leaving the tool marks that make it unique. I think of it as beauty in imperfection.

This stool is a perfect example of my process. It is a good height to use at a workbench. Make it taller for use at a counter or shorter for use at a table.

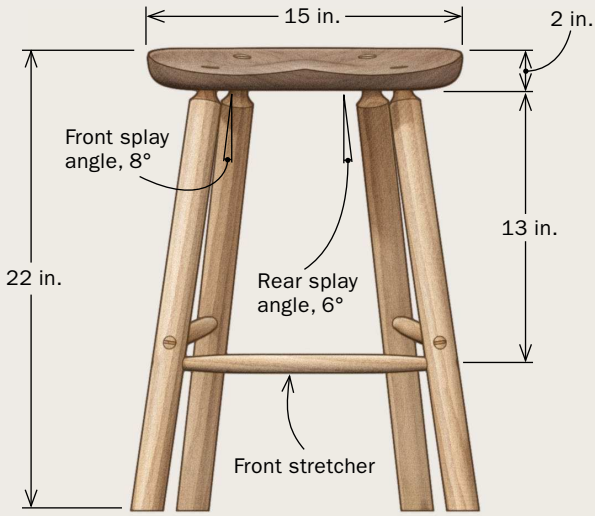
Lay out and drill the seat

I always start with the seat, which I often make from a softer wood than the legs to ease the shaping process. Basswood, poplar, and pine are good choices. You can also try walnut, cherry, or elm, but you'll work harder. For the legs, I use maple, ash, oak, walnut, and cherry.

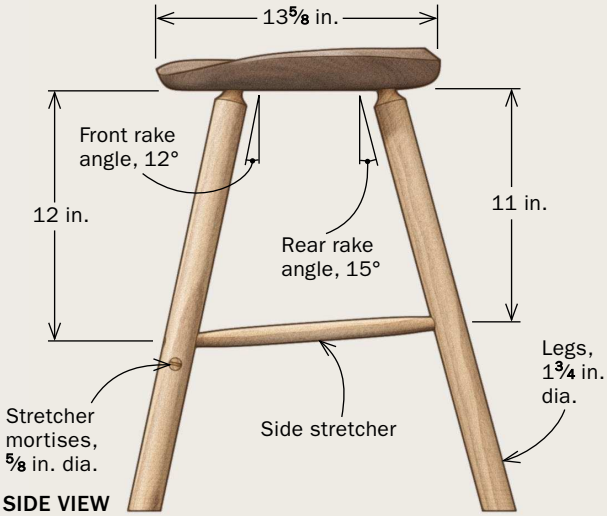
Start with the seat

A BASIC STOOL

This article describes the process of building a midsize stool, perfect for use at a workbench. But the techniques will work for stools of all sizes; you just have to modify the dimensions.



FRONT VIEW



SIDE VIEW

OTHER SIZES

The seat, leg, and stretcher dimensions and angles are similar or identical on these stools. Only the leg and stretcher lengths differ.

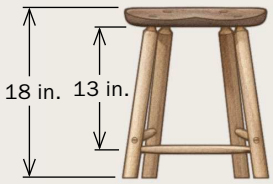
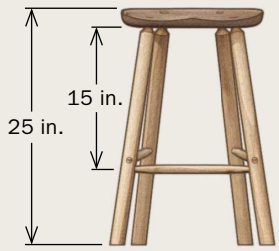
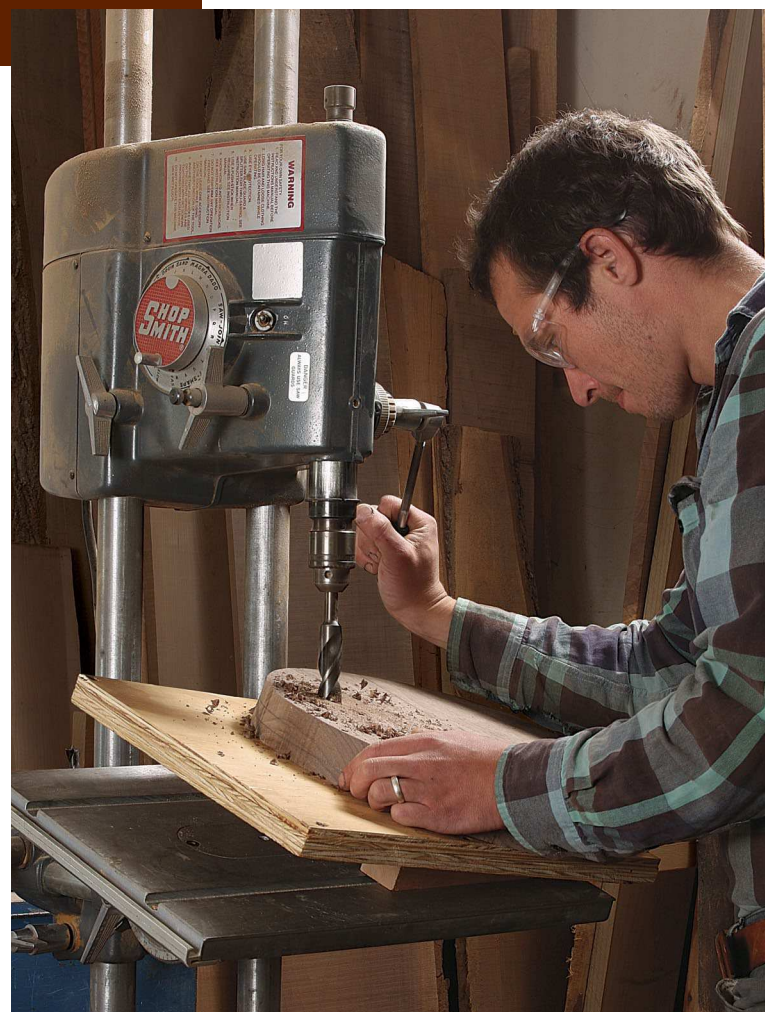


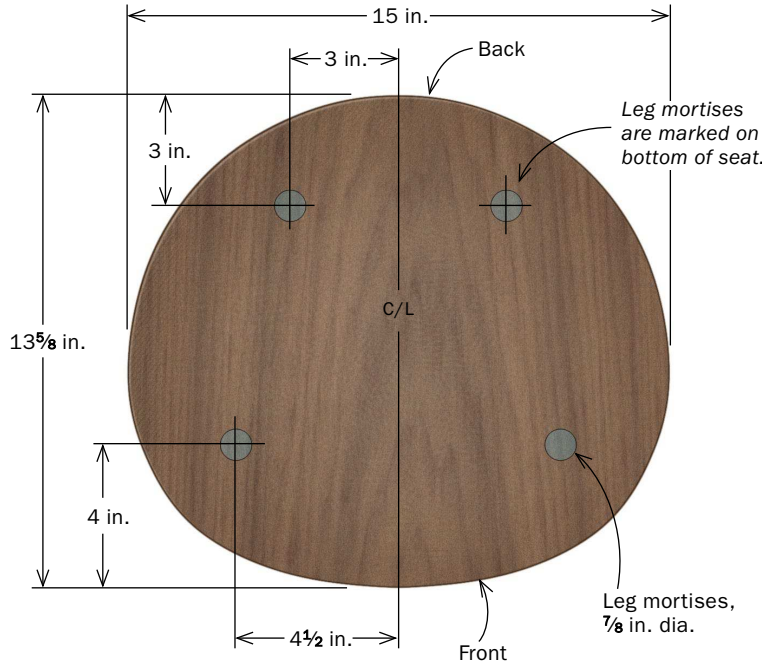
TABLE HEIGHT



BAR/COUNTER HEIGHT



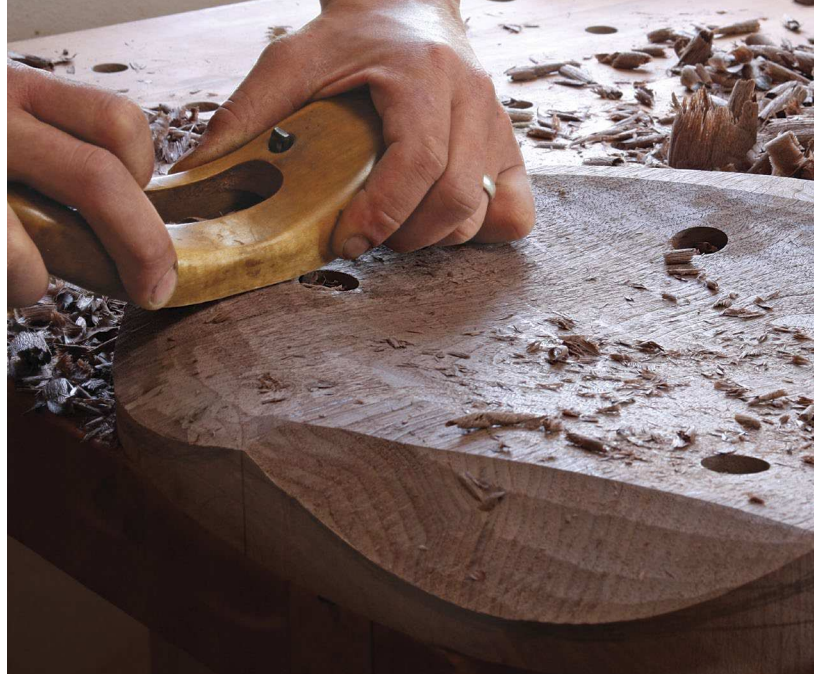
Precise angles are important for the legs. *The drill press lets you use the table to set one angle and a simple ramp jig to set the other. Make sure the seat's centerline is square to the drill-press table.*



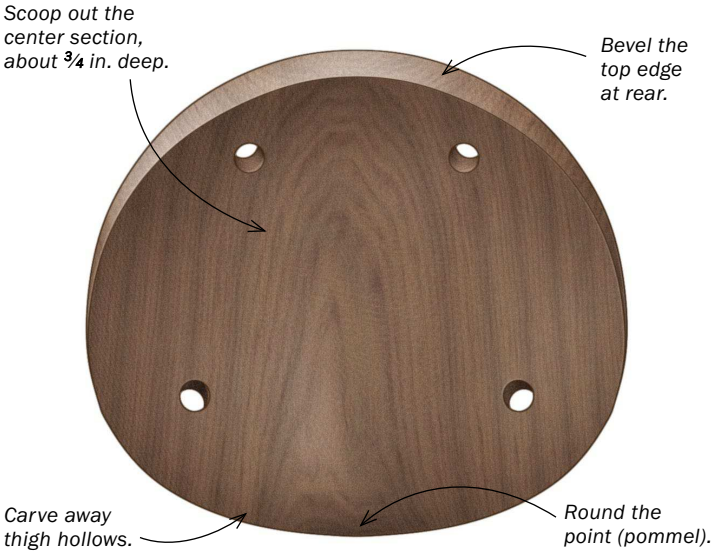
SEAT BOTTOM VIEW

Photos: Asa Christiana; drawings: Christopher Mills

Start with the big hollow. *Following penciled guidelines, work side to side with the travisher, always toward the center. Stay away from the guideline at the rear of the seat until you have reached full depth, and then work diagonally back toward the line, taking lighter cuts.*



Now the two thigh hollows. *Draw guidelines on the front edge, and work toward the center again. Use the travisher to knock down the high area between the two last steps, creating smooth transitions from back to front and side to side. Sit on the seat to check it for comfort.*



TOP VIEW

See Handwork on p. 74 for tips on using the travisher.

Top edges last. *Use a spokeshave to clean up after the travisher, thinning the edges and smoothing the surfaces as desired.*

The seat blank can come from one solid piece or can be glued up. My first step is to mark and drill the leg holes using a ⅞-in. brad-point bit. To guide the drilling, I use a simple template, setting up the angled holes using a bevel gauge. Pay very close attention as you drill. You want the legs spreading toward the outside of the seat, not the inside!

Shaping the seat: It's where the fun starts

The shaped seat is the heart and soul of this project, and it should be not only pleasing to the body, but also to the eye. I start with the top. The overall goal is for the hollow to flow from its deepest area in the back, getting continuously flatter toward the front of the seat until it flows downward at the front edge. The travisher is by far the best tool to do this job efficiently (see Handwork, pp. 74–76). I use a spokeshave to smooth out the travisher work.

The last step is to contour the edges of the seat, top and bottom. I do the bottom edges first, where the shaping is minimal. I use a bench plane to do the rough work, and then finish with a spokeshave and a block plane. I flip over the seat and contour the edges of the top, using the same tools. At this point I don't worry about creating the final surface on the top side; I do that after the leg's tenons are inserted, wedged, and trimmed flush.

Special tools for leg and stretcher tenons

I use straight-grained pieces for the legs, as well as for the stretchers, avoiding inconsistencies like knots or curly wood. To cut the

Make the legs

Narrow the end first. *Fischer uses a drill-mounted cutter (below) to make the tenons. Before using the tool, you need to narrow the end using a spokeshave or drawknife (above). Draw a circle on the end as a guide.*

Pop in a stop. *The cutter makes 3-in.-long tenons—too long for this stool—so Fischer inserts a dowel into the cutter to act as a stop.*

⅞-in. Veritas Power Tenon Cutter
LeeValley.com
$94

leg tenons I use the Veritas Power Tenon Cutter, which cuts the tenon and a round shoulder. The goal is to have ½ in. to ¾ in. of the tenon poking out of the seat before wedging.

After cutting the tenons and inserting them in the seat, I locate the stretchers on the legs using a simple string trick to mark the mortises and their angles. Then I measure to the outside of the legs at the mortise locations—adding ¾ in. to each end—to get the stretcher length.

I drill the mortises for the front stretchers first. I set the drill-press table to match the splay angle of the legs (8° on this stool), and use a ⅝-in. brad-point bit to drill all the way through each one.

I don't like the look of a round shoulder on the stretchers, so I use a different tenon cutter for them—the Veritas Tapered Tenon Cutter. You spin it by hand, and it works like an oversize pencil sharpener, creating a long, tapered shoulder with a straight tenon at the end.

When the tenons are about ¼ in. extralong at each end, dry-fit the stretcher in the legs and see if the leg tenons will go into the seat. You are looking for some tension on the legs as they go into their seat mortises, so when someone sits on the stool later, the legs won't want to spread any farther. Trim the stretcher shoulders as needed by cutting deeper with the tenon cutter.

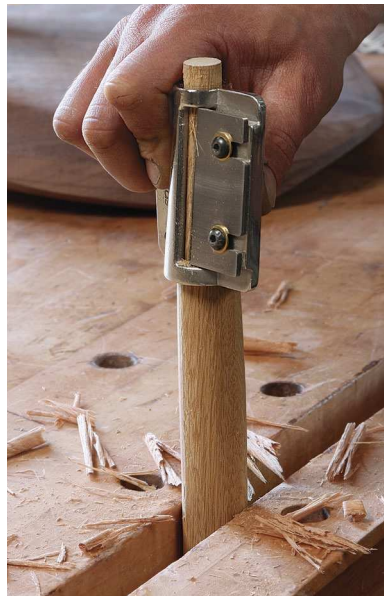
This stool has angled side stretchers. Again, I use the string trick to locate the mortises and to drill them at the correct angle. To drill the last two stretcher mortises, I dry-fit all four legs, plus the front stretcher, and use a hand brace and a very long ⅝-in.-dia. auger bit to reach through the rear mortises all the way to the front legs. This method guarantees perfectly aligned mortises for the side stretchers. I twist the rear legs as needed to line up the drill with the spots I marked on the front legs, then drill away.

Tenoning tips. *The cutter has a built-in level, so level the workpiece in the vise, watch the cutter, and you'll make a straight tenon. Go slowly until the blade is cutting, and when the cutter bottoms out, let it come to a full stop before withdrawing it.*

Add the front stretcher

Drill for the stretcher. *Loop a string around the legs at the desired stretcher location and mark the center points of the mortises. Then draw a line on the front of the legs to get the stretcher angle. Tilt the drill-press table to the angle on the face of the leg and drill the mortises.*

Rough-shape the stretcher now. *Fischer uses a different tenon cutter for the stretchers (below). Before it will work, you need to taper the ends of the stretchers. Again, draw a circle on the ends to guide you.*



Shape the tenon with hand power. *The cutter leaves a long, tapered shoulder, and forms a straight tenon as you advance it like a pencil sharpener.*

⅝-in. Veritas Tapered Tenon Cutter
LeeValley.com
$38

Test the fit. *Fit the stretcher into the front legs and try to insert the legs into the seat. You want the stretcher shoulders to be a little bit too far apart, so the leg tenons are a bit difficult to insert, but not too hard. The same rule applies when sizing the side stretchers.*

As before, I make the stretchers to fit and cut their tenons using the Veritas Tapered Tenon Cutter.

Assembly and finishing touches

Now's the time to take the legs from square and bulky to beautiful. I use a bench plane to create an octagon, and do the final shaping with a spokeshave.

After that, I dry-fit the entire stool, and mark the wedge slots in the ends of all of the tenons. This is a good time to make sure the stool goes together well and it's also a good time to mark the orientation of each leg and stretcher so there is no head-scratching when you have glue in the mortises. Last, I mark the leg tenons where they enter the underside of the seat to show

Side stretchers complete the base

String trick again. *Place the strings for the side stretchers wherever they look good to you, and line up a bevel gauge with the strings. Mark the mortise centers as before, as well as the drilling angle.*

Rear mortises on the drill press. *Use the bevel gauge to angle the table of the drill press, and drill the rear legs for the side stretchers.*

how deep the wedge slots need to go. I cut the slots on the bandsaw, but a handsaw works just as well. To keep the wedges from splitting the seat, cut the slots perpendicular to the grain of the seat. To be sure the wedges go all the way down in the all-important leg tenons, I widen the ends of the slots slightly, to about ⅛ in. The slots in the stretchers are just a simple sawkerf. I use straight-grained hardwood for the wedges, cutting them on the bandsaw at roughly 3°, and fine-tuning their width with a handplane.

For the assembly I use Titebond III, which offers more working time than standard yellow glue. I assemble the legs and stretchers first. Then I add the seat. I place the stool upside down across my thighs or a couple of 2x4s with a moving blanket on top so that I

Break out the bit. *Getting the final stretcher mortise angles right is tricky, since the front legs can't turn now. Fischer solves the problem by extending a long auger bit through the rear mortises and turning the rear legs as needed to line up the bit for drilling the mortises in the front legs.*

Bring it all together

Shape and slot the legs. *Before assembly, make the square legs round. Fischer uses bench planes (above) and a spokeshave for this, following circular guidelines on the end of each leg. Then he dry-fits the stool to mark the shoulders of the joints. Fischer uses a bandsaw to cut the wedge slot right to the shoulder line (right).*

Wedge the stretchers first. *Glue and assemble all the joints, and clamp along each stretcher as you wedge it. Apply glue to the wedges and drive them home (above). Finally wedge the leg tenons (left), and trim all the tenons flush after the glue dries. When cutting the legs to final length, Fischer levels the stool with wedges to mark them (below).*

can support the top without damaging it, while leaving room for the leg tenons to poke through.

The leg tenons enter the seat at a slightly misaligned angle until they are all the way home, so driving in the legs can be tricky. To avoid breaking a stretcher tenon, I drive in the legs evenly by alternating moderate mallet blows on each. When the shoulders of the leg tenons have bottomed out in the seat, I start wedging the stretchers. I finish by driving the wedges into the leg tenons in the seat.

After letting the glue dry overnight, I saw off the tenons and trim them flush. I use a broad gouge for final trimming, working toward the center of the tenon.

Last, I use cabinet scrapers to smooth out the seat. How smooth is a matter of taste. Sometimes I leave the travisher and spokeshave marks; other times, I sand to 220 grit. The last step is to level the legs, cutting them to final length in the process.

I prefer an oil finish on my chairs and stools. It gives a natural, rustic look and feel, and is easy to repair. □

Fabian Fischer is a full-time furniture maker in Germany, where he also teaches. Go to fabianfischerhandcrafts.com for more information.

Make Your Own Bandings

Once you master the basics, the only limit is your imagination

BY FREDDY ROMAN

Appearing light on its feet, almost as if standing on its tiptoes, Federal-style furniture relies on symmetry, tapered and turned legs, simplified moldings and carvings, and above all stringing and banding, or to give the latter its correct name, *tarsia a toppo*. This technique, invented by Italian craftsmen during the Renaissance era, can be roughly translated as block marquetry. At its simplest it is nothing more than stacking, cutting, and gluing woods of contrasting colors, thicknesses, and widths to create geometric patterns.

Here I'll demonstrate how to make such bandings using shop-made jigs and basic woodworking tools. It's a pretty straightforward process. Once you perfect the fundamental skills, you'll have the know-how to make your own custom bandings.

A simple but striking banding

I'll start with a simple but eye-catching banding that has a center core of alternating black and white squares, and several layers of veneer glued on each side to hold the center chips together and give the banding the desired thickness.

The first step is to make an L-shaped banding press by gluing and screwing together two pieces of MDF, each 15 in. long and about 3 in. wide. Cover the two inside faces with clear packing tape to keep glue from sticking to it. Then cut some 2-in.-wide by 12-in.-long strips from 1/32-in.-thick holly veneer and 1/16-in.-thick black dyed tupelo veneer. You want the finished thickness of the blank to be between about an inch and close to the maximum depth of cut on your tablesaw.

I use Old Brown Glue, a liquid hide glue, for all my bandings. Glue one face of the veneers and put them in the press a few layers at a time, pushing the edges flush against the side of the press. Put some weight on top to keep the glued layers flat until you get all the pieces into the press. Make sure that the bottom and top layers are not the same color. To clamp the veneers, start working from the center out to the ends.

Cut apart the brick and rearrange the parts

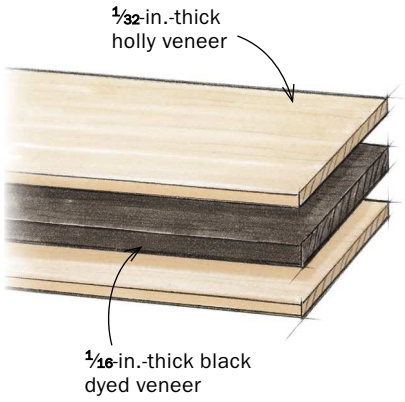
This interim step in making banding is called a brick. When it's dry, scrape the glue off the edges, joint one edge square, and rip the opposite one parallel. Next crosscut 1/8-in.-thick chips on the

Birds of a feather. *Use the basic techniques illustrated in this article to create a variety of designs.*

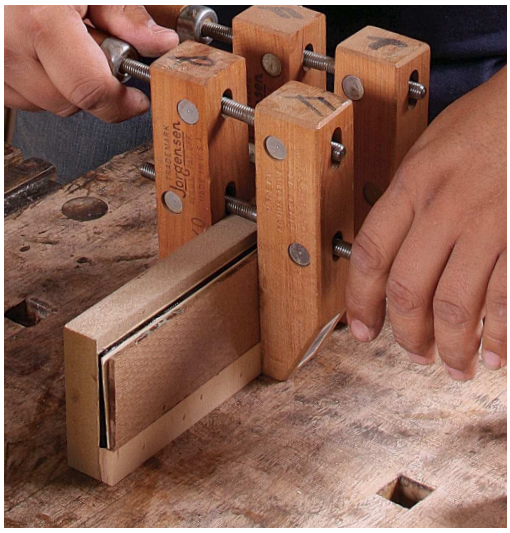
A basic banding

This simple banding has an eye-catching core of alternating black and white squares.

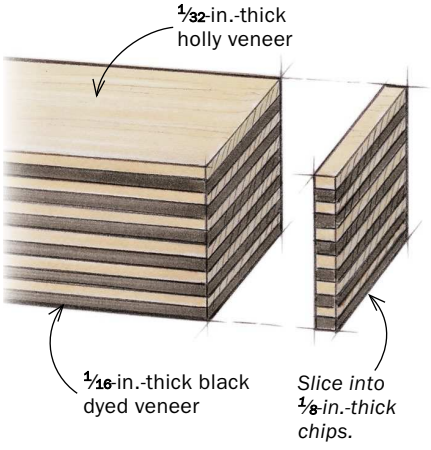
1. MAKE THE OUTER LAYERS AND THE CORE



Simple jig for glue-ups. *Roman coats the outer layers of veneer with liquid hide glue, then uses an L-shaped MDF jig to keep the parts aligned when clamping.*



Make a brick. *Glue up a stack of black and white veneers, and clamp them between a caul and the fence of an assembly jig (right) to form a brick. Then scrape the dried glue off one edge and joint it with a handplane (below right).*



Chips from a brick. *After ripping the brick to width, crosscut 1/8-in.-thick chips from it. Use a zero-clearance insert, a stop block, and the miter gauge.*

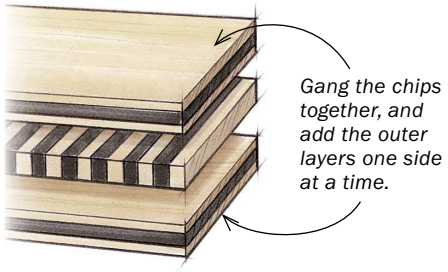
tablesaw. You now need to make an assembly board. Glue and nail a ½-in.-thick by 1-in.-wide fence to the long edge of a piece of MDF that slightly exceeds the longest length of banding you'll need. Nail on a stop block at one end, exactly 90° to the fence. Lay three or four chips on the assembly board, pushed against the fence with the first one against the stop block. Make sure you have contrasting colors where two chips meet. Use a block to push the chips tightly together and then clamp the block to the jig. Connect the chips using veneer tape. Once the tape dries (30 seconds), remove the chips from the assembly board and tape three or four more together. When you have enough to make the length of banding you want, tape the groups into one long piece.

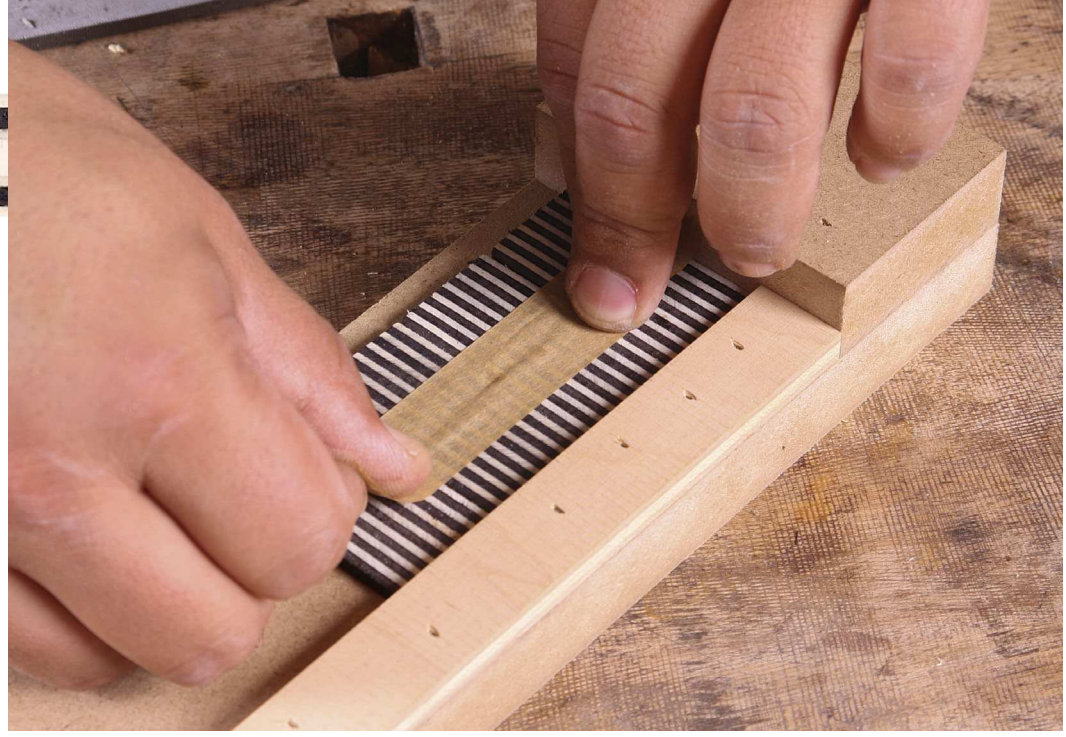
Flip the line of chips on the assembly board so that the taped side is facedown. Brush glue on the exposed side, set the adjacent white veneer on top, then glue on a layer of black veneer followed by another white layer. Put a caul on top and clamp them together. Once the glue dries, wet and peel off the tape from the other side of the chips, and repeat the veneering on that side. When the glue is dry, clamp the package in a bench vise between two long cauls and joint one edge with a handplane.

In banding terms, you now have a log that is ready to be bandsawn into strips of banding. You want the banding to be slightly thicker than the depth of the recess it will fit into, but the minimum thickness I

Photos: Mark Schofield; drawings: Dan Thornton

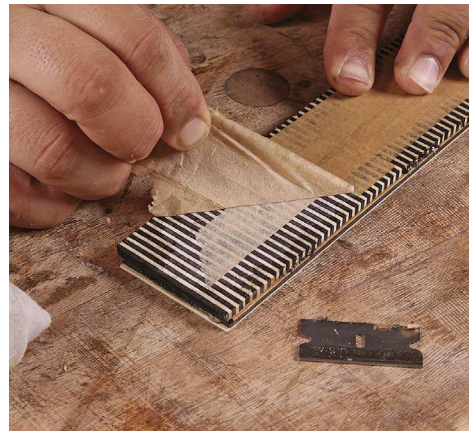
2. ASSEMBLE AND SLICE INTO BANDINGS





Tape the chips in groups. *On an assembly board with an L-shaped fence, use veneer tape to tightly bind three or four chips together.*

Add the outer layers. *Flip the taped side down and apply glue to the other side of the chips and to the first of the outer layers of veneer.*



Off comes the tape. *Now that the outer layers of veneer are holding the inner core of chips together, you can dampen, scrape, and peel away the veneer tape on the exposed side of the chips.*

work with is 1/16 in. As long as your bandsaw is cutting straight and true, there is no need to rejoint the log after each cut.

Make a two-tier checkered banding

Using the L-shaped assembly board, glue together two pieces of veneer, 1/16 in. thick by 2 in. wide by 12 in. long, one white and the other black. Scrape off any glue squeeze-out after it's dry and joint one edge straight. I cut this piece by hand because the smaller chips easily can get sucked down by the tablesaw blade. As a bonus, handsawing gives the banding a more authentic antique look, which I like.

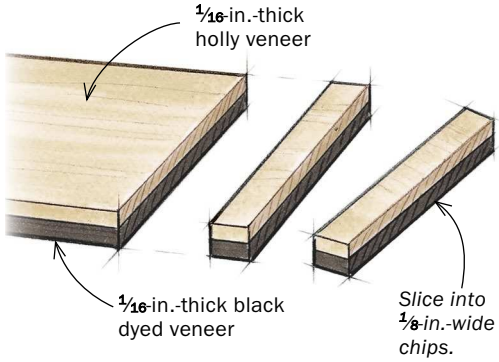
To make the necessary bench-hook-type sawing board, start with a piece of poplar

Saw up the log. *After adding outer veneers to the other side of the chips, scrape and then joint one edge. Now take this "log" to the bandsaw and cut strips of 1/8-in.-thick banding.*

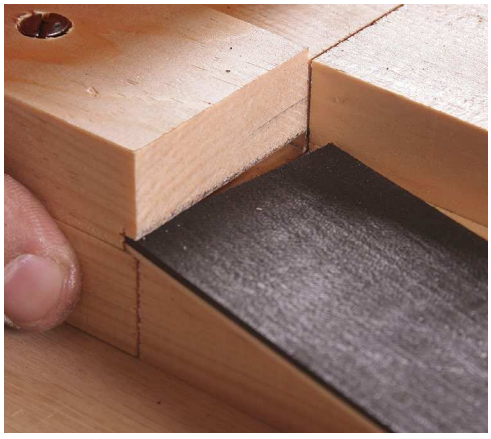
Add a checkerboard core

A fun twist on the basic banding, this design gets its punch from slicing and flipping the core to create a checker pattern.

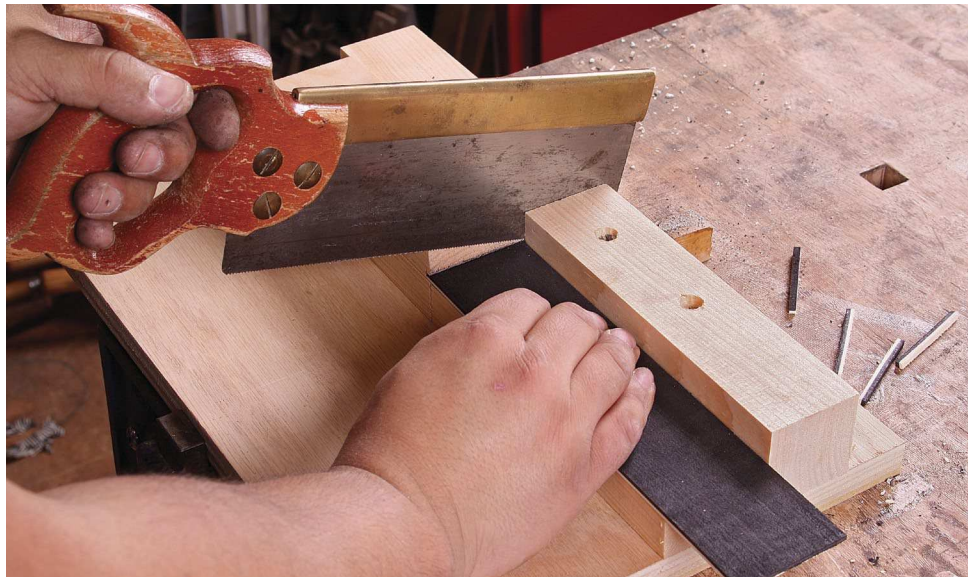
1. CUT THE CHIPS



Black and white. *The core of this checkered banding starts with a piece of black veneer and a piece of white veneer glued together.*

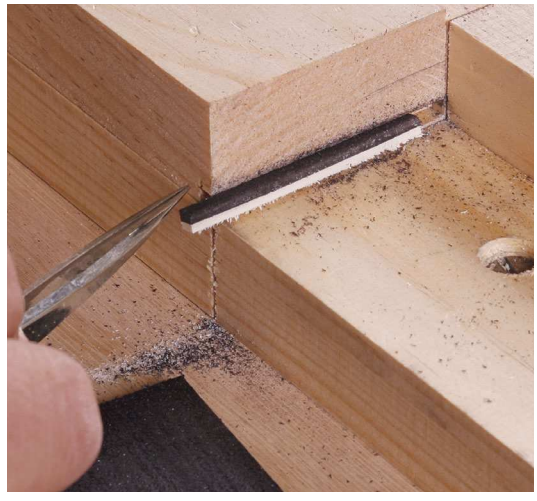


Cut the core by hand. *On the stop block of the sawing board, create a rabbet whose width matches the desired width of each chip. The sawing board should guide the saw tightly and keep each cut square.*



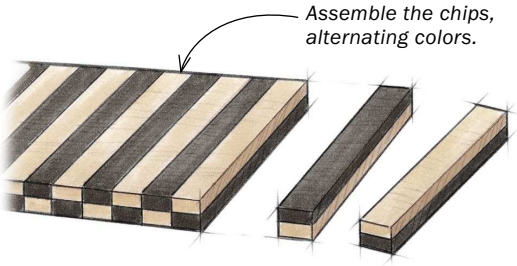
or other softwood, roughly 2 in. square by 12 in. long. Crosscut it in half at exactly 90° and screw one piece near the top left-hand corner of a piece of ¾-in.-thick plywood that is 8 in. long by 12 in. wide. Make certain the piece is 90° to the edge of the plywood. Next, bore two slightly oversize holes in the other 6-in. piece, which will allow adjustment of the sawkerf and any adjustment for 90° if necessary.

Now put the saw you'll be using in between the two pieces and screw down the second piece. This creates a zero-clearance sawkerf. To support the veneer core, add two more pieces half the thickness of the fence. Using the saw as a guide, butt the pieces against it and the fence, again making one section adjustable. Last, screw a rabbeted stop block to a core support block so that it lines up flush with one side of the sawkerf. The height of the rabbet should match the ⅛-in. thickness of the core veneer, and



Use tweezers. *A tight-fitting stop block minimizes tearout, but you may need to pry the chip out of the rabbet after each cut.*

2. MAKE THE CORE



Taped in groups. *Line up 14 to 20 chips on the assembly board (lengths of about 2 in.), making sure that the colors alternate and that you have opposite colors at each end. Cinch the chips together with a clamped block. Then apply veneer tape to one side of each group of chips.*

Tape groups together. *Form a line of chips that matches the desired length of the banding and apply tape down the whole length.*

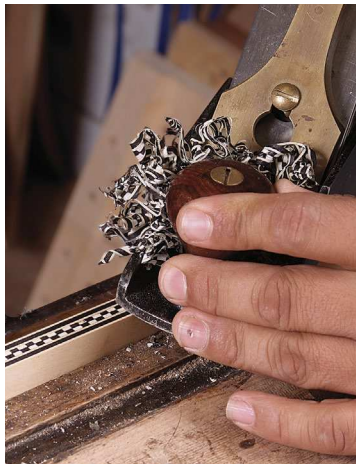
Apply outside veneers. *As with the first banding, glue outside veneers first to the non-taped side, and when dry, remove the veneer tape and veneer the second side.*

the depth should match the desired ⅛-in. width of each chip. The rabbet will also help reduce any tearout from the saw.

Crosscut the log into small chips and line them up on the assembly board, alternating colors. Push them all flush against the fence and use a square block to push them against the stop block, clamping the block in place to hold them there. Next, tape them together with veneer tape, put a caul on top, and let it dry for 10 minutes. Assemble as many of these sections as needed to make the desired banding length. Just make sure that you don't end up gluing the same color chips together.

As with the first banding, apply the outside veneers to the non-taped side, then when dry remove the tape and veneer the opposite side. The last step is to remove the log from the clamps, joint an edge, then rip the bandings on the bandsaw. □

Freddy Roman is a period furniture maker and restorer in Littleton, Mass. (periodcraftsmen.com).



Ready for banding. *Scrape and joint one edge of the log before sawing it into banding.*

SOURCES OF SUPPLY

VENEERONLINE.COM

1/16-in. thick black dyed tupelo, 1/32-in.-thick black dyed anigre, 1/16-in.- and 1/32-in.-thick English sycamore*

CERTAINLYWOOD.COM

1/16-in.-thick hard maple*

EBAY.COM

Good source for a variety of veneers

**Can be used as a substitute for holly*

gallery

JASON VAN DUYN
Raleigh, N.C.

"This is the only mulberry burl I have come across that had any size to it, so I wanted to make a larger piece to demonstrate its rarity." To create the mirrorlike finish, Van Duyn used nitrocellulose lacquer, hand-rubbed to an ultra gloss. For more of his hollow forms and furniture, go to vanduynwoodwork.com.

RED MULBERRY BURL, 10½ DIA. X 9¾H

DONALD BYRKETT
Oxford, Ohio

A hobbyist, Byrkett began this glass-topped table in an apprenticeship class with Michael Fortune at the Marc Adams school, developing the design, steam-bending the ash, and cutting the joinery under Fortune's guidance. He did the final shaping and finishing at home. The top is clear, tempered glass with a flat polished edge.

ASH AND EBONY, 48 DIA. X 30H

Photo: Tom Collins

STEVEN WHITE
Bishop, Calif.

White estimates he's made nearly 100 dressers in his woodworking career. "For me, it's mostly about the drawer fronts. I look for unusual boards, ones that tell a story." Three maple boards with brown streaking are the focal point of this low dresser.

WALNUT, QUILTED MAPLE, AND AROMATIC CEDAR
22D X 72W X 34H

MACKENZIE LEROUX
Ottawa, Ont., Canada

LeRoux says this credenza's unique leg structure was loosely based on the wings of a Supermarine Spitfire, a fighter aircraft used during the World War II era. The cabinet is attached to the leg structure with dowels and wedged through-tenons. LeRoux said he didn't want any of the hardware to protrude from the cabinet, so "I spent a lot of time working on integral door and drawer pulls."

BEECH, TEAK, AND MAPLE, 14D X 29W X 55H

Photo: David Welter

PETER MARCUCCI
Woodbridge, Ont., Canada

An enthusiastic student of the work of Charles Rohlfs (1853–1936), Marcucci has re-created several pieces by the lesser-known Arts and Crafts maker. "The artistic and somewhat eccentric nature of Rohlfs's work appeals to me." This swivel desk came about after Marcucci had the chance to photograph and measure an original (ca. 1898). Before attempting construction, he built a mockup out of plywood and reproduced many of the carvings in basswood.

AFRICAN MAHOGANY, 24D X 25W X 57H

GARY CANNING
Sunapee, N.H.

Canning built this demilune table in a class taught by Vermont furniture maker and *FWW* contributing editor Garrett Hack. He said the class was a joy, but "jatoba was a very difficult wood to work with. Garrett warned me about it; I should have listened." Asked how long it took to build, he said "I guess 60 to 120 hours, but who counts? I was having fun."

JATOBA WITH HOLLY AND EBONY INLAY, 13D X 32W X 32H

Submissions

The gallery provides design inspiration by showcasing phenomenal work. For submission instructions and an entry form, go to FineWoodworking.com/rg.

TAL MAOR
Kibbutz Ein Harod Ihud, Israel

A carpenter by trade, Maor took a two-year course at the Tree of Knowledge woodworking school in Gallilee, which teaches furniture making in the way of James Krenov. Afterward, Maor decided to take what he'd learned and design a chair. "This was the first chair that I ever built. It was a wonderful, challenging journey. I also did the upholstery and it is very, very comfortable. The only problem is my wife never wants to get up."

ASH, 20D X 24W X 35H

Photo: Nitsan Hafner

EDWARD DARCHUK
Loveland, Colo.

This whimsical grandfather clock took two years to design and build. "The clock mechanism is made out of wood and keeps precise time as long as it is wound every 13½ hours." There is also a hidden compartment. More photos can be seen at eddarchuk.com.

VARIOUS WOODS, 20D X 28W X 81H

Photo: Jafe Parson

AMY COSTELLO
Provo, Utah

The curves in this desk were inspired by the curved back of a Windsor chair. "The desk is designed to break down into small parts (left and right side, center panel, and top) to make transport easy, especially up and down staircases." A notch in the back of the desktop allows computer cords to fall neatly behind the desk.

WALNUT AND CURLY MAPLE,
27D X 57W X 29H

Photo: Samantha Staples

MAINE WOOD 2016

Here are three of the many fine pieces shown at this year's Maine Wood juried exhibition, held from January to April at the Messler Gallery at the Center for Furniture Craftsmanship in Rockport. To see more, go to woodschool.org.

KEVIN RODEL
Brunswick, Maine

While the carved and textured top may draw all your attention at first, this sideboard has other details worth noting. The stretcher has a dyed rope and ebony accent; there are five drawers in the case, and it has a frame-and-panel back. "The top (left) is modeled after Maori patterns from New Zealand."

AFRICAN MAHOGANY AND BLEACHED ASH
17D X 60W X 33H

DAVID LAVALLE
Bar Harbor, Maine

LaValle made this lamp for a client who wanted a series of lamps with handmade paper she had purchased in Japan as the common element. "I designed something light and fresh, with simple details."

CHERRY AND WALNUT, 12D X 12W X 48H

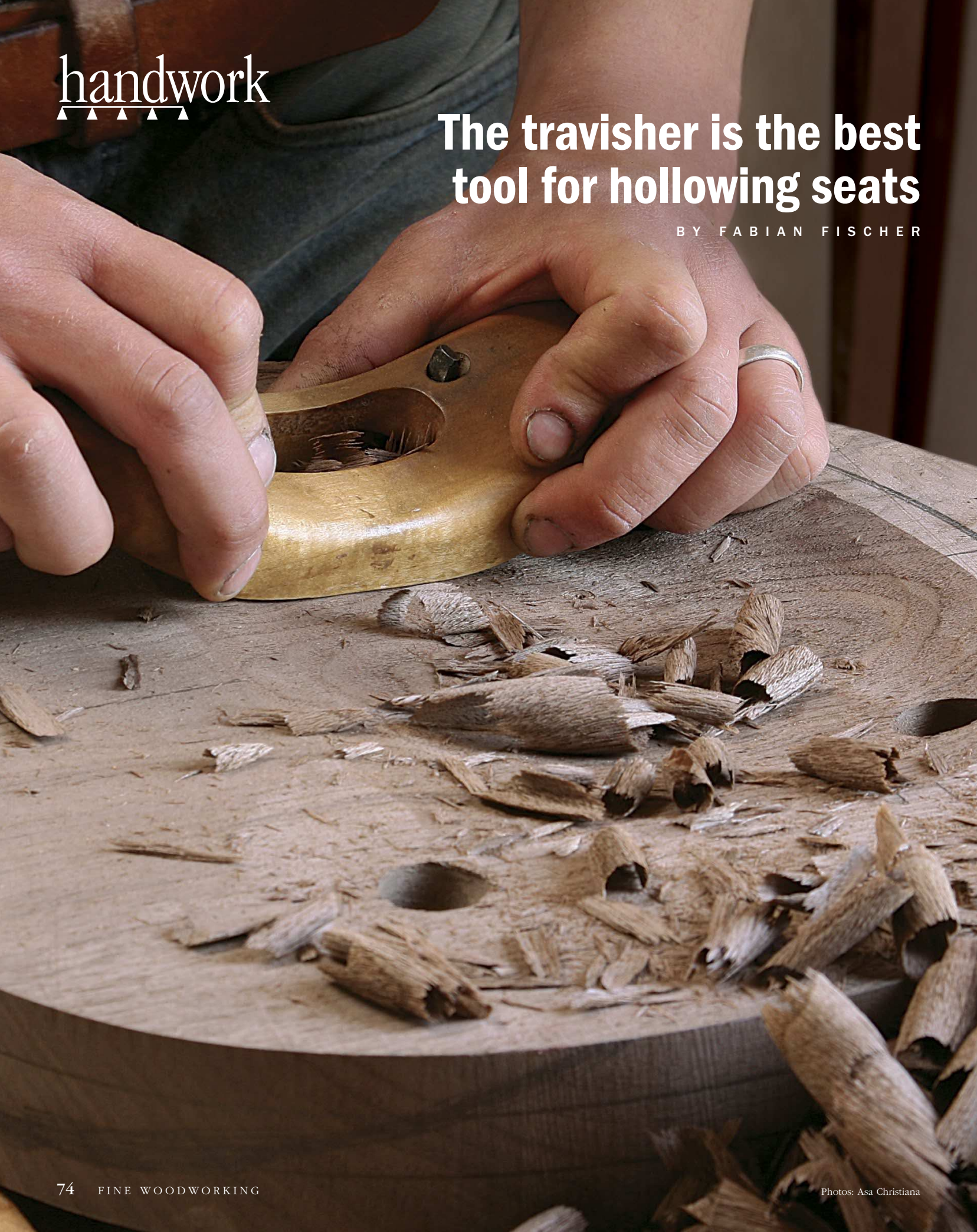
CHRISTOPHER JOYCE
Stonington, Maine

Designed to showcase the beauty of the burl, Joyce's turned vessel also contains a secret: When you lift the lid, there is a threaded African blackwood box attached to it. "The finial on the top is a variation on a handle I use on my jewelry boxes. It made me think of the branches of a tree."

BLACK ASH BURL, AFRICAN BLACKWOOD
5 DIA. X 11½H

The travisher is the best tool for hollowing seats

BY FABIAN FISCHER



Photos: Asa Christiana

To make a seat comfy you can add padding and upholstery, but that won't work for the kinds of chairs and stools I make (see pp. 56–63). To make curvy wood seats that fit the body and please the eye in all sorts of woods, I turn to the travisher, a traditional chairmaking tool. It is basically a big wooden spokeshave with a curved sole that lets you take fine or heavy cuts depending on how you hold it. If the blade is sharpened well, the chips come away in bunches, making it possible to hollow a seat in a half hour. The process is very tactile and pleasurable, and you get a pile of beautiful shavings instead of a noseful of dust.

Secrets of success

Like the adze and scorp, the travisher is best used across the grain, whether perpendicular to it or diagonal, and usually is pushed toward the deepest area in the center of the seat. The tool doesn't respond well to force, so hold it lightly in your fingertips. Push the travisher away from you, letting it ride on the tip of the sole, and make some strokes toward you without letting the blade cut at all. Now as you make more strokes, angle the travisher slightly downward until the blade catches. I recommend light

Work fast or work precise. *Hold the travisher lightly in your fingers, with the front of the sole touching the workpiece. Then lever it up or down to take heavy cuts (opposite) or very light cuts (left) with better control and a smoother surface. Work across the grain.*

TWO TO CHOOSE FROM

Fischer tried a number of new models of travishers and these two stood out. Both feel great in the hands and are easy to control. And both have quality blades, lapped to a mirror polish on the all-important back side, which is hard to do without some experience.

MURSELL TRAVISHER
$140
travisher.com

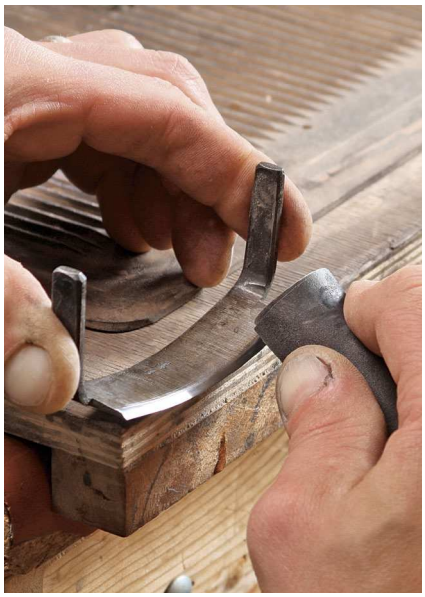
The less expensive of the two is made by James Mursell in England. The blade adjusts easily with two set screws, letting you get set up for deep and fine cuts. Start with the blade sticking out about 1/16 in., then keep extending it until you are happy with the cutting action. This is a great tool for beginners who will be doing all of their hollowing with one tool.

CLAIRE MINIHAN TRAVISHER, STANDARD SWEEP
$245
cminihanwoodworks.blogspot.com

If you plan to build a lot of stools and chairs in the future, consider investing in a travisher made by Claire Minihan, based on a design by chairmaker Peter Galbert. The blade is not adjustable, but you get all of the adjustability you need by tilting the tool forward and back. It can't take as heavy a cut as the Mursell, but when you take very fine cuts, it leaves an almost finished surface. Also it has a curved brass plate on the sole to prevent wear. It is available in two different curves (called "sweeps"), with the deeper standard sweep being the most versatile.

TUNE-UP TIPS

To put a razor edge on the travisher blade, all you need is a ¾-in.- to 1-in.-dia. dowel and a few grits of wet-or-dry sandpaper. The dowel is slotted so you can wrap the sandpaper around it.



Hone with a dowel. *Keep the dowel flat on the bevel and slide it from side to side. Start with 600-grit sandpaper, then move on to 1,500 and 2,500 grit, removing the burr after each grit.*

cuts at first, moving the tool rapidly and lightly across the work. Once you get the hang of it, you'll be able to take heavier cuts with more force. When you reach the back of the hollow and want the tool to stop cutting, you just angle it upward again.

How to sharpen the curved blade

It's not hard to sharpen a travisher blade. I use a fat dowel and wet-or-dry sandpaper (600, 1,500, and 2,500 grit) for the bevel, and my waterstones (1,000 and 6,000 grit) to remove the burr created while honing. It also helps to color the bevel with a felt-tipped marker so you can track your progress easily.

I work up through the grits, honing the bevel, then removing the burr with each grit. My last sandpaper grit on the bevel is 2,500. After removing the burr, I then hone the bevel quickly with honing paste on a piece of leather wrapped around the dowel. The back gets one last pass on the waterstone and I'm done. The blade cuts like butter. □

Fabian Fischer makes hand-shaped chairs and stools in Freiburg, Germany.

Remove the burr on waterstones. *With the back of the blade flat on your waterstone, move it back and forth in a curved motion. Then go back to the bevel with finer sandpaper, remove the burr on a finer waterstone, and so on.*

Grind as needed. *Angle your drill-press table and add a sanding drum with medium-grit paper. Slide the blade side to side to get an even bevel.*

Set the blade and test the cut. *Reinsert the blade (above) and tighten it in place. Start with the Mursell's adjustable blade sticking out about 1/16 in. from the sole, and then take some test cuts in scrap (left) to check your setup.*

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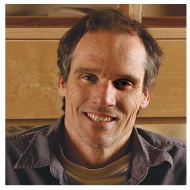
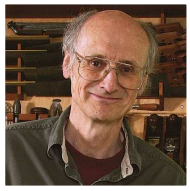
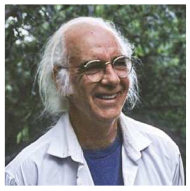
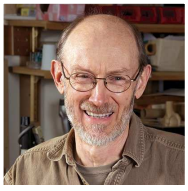



Right from the start, when Paul Roman assembled the first issue of the magazine in his attic in 1975, *Fine Woodworking* has operated more like an academic journal than a typical magazine. Instead of having journalists write about woodworkers and what they build, we've had the woodworkers themselves explaining how they work. Our editors have helped with the writing—and we take the photos—but the ideas, techniques, and designs have come directly from the authors. Their hard-won and generously shared knowledge has been the strength of the magazine for 40 years.

Our contributors have run the gamut from the deeply trained to the entirely self-taught, from machine mavens to hand-tool junkies, from period-reproduction absolutists to makers whose furniture verges on sculpture. Putting a premium on personal expertise, we've welcomed all those points of view, often presenting directly opposing approaches to the same problem.

In this final installment of Looking Back, we've gathered photos that represent the rich array of opinions and techniques embraced by our authors. We've also lined up a sampling of contributors on this page. How many do you recognize? To see if you can name them all, go to FineWoodworking.com/extras.

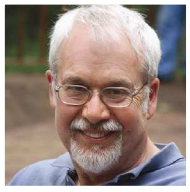








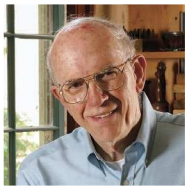


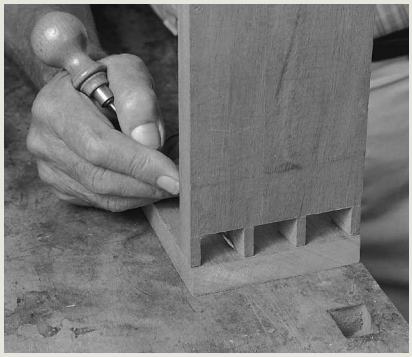












Diverse takes on the dovetail. *In the hands of Christian Becksvoort (left) and Tage Frid (above), the high quality of the final joint was secure, but the two masters approached through-dovetails from opposite directions. Becksvoort cuts the tails first and marks the pins from them; Frid started with the pins.*

The best way to cut dovetails

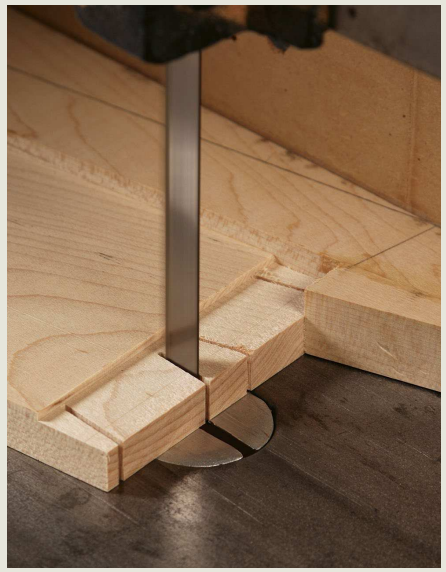
TAILS FIRST, OR PINS? BY HAND OR MACHINE?

You can find dovetails right in *Fine Woodworking*'s logo, and there's doubtless been some mention of them in every issue we've published. For all the words we've devoted to dovetails, however, we certainly haven't hammered out a consensus on how best to cut them. Two of our most prominent contributors, Tage Frid and Christian Becksvoort, fundamentally disagreed on the subject. Frid, the product of an apprenticeship in Denmark, was an advocate for cutting the pins first and scribing the tails from them. Becksvoort, the son of a German cabinetmaker, is equally adamant about cutting the tails first and scribing the pins from them. In a single article in issue #116, the two titans went pins to tails on the topic.

The controversy doesn't end with the order of pins and tails, of course. We've featured proponents of cutting them by hand, on the tablesaw, on the bandsaw, with a router (with or without a jig), and even on the radial-arm saw. Many others blend hand tools and machines in the process.

Then there are the mind-bending variations on the dovetail our authors have advocated, from the Bermudan cogged dovetails described by James Bump in issue #35 to the hawk's-nail dovetails by Kintaro Yazawa in issue #191.

Dovetails should be cut by hand... *Many of our authors, whether they use Western or Japanese tools, assert that cutting dovetails by hand is not just a mark of fine craftsmanship but also the most efficient and flexible approach.*



...unless they're made by machine*. Makers as dissimilar as Steve Latta (left), who concentrates on period-inspired work, and Stephen Hammer (right), who builds custom contemporary furniture, agree that machines have a primary role in creating the dovetail joint.*

Photos, except where noted: staff

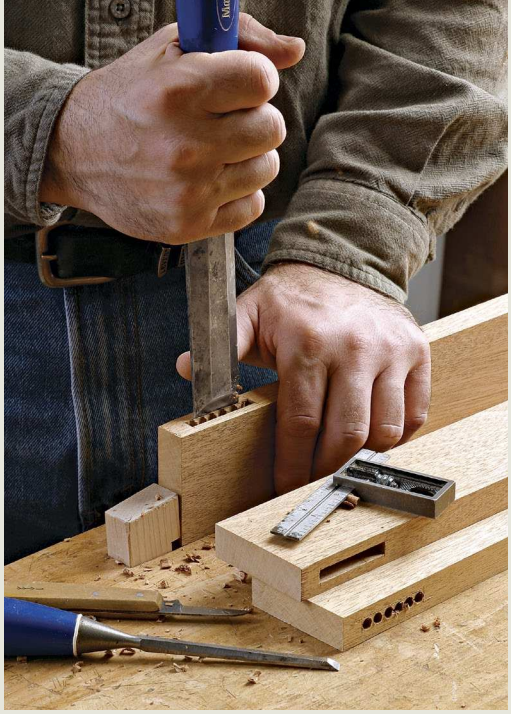
By far the best way to build furniture

AFTER 256 ISSUES, WE HAVEN'T QUITE REACHED UNANIMITY

Most woodworkers would agree that the mortise-and-tenon joint is the gold standard for frame joinery. But that doesn't mean they agree on the best way to create it. We've published techniques for mortising that range from the brace and bit to the horizontal mortiser and from plunge routers to hollow-chisel mortisers.

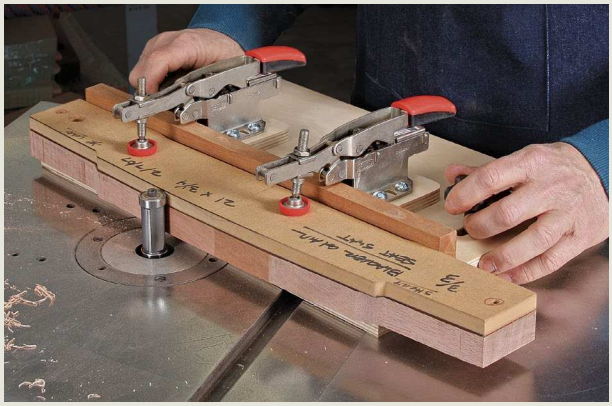
And even if most of our authors find the traditional mortise-and-tenon indispensable, they still avidly explore alternative joints and joint-making equipment. Since the early 1980s they've embraced the biscuit machine, finding it particularly fast and useful for working with sheet goods, but also fiendishly flexible for solid-wood applications. More recently, the Festool Domino, which combines a biscuit-machine format with a bit that can cut deep mortises, has begun to revolutionize solid-wood joinery by blending the speed and portability of the biscuit machine with the strength of a traditional mortise-and-tenon joint.

The best tool for a job can't often be objectively quantified—but that hasn't kept our authors from arguing for their favorites.



Hand vs. hollow chisel. *There's broad agreement on the primacy of the mortise-and-tenon joint for solid-wood applications, but no such uniformity in the debate about how to cut it.*

Biscuits, dowels, and Dominoes. *Biscuits may be derided by some as corner-cutting, but noted craftsman Michael Fortune finds many uses for them. And dowels, though long spurned as underpowered, are found in cabinets made by Jim Budlong (above) and many others trained by James Krenov. These days, the Festool Domino (left) poses a new challenge to traditionalists.*



The beauty of a jig. *For some, woodworking is all about using hand tools and working by eye; but for others, nothing surpasses the delight of producing a great jig.*

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Dream shops large and small. *Harry Van Ornum and Les Cizek built their 3,000-square-foot shop (left) in Fort Bragg, Calif., where they both studied with James Krenov. Matthew Teague made do nicely with 160 square feet in a one-car garage (right).*

Downstairs or outside. *A garage or basement is often the best option for a home shop.* FWW *executive art director Michael Pekovich set up shop in his two-car garage (top), and former associate editor Bill Duckworth has a basement shop (bottom) with easy outdoor access.*

Show me your shop

WORKSPACES AS INDIVIDUAL AS THE MAKERS WHO USE THEM

Woodworkers may be divided by age, skill level, style preference, and whether they take a machine-based or hand-tool approach to the craft, but it seems they all share a fascination with the way other makers set up shop. We often hear from slightly sheepish readers who say that after quickly absorbing the main action in a photo in the magazine, they spend much more time poring over the background, scrutinizing it for unusual tools and machines, clever storage solutions, or simply expressions of personality.

And of course they're curious to know where a maker lives and into what outbuilding, old button factory, or corner of the cellar they've shoehorned their workshop. Most home shops wind up in a garage or a basement, and we've featured many of those. Then there are the lucky makers with freestanding shops designed to suit their woodworking habits. But some of the best work seems to come from surprising spaces, and our authors have also set up shop in a kitchen in Connecticut, an uncooled attic in Texas, a former firehouse in Massachusetts, and a chicken coop in California.

In the woods or on the water. *Windsor chairmaker Curtis Buchanan, who works mostly with hand tools, built a snug timberframe shop (far left) in his back yard in Jonesborough, Tenn. Andy Peklo converted an old Connecticut thimble mill (left) to serve as his home and workshop.*

WOODWORKERS MART

An array of styles

DESIGN AS A SOURCE OF DIVISION AND DELIGHT

Nothing has the potential to divide *Fine Woodworking* readers as emphatically as a discussion of furniture styles and design. A striking contemporary piece on the back cover can elicit hosannas on one side and howls of indignation on another. And an exacting period reproduction might be met with both high praise and indifference. We have tried to present work all along the stylistic spectrum, pieces so well made that they'll silence the critics—or at least divert them with some fascinating techniques.

But for many woodworkers, design is more difficult than any technical challenge. So we've always aimed to feature pieces—even in highly technical articles—that are as notable for their grace of line and proportion as they are for their outstanding craftsmanship.

Fortunately, *Fine Woodworking* was launched into the middle of a renaissance in hand-built furniture, a movement driven by designer/makers like Wharton Esherick, Tage Frid, and James Krenov, and their work and its influence has been evident in the magazine from the start.

Classic to contemporary. *To many readers, reproducing a period secretary like this one by Lonnie Bird (left) is the pinnacle of the craft. For others, designing and building a new classic—like Michael Fortune's No. 1 Chair (right) is the ultimate challenge.*

Stylistic sweet spot. *Shaker-influenced furniture like that made by Maine craftsman Christian Becksvoort (left) appeals to a broad band of the magazine's readership. So does Arts and Crafts flavored furniture (right), like that made by Kevin Rodel, another Mainer, who was once a shopmate of Becksvoort's.*

Fathers of craft furniture. *The middle decades of the 20th century saw a blossoming of handmade furniture. Makers like (from left) George Nakashima, Sam Maloof, and James Krenov set the compass for a resurgence in the field.*

Photos, this page: Michael Fortune (top right); Amanda F. Williams (bottom right)

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Turn oak into lace

BY JONATHAN BINZEN

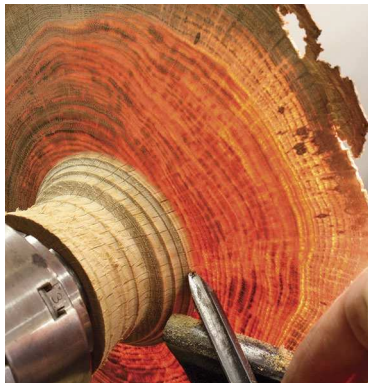
Whether making vessels (see the back cover), or disks like this one, Pascal Oudet works with green wood cut fresh from the log. He buys two to four logs per year, going into the forest during felling or to the log yard to hand select them. Two species of European oak (*Quercus petraea* and *Quercus robur*) have just the attributes he wants—distinct separation between spring and summer growth, and wide, strong medullary rays. Once he begins a disk, to keep it from warping on the lathe and becoming impossible to turn, Oudet works until it is finished—no stopping for meals—which can mean 10 or 11 hours of turning. Afterward he lets the piece dry and deform for several days. Then he sandblasts it, a painstaking process that can take three or four times as long as the turning.

FLATTEN THE FACE

From log to lathe. *After chainsawing a thick disk from the log, Oudet turns a tenon to fit his chuck, then turns the outside face flat.*

Calipers are critical. *As he turns away all but the outside 2mm of the workpiece, Oudet proceeds very slowly, stopping the lathe frequently to check the thickness. Turning away all the waste gradually keeps the piece as stable as possible.*

TURN THIN, THEN SANDBLAST



No going back. *Oudet aims for a very clean surface. Once an area is turned to the thickness he wants, he never goes back. Backlighting helps him assess the thickness.*

It's a blast. *After air-drying for several days, the disk goes into the sandblaster. It can take three days or more of sandblasting to achieve the transparency Oudet is after.*

Photos: Pascal Oudet

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To find out more details or to enter go to: www.oneida-air.com/acs

Lacework in Oak

Most anyone who works with oak quickly discovers that each of the wood's annual rings comprises two distinct layers—softer spring growth and harder, denser summer growth—and that these are crossed by prominent medullary rays, cells that radiate from the tree's pith to its perimeter. For Pascal Oudet, these are not just interesting facts but the foundation of his work in wood. In his barn shop in southeastern France, Oudet starts with chainsawn hunks of European oak and turns vessels with walls just 2mm thick (about 1/16 in.), then sandblasts them until the spring growth is scoured completely away. What's left is a kind of lacework, with just the threadlike medullary rays holding the summer growth rings in place. Oudet's pieces, turned green and deformed through drying, take on hauntingly beautiful shapes and present a revealing new portrait of one of the world's most well-known woods.

—Jonathan Binzen

Photos: Pascal Oudet

How They Did It Turn to p. 86 to see the work that goes into turning a lacework disk.

See and hear about a wide range of Oudet's thin-walled pieces.