

TAUNTON'S **Fine
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- **Oval side table**
- **Fast hinge mortises**
- **Arts & Crafts finish**
- **Amana church bench**
- **Designer's Notebook**



Houndstooth dovetails, p. 52



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- Approximate shipping weight: 294 lbs



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WARNING! †

G0861 ~~\$1645.00~~ SALE \$1250.00

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12" 7-1/2 HP 3-PHASE COMPACT SLIDING TABLE SAW

- Motor: 7-1/2 HP, 220V/440V* (prewired for 220V), 3-phase, 20A/10A
- Rip capacity: 33"
- Crosscut capacity: 63"
- Blade tilt: 0-45°
- Max. depth of cut @ 90°: 3-5/16"
- Max. depth of cut @ 45°: 2-3/8"
- Main blade size: 12"
- Main blade arbor: 1"
- Scoring blade size: 4-3/4" (120mm)
- Scoring blade arbor: 20mm
- Number of dust ports: 2
- Overall dimensions: 118" W x 90" D x 45" H
- Approx. shipping weight: 996 lbs.



MADE IN AN ISO 9001 FACTORY

WARNING! †

G0820 ~~\$6970.00~~ SALE \$5995.00

\$425 SHIPPING

12" 5 HP PLANER/JOINTER WITH V-HELICAL CUTTERHEAD

- Motor: 5 HP, 220V, single-phase, 25A
- Maximum cut width: 12"
- Maximum cut depth: 1/8"
- Maximum planer stock thickness: 8"
- Cutterhead diameter: 3-1/8"
- Cutterhead speed: 5034 RPM
- Cutterhead type: V-helical, 48 inserts
- Cutterhead insert size: 15 x 15 x 2.5mm
- Planer feed rate: 22 FPM
- Bevel jointing: 0°-45°
- Jointer table size: 14" x 59-1/2"
- Fence: 5-3/4" x 51-1/2", end-mounted
- Fence stops: 45 and 90°
- Dust port size: 4" (x2)
- Overall size: 67-1/2" W x 24" D x 41-1/2" H
- Approx. shipping weight: 704 lbs.



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WARNING! †

G0634X ~~\$3995.00~~ SALE \$3495.00

\$299 SHIPPING

19" 3 HP EXTREME SERIES BANDSAW

- Motor: 3 HP, 220V, single-phase, 12A
- Maximum cutting width left of blade: 18-1/4"
- Maximum cutting height (resaw capacity): 12"
- Table size: 26-3/4" x 19" x 1-1/2" thick
- Table tilt: 5° left, 45° right
- Floor to table height: 37-1/2"
- Blade size: 141" - 143" (1/8" - 1-1/4" wide)
- Blade speeds: 1700, 3500 FPM
- Footprint: 17-3/4" x 29-1/2"
- Overall dimensions: 36" W x 32" D x 76" H
- Approximate shipping weight: 460 lbs.



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WARNING! †

G0514X ~~\$2265.00~~ SALE \$2050.00

\$239 SHIPPING

22" X 42" VARIABLE-SPEED WOOD LATHE

- Motor: 3 HP, 220V, 3-phase, 8A
- Required power supply: 220V, single-phase, 20A
- Swing over bed: 22"
- Swing over tool rest base (banjo): 18"
- Swing over tool rest: 16"
- Distance between centers: 42"
- 1-1/4" x 8 TPI RH headstock spindle
- MT#2 headstock and tailstock tapers
- Variable speed: 100-3200 RPM
- Tool rest width: 14"
- Overall dimensions: 81" x W 23" D x 49-1/2" H
- Approximate shipping weight: 611 lbs.



MADE IN AN ISO 9001 FACTORY

WARNING! †

G0766 ~~\$3250.00~~ SALE \$2825.00

\$299 SHIPPING

9" X 138-1/2" INDUSTRIAL OSCILLATING EDGE SANDER

- Motor: 3 HP, 220V, single-phase, 15A
- Sanding belt size: 9" x 138-1/2"
- Sanding belt speed: 4120 FPM
- Oscillations: 1/4"
- Platen: graphite coated, 47-1/2" x 9-1/2"
- Main table size: 11-3/4" x 47-3/4"
- Main table vertical travel: 8"
- Main table tilt: 0-45°
- End table size: 18" x 13"
- End table travel: 8"
- Number of dust ports: 2
- Dust port size: 2 x 4"
- Footprint: 42" x 24-1/2"
- Overall dimensions: 82" W x 24" D x 45-1/2" H
- Approximate shipping weight: 873 lbs.



WARNING! †

G9984 ~~\$4895.00~~ SALE \$4595.00

\$350 SHIPPING

10" 5 HP 240V CABINET TABLE SAW WITH BUILT-IN ROUTER TABLE

- Motor: 5 HP, 240V, single-phase, 23A
- Rip capacity: 32" right, 14" left of blade
- Max. depth of cut @ 90°: 3"
- Max. depth of cut @ 45°: 2-1/8"
- Table size with extension: 48" W x 27" D
- Distance from front of table to center of blade: 17"
- Distance from front of table to blade at max. cut: 12"
- Floor-to-table height: 34"
- Arbor diameter: 5/8"
- Arbor speed: 4200 RPM
- Max. width of dado: 13/16"
- Dust port size: 4"
- Overall dimensions: 66" W x 47" D x 39-3/4" H
- Footprint: 20-1/2" x 20-1/2"
- Approximate shipping weight: 542 lbs.



MADE IN AN ISO 9001 FACTORY

WARNING! †

G1023RLWX ~~\$2650.00~~ SALE \$2395.00

\$299 SHIPPING

24" 5 HP DRUM SANDER WITH VS

- Sanding motor: 5 HP, 220V, single-phase drum, 25A
- Feed motor: 1/3 HP, 2A
- Maximum board width: 23-1/2"
- Minimum board width: 2"
- Maximum board thickness: 4"
- Minimum board thickness: 1/8"
- Minimum board length: 9"
- Drum surface speed: 2300 FPM
- Conveyor feed rate: variable, 0-20 FPM
- Sanding drum size: 6"
- Sandpaper type: 3" x 176" hook-and-loop
- Overall dimensions: 50" W x 37" D x 44-1/2" H
- Approximate shipping weight: 489 lbs.a



MADE IN AN ISO 9001 FACTORY

WARNING! †

G1066Z ~~\$3295.00~~ SALE \$3145.00

\$239 SHIPPING

24" X 36" CNC ROUTER

- Motor: 3 HP, 220V, 3-phase (with inverter), 8A
- X-, Y-, Z-axis motors: Stepper, 4.3A
- Cutting area: 23" x 35"
- Cutting accuracy: +/- 0.005"
- Maximum distance spindle to table: 5"
- Spindle Speed: 0-24,000 RPM
- X-axis travel: 35-3/8"
- Y-axis travel: 23-5/8"
- Z-axis travel: 5"
- X-, Y- travel speed: 32 FPM
- Z- travel speed: 16 FPM
- Collet Size: 1/8", 1/4", 1/2"
- Collet Type: ER20
- Footprint: 47-1/4" x 28-1/2"
- Overall dimensions: 45" W x 56-1/2" D x 62" H
- Approximate shipping weight: 882 lbs.



WARNING! †

G0894 ~~\$7575.00~~ SALE \$6995.00

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IN THAILAND

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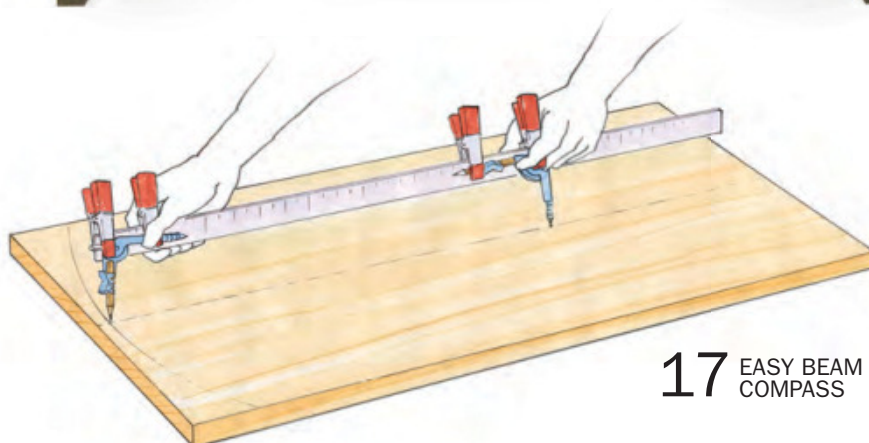
A bag of old chisels

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ARTS AND
CRAFTS FINISH



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VIDEO

Woodshops a world away

From open-air spaces to Krenovian escapes, take a closer look into some of Thailand's workshops, which are as varied as its woodworking (p. 44).



VIDEO

Practice makes better

Before Frank Strazza saws his dovetails (p. 52), he sometimes tunes up with some practice. In this video, Frank demonstrates techniques that can start you on the right path.

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VIDEO WORKSHOP

Arts and Crafts Bed

Modeled after a Stickley bed, Kevin Rodel's version features Glasgow-style inlay, pierced carving, and tapered posts. As you build it, you'll learn how to:

- Use templates to shape the bedposts and top rails
- Create curved inlay using bent lamination
- Inlay with pewter
- Create a decorative piercing with a carved relief



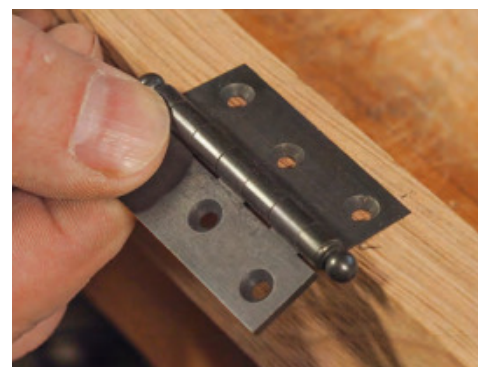
Online extras

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A lesson in referential measuring

Jameel Abraham (p. 58) demonstrates how to determine the length and angle of a knockdown joint without math.



VIDEO

Hassle-free hinges

Michael Pekovich (p. 36) demonstrates the jig he uses to create perfect hinge mortises.

VIDEO

Arts and Crafts finish

We take a step-by-step look at three Arts and Crafts-style finishes, including the one demonstrated by Nancy Hiller on p. 76.

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contributors

Robert Sukrachand ("Contemporary Woodworking in Thailand") is a furniture maker and designer who splits his time between New York and Chiang Mai, Thailand. Having grown up in Massachusetts while spending summers in his father's native Thailand, Robert started woodworking as a hobby in 2012 and fell in love with it. He then did a three-month intensive at the Center for Furniture Craftsmanship in Maine. After that, he spent a couple of years honing his skills as a fabricator, building custom designs and working for friends, before launching his company and first collection in 2015.



Jameel Abraham (Amana Church Bench) is the king of the undersell. If he asks if you have time to see some of his work in his family's church, what he really means is "This church is full of my carvings and paintings, including icons and friezes that span the ceiling." When he says, "I got into instrument making for a bit," what he really means is "I combined luthiery with marquetry to create fabulous ouds." And if he mentions his car doesn't have AC, what he means is, "We're going to roll down the windows on the Porsche 911 I rebuilt and drive to Benchcrafted, the workbench-focused company I co-own."



Frank Strazza ("Houndstooth Dovetails") was barely out of the single digits when he cut his first set of dovetails. He began an apprenticeship right out of high school, proceeded to a journeyman'ship (under Paul Sellers), and taught for eight years at the Heritage School of Woodworking in Waco, Texas. These days, his dovetails wind up in custom workbenches as well as in furniture. His woodworking passions also include carving, tool making, violin making, and inlaid lettering. He lives and works in the Texas Hill Country, but he has taught hand-tool woodworking across the United States.

Thomas Throop ("Oval Side Table") grew up in New Canaan, Conn., where he worked summers at a small custom lighting workshop. Tucked behind a house just across the street from the factory, unbeknownst to him, was a snug, one-man cabinet shop. After college, he moved to England for two years to train at the storied John Makepeace School in Dorset. He returned to the U.S. in 1992 and began designing and building furniture as Black Creek Designs, working in a series of shops until he found his way back to New Canaan and that same snug shop in town.



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From the Editor

If you're going to mess up, do it with style

Before me sits a pile of fail pieces, attempts at making wood bend in precise ways it didn't want to bend. I'm not bothered by it one bit, and I've been trying to figure out why. Years past, I'd have been annoyed by every single one of these pieces not turning out the way that I wanted them to. Each one would have made me feel discouraged, then frustrated, then likely I would have abandoned the project.

My job gives me a glimpse behind the curtain. I've seen woodworkers, some of whom I have looked up to for years, screw up. They all do. I've seen mistakes made by Mike Pekovich, Chris Becksvoort, Bob Van Dyke, Tim Rousseau, Chris Gochmour ... you name it. The difference is, they do it with style. They deal with it, and they move on. When you're learning how to work wood from magazines and videos you can only take in the information that's given to you. Most of the time, you see the end product, which may be the result of fancy video editing, or countless iterations and prototypes. Stop judging yourself, your skills, or your project on other people's end products. Trust me, you're not seeing all that has gone into a piece. You can't.



For me, woodworking is a journey. Once I stopped thinking that every project had to be perfect, I got better and better because my attitude got better. I was able to try things and not worry about their outcome. I was able to move forward with a project even though it was flawed. You don't get better by stopping. My projects have flaws. They will always have flaws. But, every time I screw up, it's one

more notch on the wall, one more "point" earned, one more mistake that I can learn from and then stop worrying about.

If I make a new mistake, I think: Why did it happen? How can I set myself up to make sure it doesn't happen next time? Do I need to use a different tool or technique? Did I inspect my material properly? Did I mark my piece properly? If it's an old mistake that has reared its head again, I know how to fix it. It's not as daunting the second time around. Laugh it off, suck it up, and fix it.

When I look at the pile of failed bends in front of me, I see notches on the wall. Whether it was deciding to work a little slower, making a change to a bending form, or using better clamping techniques, I learned from every single one of them, getting me closer to my final goal. From the moment I cut into the board, I knew these pieces were not do or die. I milled up extra stock because I planned to try some new techniques and inevitably would rack up some "mistake points." I knew that I would find success, whether the bend was good or bad.

Accept that you're going to make mistakes. They are not novel. Learn to glory in them, because that's the only way they will be worth it.

mobilism.org

—BEN STRANO, editor, FineWoodworking.com



Sixteenths is small enough

I am a kindred spirit of letter writer Christopher Brodersen (*FWW* #297), who complained about the article "Polka Dot Box." Well, he complained about several things, but the one I agree with is the absurdity of project drawings with dimensions in $\frac{1}{64}$ -in. increments. Even back when my eyes were younger than 54 years old, I never measured anything less than $\frac{1}{16}$ in. Of course, my projects involved dimensions much smaller than that, but those adjustments were made by eye, or mostly, by feel.

—PAT McVICKER, Gaithersburg, Md.

It's the journey that counts

I've been waiting for your editorial, "Technology and the future of woodworking," because it's an issue I have thought about regularly for years. Your line, "I'm fond of saying that the end product is what is important to me and not necessarily the means ..." got my attention. Many of us are hobbyists, and don't create things from wood necessarily for the end creation, but for the "therapy" in our fortresses. For me, woodworking certainly is for the means and not the end. Many times when I've looked at my very expensive dovetail jig, I've asked myself, "why am I in here?" The answer is for relaxation, time away from the business world, and to liberate my artistic side. Years ago, your cover showed a man chiseling out pins for a dovetail. That's where I learned. Over the years, I've set up my tablesaw and bandsaw to cut pins and tails. The first time I joined two boards with dovetails, I ran into the house to show my wife, only to have her ask, "what is it?"

I always come back to the idea that I'm not in here for mass production; it's about the journey, not the destination. Of course I use the planer when milling stock but, every chance I get, I dive into my wall of planes. I think that there is a history and culture to woodworking that we want to maintain and pass down. I use my grandmother's recipes for a similar reason. I could always order out, but then the art will be lost.

—RICHARD DISAMMARTINO,
Lower Gwynedd, Pa.

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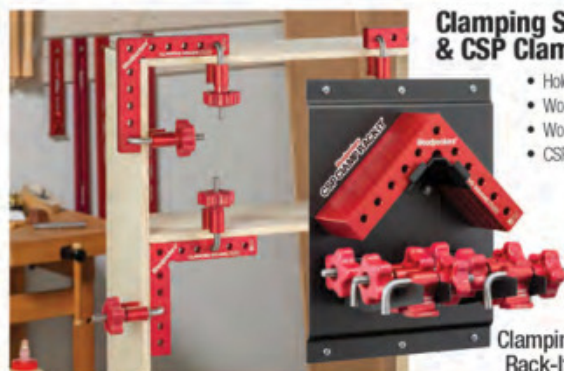
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- Works with most drills.
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- Deluxe Kit includes extensions.



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Deluxe Kit....\$369.99



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Duax....\$299.99
Deluxe Kit....\$339.99



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Deluxe Kit....\$649.99



Drill not included.

workshop tips

Quick-Grip-style clamps assemble miters quickly and accurately

After trying numerous jigs and doodads for clamping mitered frames, I found that Quick-Grip-style clamps provide the most straightforward and effective method.

First, place two parallel pieces separately in clamps, with the tips of the miters slightly outside the centerline of the clamp pads (roughly $\frac{3}{8}$ in. from the ends). To make sure the parts are positioned accurately, it helps to use spacers as shown. Use just enough clamp pressure to hold these first two pieces in place.

Next, apply glue to the miters and slide the two remaining pieces into place. The soft clamp pads allow these pieces to slip in, aligning their tips pretty well in the process.

To draw the miters together, position two more clamps perpendicular to the first pair and tighten them gently. Now increase the pressure on all four clamps, checking the miter alignment as you do so. When the joints are tight and accurately aligned, you're done. To align the joints in the other direction, feel free to pinch more clamps across their faces.

I've used this method for all sorts of frames—thick and thin, small and large—and it works on boxes too, with a set of clamps at the top and bottom edges. This method is quick, easy and direct, with nothing to set up and nothing to fiddle with.

—BOB PETERSON, Portland, Ore.

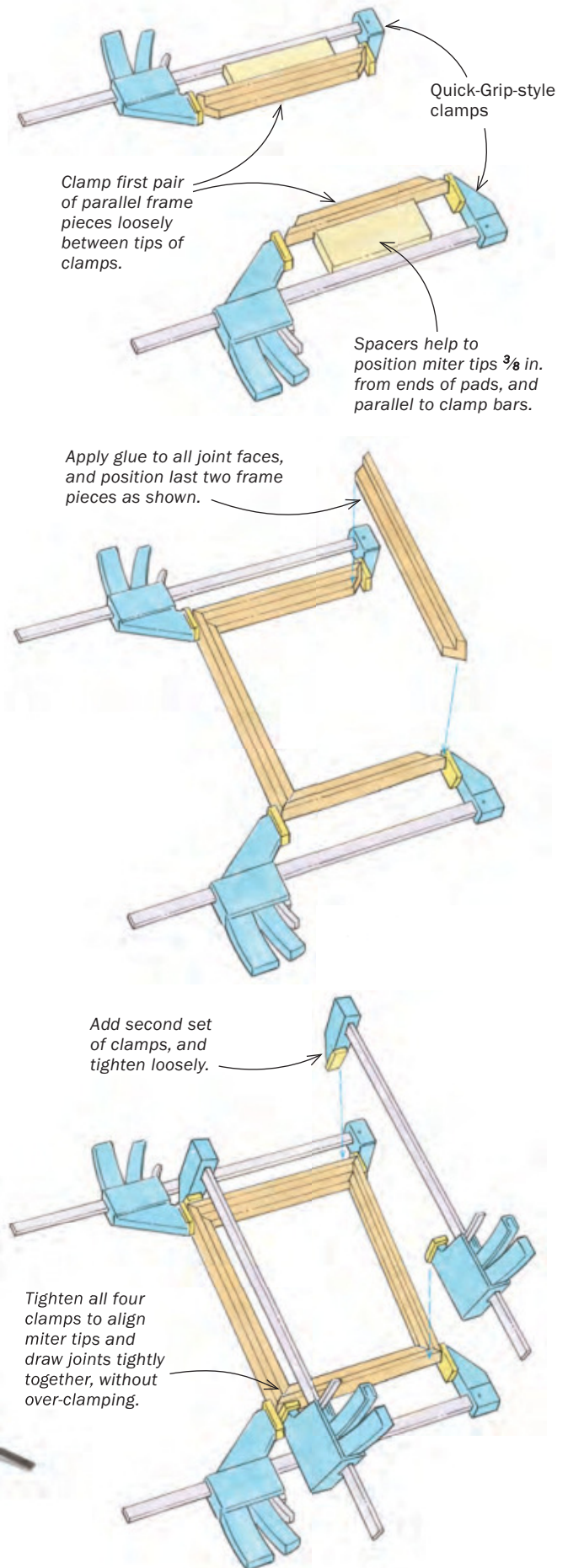
Best Tip



Bob Peterson's woodworking career got off to a rocky start at age 6, when he tried to build a backyard fort and left his dad's tools outdoors. Over the decades since, he has built all sorts of projects, including large tables that incorporate steel, wood, glass, and porcelain. He built his latest shop to be his last, with all the space and features he's wished for over the years.

A Reward for the Best Tip

Send your original tips to fwtips@taunton.com. We pay \$100 for a published tip with illustration; \$50 for one without. The prize for this issue's best tip was an Irwin 26-pc. impact set, Irwin 15-pc. turbo drill set, Irwin Quick-grip clamp 4 pack, Irwin 13-pc. Speedbor spade bit set, and Irwin Forstner bits, sizes $\frac{1}{4}$ in. through $\frac{7}{8}$ in. dia.

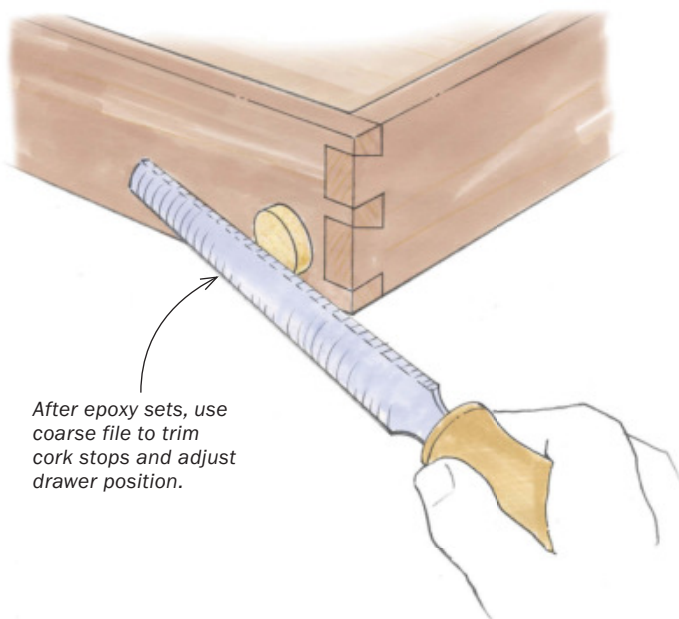
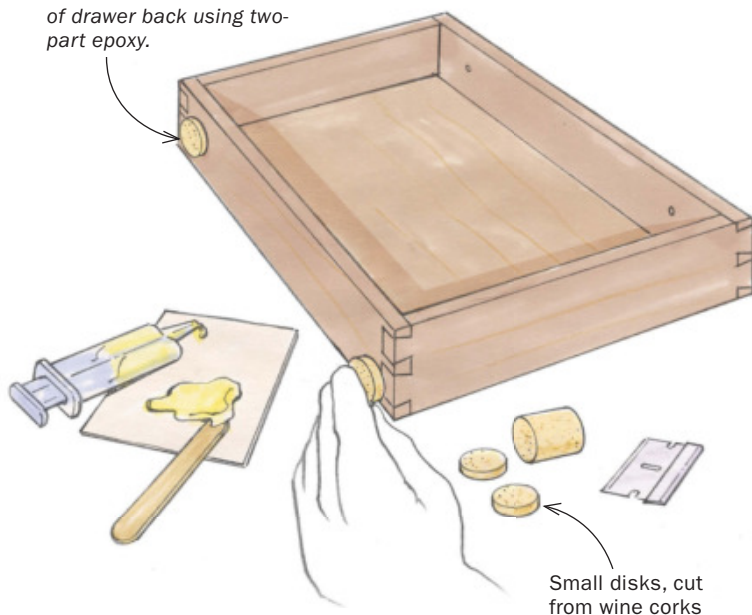


Bottle corks make good drawer stops

The usual way to create a drawer stop is to glue it onto the lower part of the pocket (usually a rail of some kind), where it will catch the inside edge of the closing drawer front. But it's awkward to figure out exactly where to attach the stop so it arrests the drawer in the perfect position. Instead, I attach cork disks to both sides of the drawer back. Wine and champagne corks are perfect. Cut each slice a little too thick and attach it with 5-minute epoxy. Once the epoxy is set, you can fine-tune the drawer position by shaving each disk with a coarse file. If you cut one too short, just glue on a little more cork. The cork stops are not only easy to adjust, but also bring the drawer to a cushioned close.

—DICK EVANS, Chatham, Mass.

Cut cork slices extrathick and attach to both corners of drawer back using two-part epoxy.



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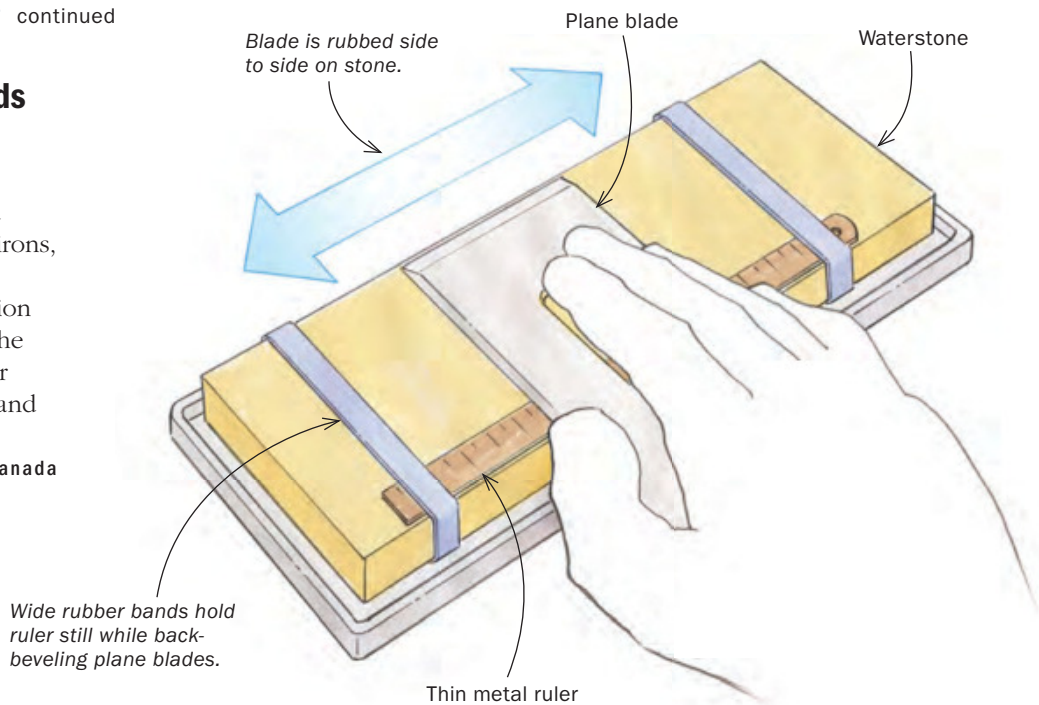
SINCE 1993



Hold a ruler with rubber bands when back-beveling blades

When using the ruler trick to hone a shallow bevel on the back of plane irons, I find it hard to keep the metal ruler stable on the stone. My simple solution is to wrap wide rubber bands over the ruler and stone. These keep the ruler in place, making back-beveling fast and accurate.

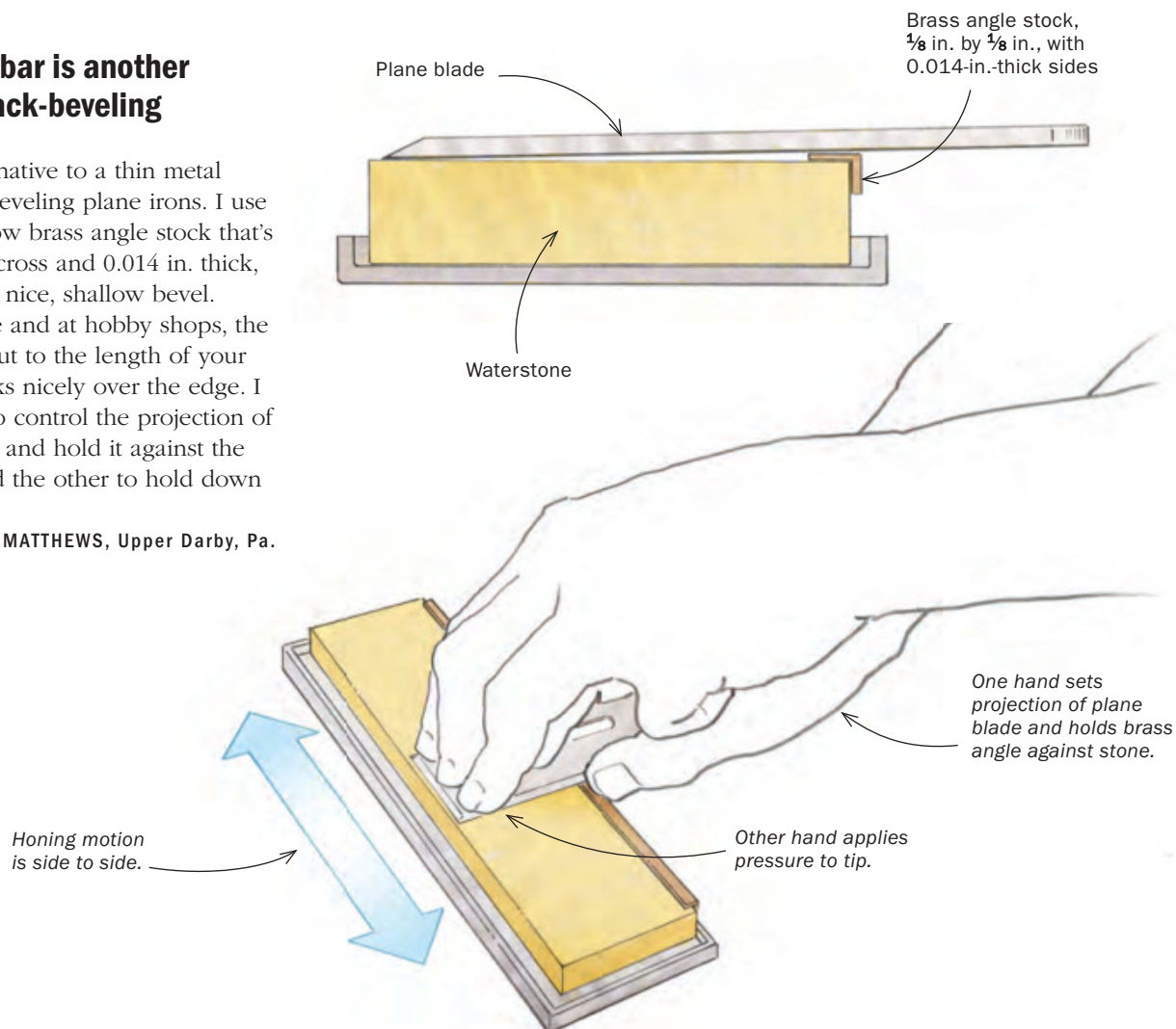
—CHARLES MAK, Calgary, Alta., Canada



Brass angle bar is another option for back-beveling

Here is an alternative to a thin metal ruler for back-beveling plane irons. I use a piece of narrow brass angle stock that's roughly $\frac{1}{8}$ in. across and 0.014 in. thick, which creates a nice, shallow bevel. Available online and at hobby shops, the brass is easily cut to the length of your stone, and hooks nicely over the edge. I use one hand to control the projection of the plane blade and hold it against the brass angle, and the other to hold down the tip.

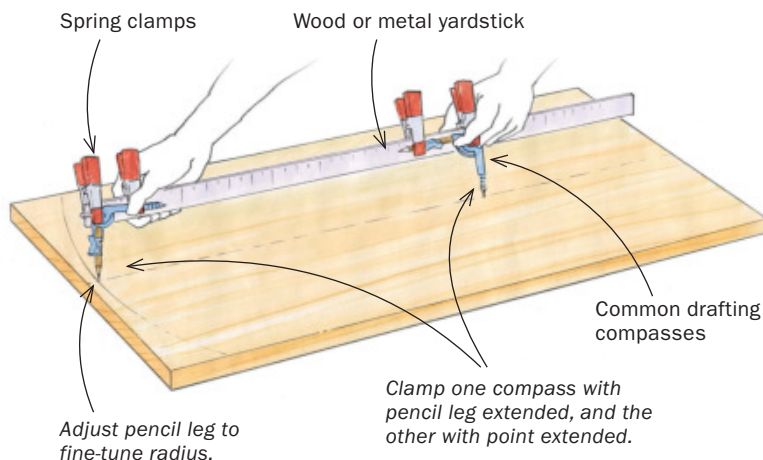
—LARRY MATTHEWS, Upper Darby, Pa.



Make a beam compass from common supplies

Needing a drawing tool for very large arcs, I figured out a way to make a beam compass from two common compasses and a yardstick. After attaching the drawing compass in rough position, you can adjust its pencil leg to fine-tune the size of the arc. Clamp the compasses to a longer stick, and there is no limit on size.

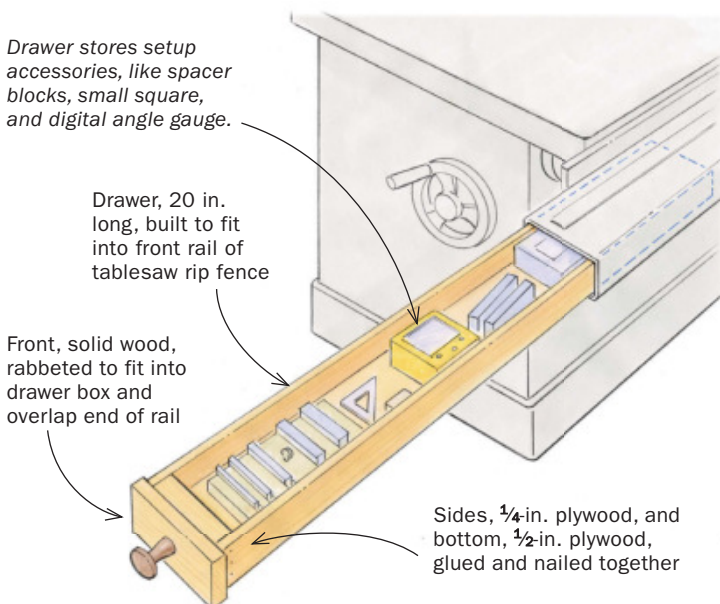
—WAYNE RALLEY, Phoenix, Ariz.



Long drawer builds storage into your rip-fence rail

I was looking for a place to store my precision tablesaw tools close to the saw, and came up with this idea. Like many rip fences, mine rides on a hollow rail, which turns out to be the perfect place for a drawer. I made a long wooden one that fits into the rail and holds all of my favorite setup tools. It takes advantage of the unused space, and keeps my tools dust-free and close at hand.

—DAN KAY, Levack, Ont., Canada



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■ BLADES AND BITS

Fantastic tablesaw blades

Tablesaw blades by
Whiteside Plus/Dimar
Combination, \$65
Rip, \$75
Glueline rip, \$85



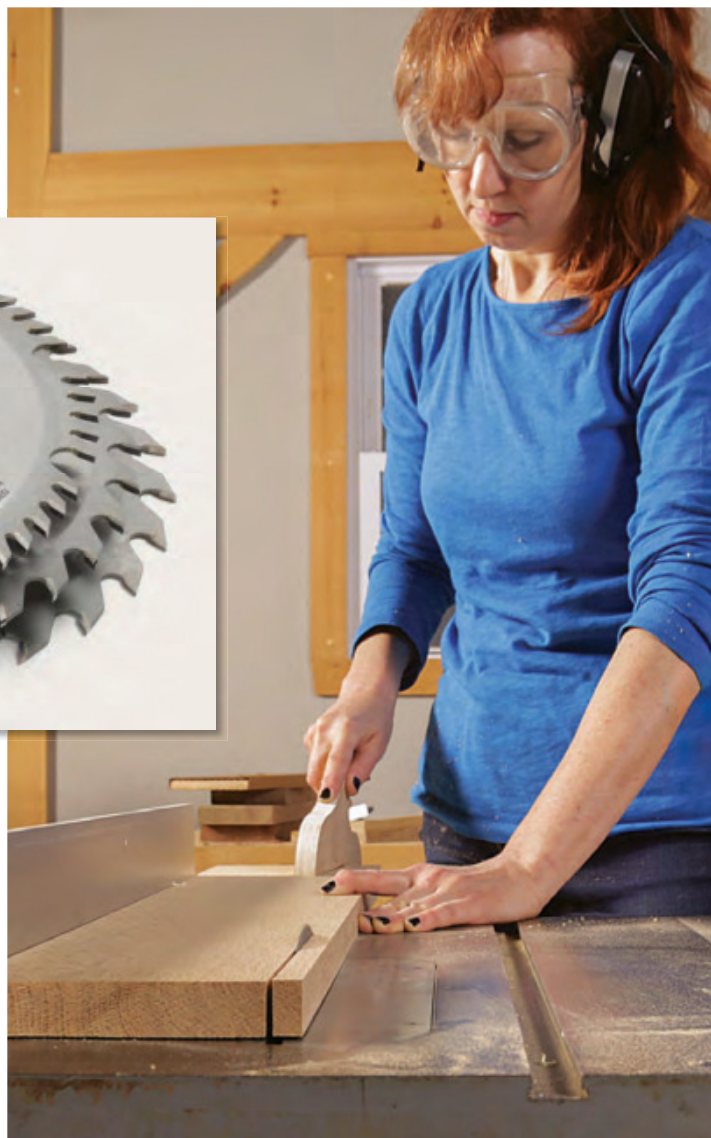
WHITESIDE has paired with blade manufacturer Dimar to bring three new 10-in. tablesaw blades to the United States: a combination, a rip, and a glueline rip, which was my favorite. All three were superb, making them a perfect trio. Their cut quality was excellent and made each of my tasks easy, saving me a lot of time at the bench. The clear writing on each outlining the blade type, arbor size, tooth hook and grind, and number of teeth made for a great convenience.

The 50-tooth combo blade worked fantastically for ripping and crosscutting both hard- and softwoods. While I usually find combo blades give just OK rips, this blade left minimal sawmarks on cherry, maple, and pine while requiring little force to push the stock through the saw. For both 45° and 90° crosscuts, there was no tearout and the end grain was smooth. All in all, this blade worked as well as dedicated rip and crosscut blades.

The rip blade's 24 teeth have a flat top, which I prefer over an ATB grind for its better stock removal during rips and its flat-bottomed cut. I tested the blade on oak, cherry, maple, pine, and poplar from $\frac{3}{4}$ in. to 2 in. thick. It cut even the thicker stock very well, leaving smooth edges, and had no vibration. With the cherry and oak, it was hard to tell which edge I had run over the jointer and which I had ripped on the tablesaw.

The glueline rip blade, with its triple-chip grind and 30 teeth, might be my new favorite. I'd never used one before, so I was skeptical about gluing up off the tablesaw. I tested this blade with $\frac{3}{4}$ -in. oak, poplar, and cherry. All were easy to push through the saw and, despite visible sawmarks, each joint glued up perfectly right off the saw. It was the fastest way I have ever glued up boards. I am definitely purchasing this blade.

—Ellen Kaspern teaches at North Bennet Street School and around the United States.



Glueline rip blade lives up to its name. Test boards' edges were glue-ready off the blade, yielding a joint that was tight and free of gaps.

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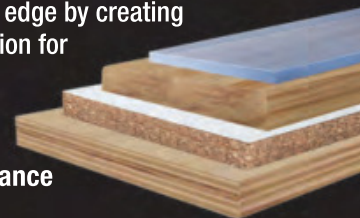


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■ ACCESSORIES

Easier bandsaw setup

IT'S OFTEN OVERLOOKED, but a critical step in setting up a bandsaw is adjusting the table parallel with the blade. If you don't, you're left with frustrating "drift," which is nothing more than the fence, which is typically adjusted parallel to the miter slot, being skewed relative to the blade because the table isn't set up correctly. Rips will be skewed and crosscutting with a miter gauge or sled will be choppy and inaccurate.

While squaring the table often takes careful, patient trial-and-error, iGaging's Bandsaw Companion makes the process super easy. The Companion is essentially a ¼-in.-thick by 12-in.-long aluminum rule with four rare-earth magnets fastened to one side and a space next to the magnets for the bandsaw's blade. Simply snap the rule to the blade (½ in. or wider works best), loosen the table bolts (keep one snug as a pivot point), and align the blade and miter slot using a finely graduated ruler. The length of the Companion greatly exaggerates the path of the blade, making it much easier to measure its relationship with the miter slot.

The Companion is also an accurate rule, has a sliding stop for setting distances, and can be used as a beam for scribing circles.

—Roland Johnson is a contributing editor.



Bandsaw setup bar
by iGaging
\$27

■ ACCESSORIES

Stronger finishing gloves

I USE NITRILE GLOVES almost daily in my shop, typically taking them on and off many times a day, particularly if I'm working with stains, dyes, or other finishing products. My current gloves are good quality quasi-medical gloves that are resistant to chemicals, but they're hard to put on and off and are frequently destroyed trying to get one on a damp hand. I keep a bottle of talcum powder around for that purpose, but that's a messy hassle.

I've had a much better experience with Venom Steel gloves. These nitrile gloves have two layers, a tough outer layer and a slick inner one, that make it easy to put them



Nitrile gloves
\$18



on or take them off without destroying the glove or my patience. They even stood up to student use. I took several pairs to a class and they held up amazingly well. We were building a large torsion box, and two of the students wore the gloves all afternoon with only one rip in one of the gloves.

The gloves also feel good—so good that I'm wearing them as I type this review! They seem to do well at keeping the chemicals at bay and are tough enough to survive rigorous use in the shop. Venom Steel sells them as "one size fits most," which means they'll be a bit big on small hands.

—R.J.

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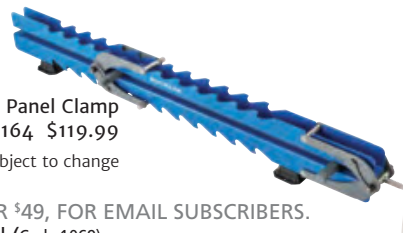
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■ NEW TO MARKET

Tools to look out for

High-hp fixed-base router

Bora's PM-6250 comes with a 3.25-hp, 15-amp motor and a fixed base with two D-handles. A ring on the base controls height adjustment. The motor has a soft start and variable speed from 10,000 rpm to 22,000 rpm. In addition to two collets, a ¼-in. and a ½-in., the PM-6250 includes two subbases, one for standard bushings and another with a 2.5-in.-dia. opening for larger bits.



Osmo with less white

Osmo's Polyx-Oil Raw Matte 3051 is formulated to give an untreated appearance on lighter woods, like ash, maple, and birch. Compared with Osmo 3041, a neutral hardwax oil, the Raw Matte 3051 has less white pigment. As a result, on open-pore species such as ash and oak, the company says white pigment will not show through on multiple coats. Osmo also says it won't amber over time.



Splinter removal kit

Infinity is selling the Sliver Med Pack, developed by MyMedic. To help locate splinters, the MyMedic kit comes with tweezers that have a built-in light pointing toward the tips. Other items help with finding and removing the splinter and sanitizing the area, such as a small magnifying glass, sliver removers, antibiotic cream, a sanitizing towelette, and bandages. There's also a magnet to help with metal splinters.



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Exploring the versatile trestle table

BY THOMAS THROOP

The trestle table has always intrigued me, from its humble origins during medieval times, when plain planks were laid on sawhorse-like trestles, to more recent forms with a fixed top supported by a pair of pedestals with a connecting stretcher. I've been most inspired by early English refectory tables and by Shaker and Arts and Crafts-era trestles. The trestle table's general design is simply elegant, structurally sound, and very efficient to make, requiring only straight-ahead joinery and a minimum of material. There's great economy to the structure: The stretcher keeps the legs square, and the top is integral, acting essentially as a second stretcher to keep the base from racking and from twisting. And compared to most dining and coffee tables, with their legs at the corners and aprons all around, trestles offer far superior leg space.

Yet the trestle table is endlessly flexible. The form can be used at a variety of heights, for anything from a dining table to a bench, a hall table to a coffee table, and anywhere in between. Beyond that, the structural elements can be designed in an infinite variety of shapes, sizes, and proportions, all detailed to the desired effect.

My forays into the trestle form range from the deeply traditional to the completely contemporary. In between I've played with all manner of trestles, and I've selected a number of different ones to discuss here. My first were dining tables whose legs were made in a familiar post, foot, and top rail configuration. Later, designing low trestle tables, I used a modified three-part leg, broadening the post into more of a plank. Then I started to think about foyer tables and began designing pieces in which the three-part leg lost its foot and its top rail, and became a full-height slab. Along the way, I also began moving the stretcher higher on some tables, allowing more negative space below it and creating more visual tension with the narrower space above. Pushing the form even further, I started designing consoles and benches with waterfall legs and with the rail pressed tight to the top—a completely different look from earlier ones I made, but still maintaining the simple structural elegance of the trestle table form. What's next for my trestle table design, I'm not sure, but I am looking forward to exploring its continued evolution.

Thomas Throop builds furniture in New Canaan, Conn.



A contemporary twist on the traditional trestle is what I had in mind for this cherry dining table. I wanted to convey the feeling that the table was blooming—springing out of the ground. That led me to taper the leg posts and give the stretcher an upward arch. The foot, a modernized version of a Shaker trestle foot, blends the curve of the stretcher with the flat planes of the posts. Inlaid walnut beads on the posts further accentuate verticality, and an underbevel lightens the top by making it appear thinner than it is.



Designed in the vein of an English Arts and Crafts trestle, this sofa table in walnut

adds a few embellishments to the original. The challenge was to make the piece look strong and sturdy but not overly heavy. The posts, at $2\frac{1}{4}$ in. thick and tapering from 5 in. wide at the base to $3\frac{1}{2}$ in. at the top, have definite heft. But I cut tapered chamfers on the corners—wide at the top to narrow at the bottom; they accentuate the post's taper and lighten its top. Heavy chamfers on the stretcher visually lighten it as well, and also tie its look to the legs. I stopped those chamfers with lamb's tongues to give the eye a resting place at the center of the stretcher.

Slab-like legs here replace the posts more typical of trestle tables. This

coffee table in walnut with a cherry top was the first trestle table I made with slab legs, but many more variations have followed. The slabs were originally one wide plank, but I cut them in half and created a gap between them to break up the wide surface and create a shadowline. The slabs are notched to accept the stretcher's through-tenon. I carried the same idea to the top, which also has a gap down the middle, this one bridged by a series of inlaid squares of bastogne walnut—a hybrid of claro and English walnut.



Moving the stretcher upward transformed the trestle on this hall table in walnut and bubinga, giving the piece a far lighter

feeling while retaining its structural function. I also dispensed with a separate foot and top rail, aiming for a more elemental and contemporary feeling. I did include a small cutout at the bottom of the leg, which produces the appearance of feet. The design of the slabs was inspired by the architecture of the Yucatan—in particular, the grand pyramid Chichen Itza, with its wide stairway rising between larger smooth blocks of stone. I carved the central section of the leg slabs to echo that arrangement of a fine-textured band framed by smooth ones.



“Can you add a drawer to that table?” a client asked, and this was my answer. To make room, I dropped the stretcher a bit and extended the inset section at the tops of the legs. I made the drawer front curved on the bottom to reflect the curve of the stretcher. I included the chip carving on the legs but skipped the cutout at the bottom, giving these legs a more rooted feeling.

Sometimes materials drive the design.

In all my earlier iterations of this type of trestle table I had used the legs and stretcher to define negative space at the center of the piece. But in this one, with its claro walnut legs and top, I wanted to feature two tapered panels of beautiful Oregon myrtle at the center. To help draw your eye to the panels, I curved the top and bottom stretchers and made them wider as they approach the panels. I wanted to have legs that tapered, thicker at the floor, but I didn't have thick enough planks of claro to manage it. So instead I applied tapered edging to either side of a parallel panel.



Reimagining the trestle table,

I used the same key structural elements—legs, stretcher, and top, to build this bench. I was looking for simple, elemental shapes and trying to make something new from the historical trestle form. All the parts move in sympathy, so there are no wood movement issues, and the design is extremely sound structurally, since the stretcher shares a long-grain glue joint with the top, creating a rigid T-shaped element, and the mitered waterfall legs are screwed and glued into notches in the stretcher.



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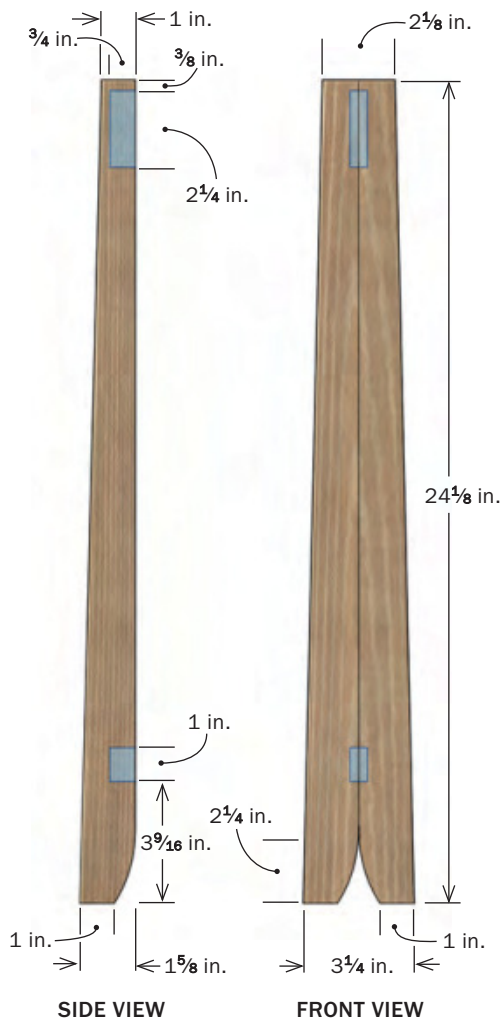


Oval Side Table

An elliptical top and crossed rails distinguish
this contemporary piece

BY THOMAS THROOP

Legs



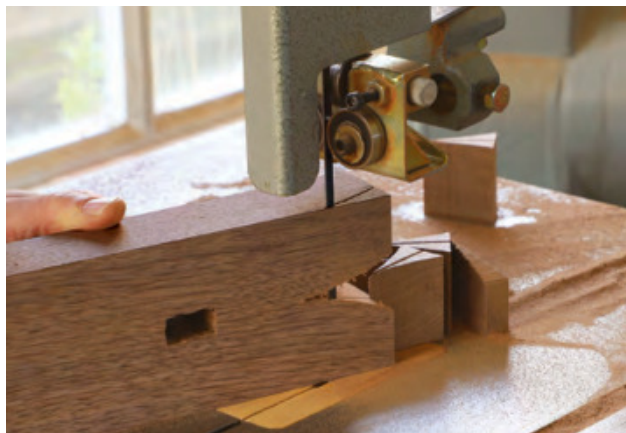
When I designed this side table, I was aiming for something straightforward yet still somewhat unexpected. I have always been fond of half-lap, or halving joints, and I decided to give the table's base X-shaped rails and stretchers that would be joined with half-laps where they crossed. A rectangular top might have been visually awkward with this configuration; going with an oval instead seemed like a natural solution. I often include tapered elements in my designs, which can control visual weight and movement in a piece. Here I designed a leg that is wider and thicker at the bottom to help ground the piece while still maintaining an overall sense of lightness. And to enhance the upward movement of the taper I added an incised vertical line at the center of the leg. At the foot I included some curves to reduce the visual weight down there and produce a more dynamic stance that ties in with the oval top and shelf. To complete the composition, the rails and stretchers needed to be curved too. The rails, bowing



Mortises first. Throop cuts the mortises for the rails and stretchers with the workpiece still square. Then he bandsaws the taper into the front face of the leg.



Post-taper shaping. After sawing and smoothing a taper on the front face of the leg, and then running a centered V-groove along its length at the tablesaw, Throop bandsaws the twin curves at the foot.



Another curve. A third bandsawn cut creates the curving inside face of the foot.



Two more tapers. Throop next tapers both edges of the leg on the bandsaw before smoothing them with several light passes at the jointer.

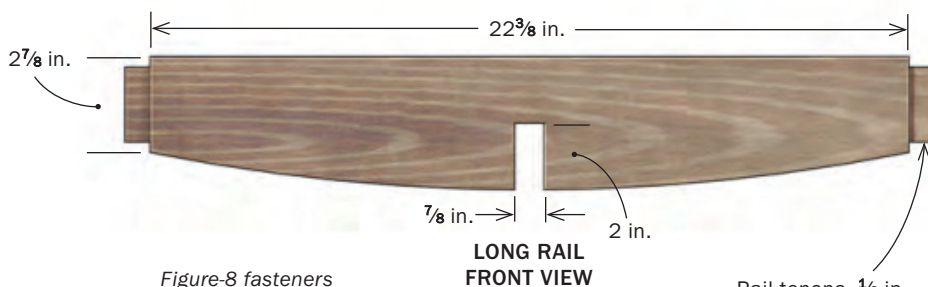
SIDE TABLE WITH HALF-LAPS AND TAPERS

Top and shelf are bubinga; legs, stretchers, and rails are walnut.

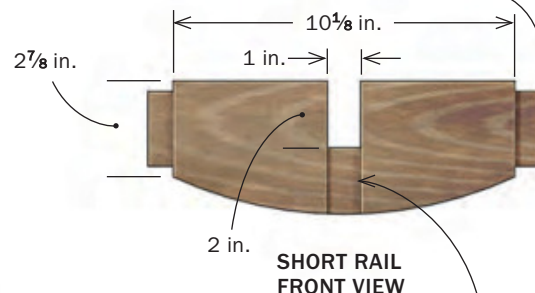
Top, $\frac{7}{8}$ in. thick by $14\frac{7}{8}$ in. wide by $27\frac{5}{8}$ in. long

Long rail, 1 in. thick by 4 in. wide by $23\frac{7}{8}$ in. long

Figure-8 fasteners are let in flush to underside of top.



Rail tenons, $\frac{1}{2}$ in. thick by $2\frac{1}{4}$ in. wide by $\frac{3}{4}$ in. long



Dado, $\frac{1}{16}$ in. deep, creates shouldered portion of half-lap

Leg, $1\frac{5}{8}$ in. thick by $3\frac{3}{4}$ in. wide by $24\frac{1}{8}$ in. long

Shouldered half-laps join rails and stretchers where they cross.

Short rail, 1 in. thick by 4 in. wide by $11\frac{5}{8}$ in. long

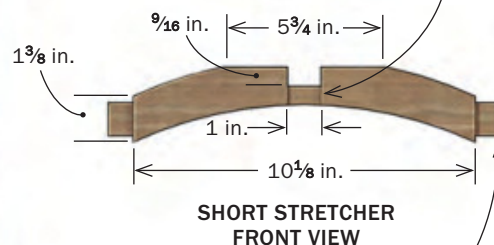
V-groove, $\frac{1}{16}$ in. deep



To purchase expanded plans and a complete parts list for this table and other projects, go to FineWoodworking.com/PlanStore.

Long stretcher, 1 in. thick by $2\frac{3}{8}$ in. wide by $23\frac{7}{8}$ in. long

Dado, $\frac{1}{16}$ in. deep, creates shouldered portion of half-lap



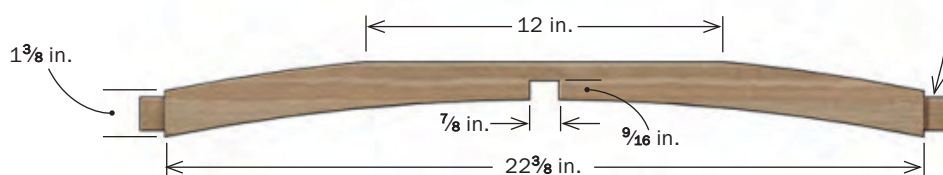
Stretcher tenons, $\frac{1}{2}$ in. thick by 1 in. wide by $\frac{3}{4}$ in. long

Shelf, $\frac{7}{8}$ in. thick by $7\frac{3}{4}$ in. wide by 14 in. long

Center section of stretcher left flat to receive shelf.

Shelf attached with screws through stretchers.

Short stretcher, 1 in. thick by $2\frac{3}{8}$ in. wide by $11\frac{5}{8}$ in. long



upward from center to ends, echo the oval top, while the stretchers, bowing the opposite way, create more lift in concert with the feet. I've made this table in a variety of woods; this time I made the base of walnut and the top and shelf of bubinga.

Legs first

The legs taper two ways—they are wider at the bottom, but also thicker there. With the leg blanks still square, I marked both tapers, then marked the mortises. After chopping the mortises on my hollow-chisel mortiser, I moved to the bandsaw to cut the taper in the leg's thickness. In order to keep the joinery simple where the rails and stretchers meet the leg, I tapered only the outside face of the leg. I smoothed the band-



Slot-cutting. With the stop block in the same location, Throop turns the rail on edge and raises the dado blade incrementally to cut the half-lap slot.

sawn surface with a few light passes over the jointer.

With the leg tapered in thickness but still full width, I detailed the front side with a centered V-groove running top to bottom. I did this at the tablesaw with the blade tilted at 45° and set to cut about 1/16 in. deep. The V-groove then became my reference line as I laid out the rest of the shaping of the leg—the taper in its width and the curves at the foot. I cut to those lines at the bandsaw, then cleaned up the tapers on the jointer and the curves at the bench with hand tools.

Half-lapped rails and stretchers

The next step was to cut and fit the tenons on the rail and stretcher blanks. I cut them at the tablesaw with a dado stack and a miter gauge. I set up the dado blade to cut less than the full length of the tenon; for a 1-in. tenon I use a dado stack 3/4 in. or less. This enabled me to cut each face of the tenon in two passes and use the rip fence as a stop.

After the tenons were complete, I cut the shouldered half-lap joints. I used the shouldered version because it helps keep the rails from twisting. I started by cutting the shallow dadoes for the shouldered section

Shouldered half-lap joints



Centering device. The half laps begin with shallow dadoes for the shouldered portion of the joint. Throop cuts in two passes using a stop block on the miter gauge and turning the workpiece end for end between passes, ensuring the dado is perfectly centered.



The mating slot. With the first rail's dadoes and slot cut, Throop can measure to find the correct width for the mating slot. He cuts it using the same centering technique.



Well-fitted half laps. Having cut the second slot slightly tight, Throop uses a few strokes of a shoulder plane to achieve a perfect fit.

Shaping the aprons and stretchers



Taking care of the curves. Having cut and fitted the tenons and half-laps, Throop bandsaws the rails' curves and then smooths them at his edge sander.



of the joint. I used a dado stack and the miter gauge, and again the width of the dado stack was less than the full width of the dado. To be sure the dado was perfectly centered in the length of the rail, I set a stop block on the miter gauge and cut each dado in two passes, flipping the rail end for end between them.

Next, I cut a slot half the height of the rail. I used the same stop-block setting, but I turned the workpiece up on edge and began cranking up the dado blade, reaching the full height of the slot with a series of cuts. It is very important to use a sacrificial backer here to minimize blowout. Once these cuts were completed, I had the target size for the slot in the mating rail. I set the stop block to cut the slightly narrower slot, and again guaranteed it was perfectly centered by turning the workpiece end for end between each pair of passes. Once cut and fit, the joint should come together with just the slightest amount of friction.

At this point I took the stretchers to the drill press and cut clearance holes and counterbores for the screws I would use to attach the shelf. With that done, I cut the rails and stretchers to their curved shape at the bandsaw and cleaned up with hand tools. I could have made templates and flush-trimmed the parts to final shape with a router, but with just one table to make, I find it simpler and more efficient to work by hand and by eye. A few passes with a small block plane or the compass plane after bandsawing to the line and I was ready for sanding. After final fitting of the rail and stretcher half laps, I dry-assembled the entire base and set it aside.

Two ellipses

To lay out the elliptical top and shelf, I used a tried-and-true method with brads and a circle of string. With the top (and then the shelf) upside down, I set pins at the focal points of the ellipse, looped the circle of



Boring for screws. After completing the stretchers' tenons and half laps, but before cutting their curves, Throop drills clearance holes and counterbores for the screws that will fasten the shelf.



Curving the stretchers. Bandsaw work achieves the curves. Edge sanding smooths the convex curves, but Throop uses a compass plane to fair the concave ones.

Assemble the base



Join the half-laps first. Throop glues up the rails and stretchers separately and lets them cure before moving on to the rest of the base assembly.

string around them, and pulled it tight with a pencil. Keeping the string taut, I moved the pencil around the perimeter to draw the ellipse. It can take a few attempts to get a smooth shape. I cut to the line at the bandsaw, smoothed the curve at a disc sander, and did some hand sanding for final smoothing. Last, I routed a small 45° chamfer around the top and bottom edges.

The table comes together

The first step in assembly is gluing up the half-lap joints. Take care that the parts are glued up with their top edges flush and their inner faces square to each other. This should all happen naturally if the joint is cut properly. Just a bit of glue on the surfaces and a single clamp will close the joint. Too much glue and it will be difficult to close the joint, as the glue has nowhere to easily squeeze out.

Once the rails and stretchers were glued up, I dry-fit all the legs again. Then I removed one leg at a time



Dry-fit the whole base. With the rails and stretchers glued up, Throop adds all four legs glued dry, then stands the base upright.



Then glue the legs one by one. He removes one leg, applies glue, replaces and clamps it, then moves on to the next leg, working his way around the table. Tapered offcuts saved from the leg-making process serve as clamping cauls.

Topping off the table

Elliptical layout.

A loop of string, two brads, a pencil, and a steady hand produce the elliptical layout for the top.

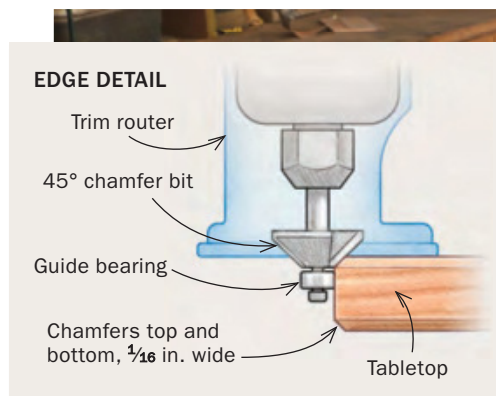


to glue it and clamp it in place. Tapered clamping cauls were necessary; I had saved offcuts from the leg-tapering process for just this reason. As the glue set on one leg, I would remove and glue up the next one, working my way around the table until all the legs were glued and clamped.

When the glue had cured, I moved on to attaching the top and shelf. Attaching the shelf was just a matter of driving screws through the holes I had drilled in the stretchers earlier. But I attached the top in a different manner. Because the rails are so deep, it would be unwieldy to drill through them for screws; and screws wouldn't permit as much movement as I wanted for



The oval emerges. At the bandsaw, Throop cuts the bubinga top blank to within $\frac{1}{16}$ in. of the layout line; then he fairs and smooths the edges at his disc sander.



Mini profile. Using a trim router and a 45° chamfer bit with a guide bearing, Throop cuts a small chamfer around the top and bottom edges of the top and shelf.



Figuring out the figure 8s. Wanting to recess the figure-8 fasteners into the underside of the top, Throop first screws them directly to the top of the rails.



Inset ovals. After inverting the base on the top and marking the locations of the figure 8s, Throop uses a template to rout shallow oval mortises for each of them.



Neat mortises. When set in their mortises and screwed down, the figure 8s sit flush with the underside of the top.

the top anyway. So I chose figure-8 desktop fasteners. These allow plenty of movement and are easy to install. I did add one twist to the process—I mortised them into the underside of the top rather than into the top of the rails. I think this makes for a cleaner job and keeps the fasteners less visible.

First I screwed the fasteners directly to the top of the rails. Then I placed the top upside down on the bench and flipped the base upside down, locating it on the top. I marked the location of the holes through the fasteners and drilled pilot holes in those spots. Then, using a template and a trim router, I mortised out an oval for each fastener. The mortise was the same depth as the fastener and large enough to allow it to swivel as the top moves with seasonal humidity change.

To ebonize the walnut base, I used two coats of Osmo Wood Wax in ebony. I followed that with three coats of Osmo Polyx-Oil clear satin on the whole table. □

Tom Throop makes custom furniture in New Canaan, Conn.



Fast, Accurate Hinge Mortises



The key is to build
a routing template
around the hinge itself

BY MICHAEL PEKOVICH

There are a lot of ways to go about cutting a hinge mortise. One option that I didn't use for a long time was a routing template. I never knew what hinge I would use for a project, and it didn't seem worth it to make a new template for each time. Second, I assumed templates would be a pain to make. And last, I doubted their accuracy. However, teaching had a way of changing my view. In trying to figure out a way to get a class through the process of hanging a door at the end of a long week, I decided to give router templates a look. It turns out that making a template is fast and a good fit is just about automatic. The key is to build the template around the hinge itself. From there, a short



ROUT AND SQUARE FOR A PERFECT FIT

At the heart of the system is a pattern bit that allows you to create a template sized to the hinge, eliminating the need for measuring or guesswork. Simply clamp the template in place, rout the mortise, and finish up by squaring the corners with a chisel.



pattern bit makes quick work of the mortising, leaving just the rounded inside corners to take care of with a chisel. It's important to use a good quality hinge (which you should do anyway) because the sizes are more consistent from hinge to hinge, which makes for a more consistent fit. I've had good luck with hinges from Horton Brasses, Brusso, and Whitechapel Ltd.

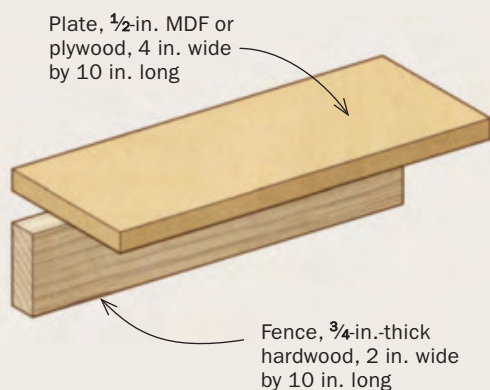
This technique is so fast and accurate, I no longer use it just for teaching. I've been putting it to use in my own shop as well.

Start by making the template

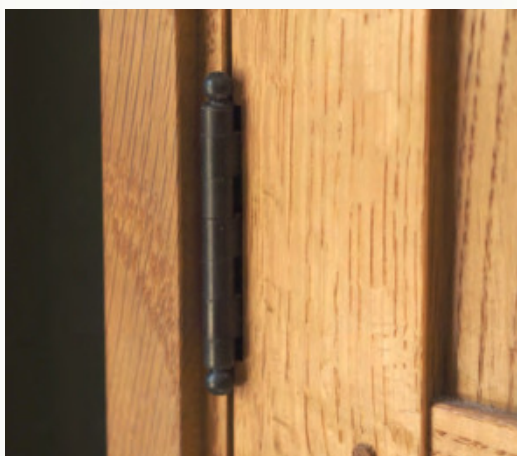
The hinge mortising jig consists of two parts, an MDF plate that supports the router, and a solid-wood fence that gets clamped to the workpiece. The plate is notched to create a recess for routing, and cutting that notch is the most critical step. The pattern bit I'll use to rout the mortise simplifies the task. Its bearing exactly matches the diameter of the cutter. Be careful when buying a bit because not all brands have this feature. I've had good luck with a 1/4-in.-long pattern bit from Whiteside, model 3000. With this type of bit, you can cut the notch in the template precisely to the hinge dimensions; you don't have to account for any offset between bearing and bit. (This offset issue can also arise if you use a router equipped with a guide bushing.)

I'll begin with a hinge template designed to cut one mortise at a time. Later I'll show you how to speed the process by making a jig to cut both mortises at once. First you'll establish the ends of the template notch with a pair of deep cuts at the tablesaw. The spacing of the cuts will determine the fit of the final mortise, so take a minute to get it right. Start by tracing the hinge onto the plate. The depth of the notch will need to account for the thickness of the fence as well as the width of the hinge. Align the fence to the edge of the plate and set the hinge against the fence. With a sharp pencil, mark along each end of the hinge. Also make a

Making the template



THE HINGE TYPE DETERMINES THE MORTISE DEPTH



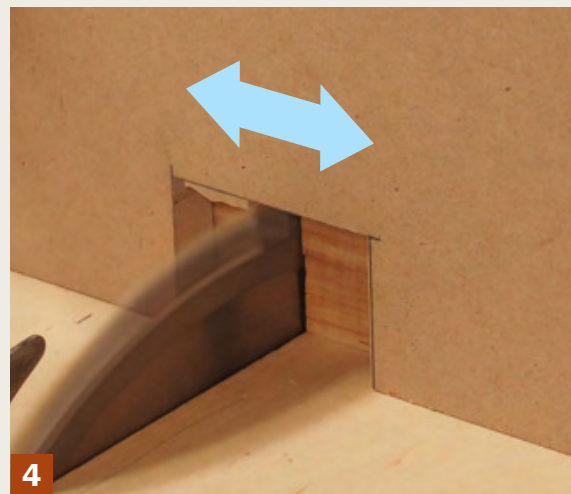
On a ball-tip hinge, the entire barrel should be proud of the surface. This provides clearance for the hinge tips.



On a butt hinge with flat ends, recess half of the barrel below the surface for a cleaner look.



To create the routing template, start by marking the length of the hinge on the plate (1). The notch needs to account for the thickness of the fence as well, so butt the plate and fence against a vertical surface when marking. Then mark the depth of the notch. For a normal butt hinge, mark at the center of the barrel. On a ball-tip hinge, shown here, mark at the inside edge of the barrel. Then cut the side walls of the notch at the tablesaw, sneaking up on a snug fit. Clamp a pair of stops to the crosscut sled fence, adding a pan-head screw to one block to act as a micro-adjust (2). Set the blocks to cut inside of the pencil lines. Cut the ends of the notch (3), and then bandsaw out most of the waste. Do the final trimming to the depth line with a side-to-side skim cut at the tablesaw (4). After this step, the notch should be too narrow for the hinge (5). Adjust the screw stop to dial in the fit (6). The hinge should slip snugly into the finished notch (7). The final task is to glue and pin the plate to the fence (8). Keep the edge of the plate flush with the fence when attaching it to ensure a hinge mortise of the proper width.



mark to indicate how deep the notch should be. The type of hinge you use will determine this dimension. For a standard butt hinge, a rule of thumb is to cut a hinge mortise so that half of the barrel is inset into the door. For a ball-tip hinge, inset the hinge to the edge of the barrel to leave clearance for the ball tips at the ends.

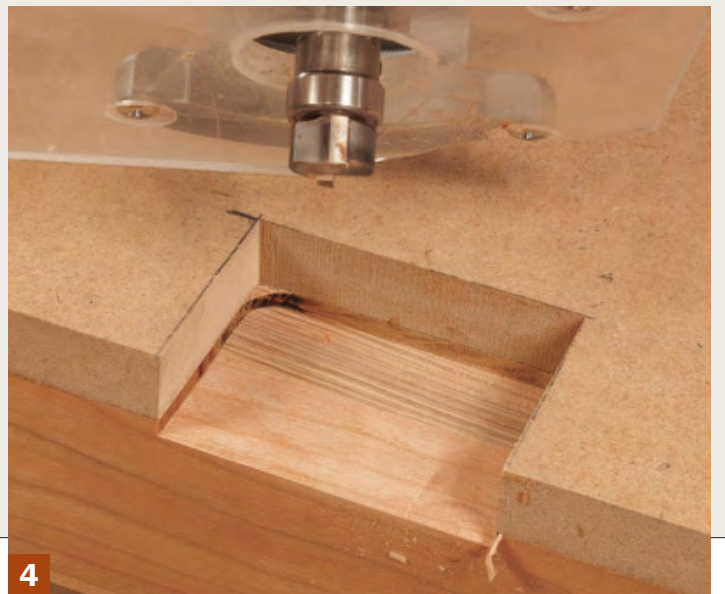
To cut the notch, clamp a pair of stop blocks to a crosscut sled. Drive a pan-head screw into the end of one stop to allow for fine adjustments without the need to unclamp a block. Set the stops to cut a notch slightly narrower than you need. After cutting the ends of the notch, head to the bandsaw to remove most of the waste. To get to final depth, head back to the tablesaw. Place the plate between the stops and slide it back and forth, advancing the sled slowly as you do so. Once the notch is cut, set the hinge in place to check the fit. Ideally the hinge doesn't quite fit at this point. To widen the notch, drive the screw stop in slightly and make another cut. It may take a couple of tries, but when the hinge just slips into the notch, you're set. Now attach the fence to the plate. I use glue and 18-gauge brad nails to hold it in place.

Putting the jig to use

If you've been careful to this point, then the rest of the process goes quickly and easily. The first step is to set the bit depth. I use a trim router. It has plenty of power to handle the task, and



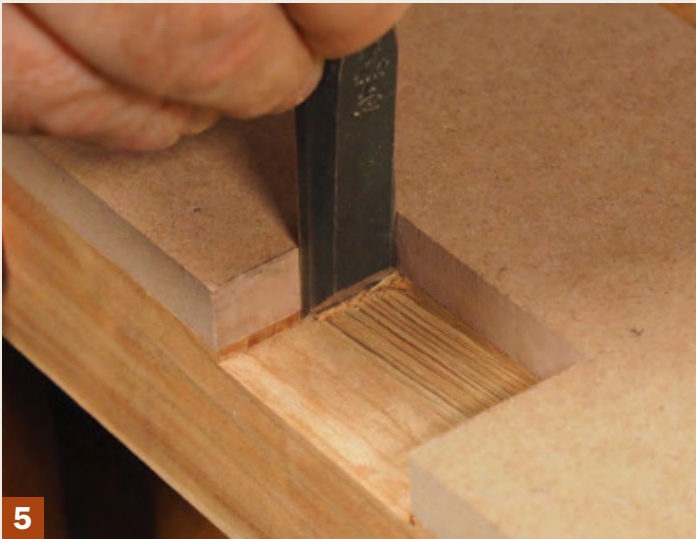
Routing a hinge mortise



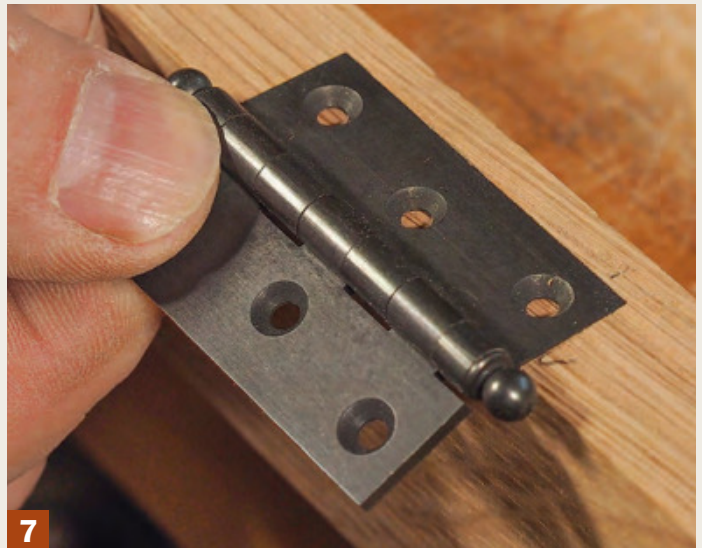
the smaller, lighter body is easy to maneuver. To aid in stability, I replaced the small circular base with an oversize plate of Plexiglas. Set the bit depth and rout the mortise following the steps in the photos. The first time you use the jig, you'll rout a notch into the fence as well as the workpiece. On future jobs, you can use the depth of the notch in the fence as a guide for setting the bit depth.

Once the routing is complete, leave the jig clamped in place and use it as a guide for chiseling the corners of the mortise square.

Slide the hinge in place to check the fit. Ideally the fit should be snug end to end. If the hinge fits the jig, but is too tight for the mortise, it probably means that the bearing is slightly larger in diameter than the cutter. In this case, the bit will leave a thin lip of waste along the mortise walls. Simply pare the lip away while the

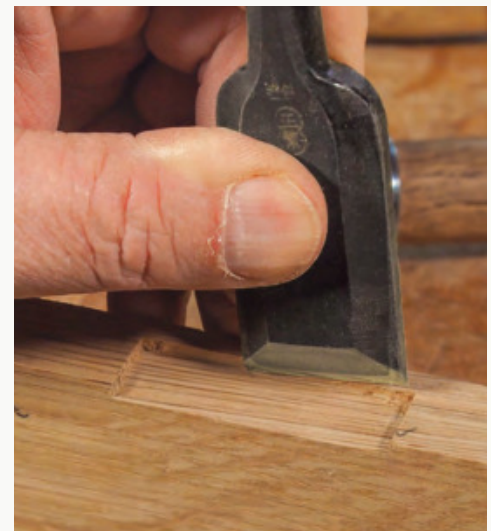


A trim router equipped with a pattern bit makes quick work of routing a mortise. To set the bit depth, place the template on the router base and rest the hinge on top of it. Raise the bit until it is slightly proud of the hinge (1). Then clamp the template in place (2). An oversize base makes it easier to keep the router flush against the plate when routing (3). Work side to side, taking shallow passes as you work toward the rear wall of the mortise. The bearing of the pattern bit runs along the walls of the notch, creating a mortise exactly the size of the hinge (4). Leave the routing template in place and use it as a guide when chiseling the corners square. Establish the vertical walls of the corners starting with the mortise ends and then paring the rear wall. (5). Then pare the bottom of the mortise flush (6). The hinge should fit tight side to side and flush against the back wall of the mortise (7). If there is any gap at the back wall, check the corners again for any waste you may have missed (see below).

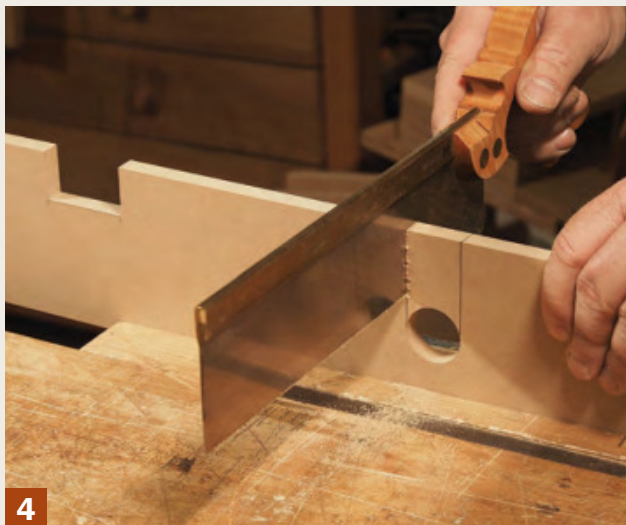


CHECK THE FIT

It's not uncommon to find that the hinge doesn't seat fully against the rear wall of the mortise. While it may not be apparent at first glance, the culprit is typically waste that hasn't been fully chiseled out from the corners. To remedy the situation, use a wide chisel, registering it against the routed portion of the rear wall, and pivot it down into the corner. Check the fit and repeat if necessary.



A two-hinge template



jig is still clamped in place. Once the hinge slips in place, check that it seats flush along the back wall and flat in the mortise. If it doesn't, the cause is usually waste. It doesn't take a lot to keep the hinge from seating, so don't overdo it when trying to remedy the situation. Go at it gently until the hinge fully seats.

Mortising for two hinges at once

While I started out using a single-mortise jig, there are some benefits to using a jig that allows you to rout both hinge mortises at once. The obvious advantage is that there is less setup to do, but it also helps to ensure accurate spacing. Routing one hinge mortise at a time requires you to reposition the jig after each mortise. If your positioning is slightly off, the hinge mortises won't be perfectly aligned between the case and door. This necessitates having to widen one of the hinge mortises to get both to seat. A jig that

cuts two mortises at once ensures consistent spacing between the hinge mortises in both the door and case.

Making the double jig doesn't take a great deal more time than the single hinge jig, but you will need to make custom jig for each project to match the door height. To make the jig, determine the mortise spacing from a full-size drawing or the door itself. I align the outer edges of the mortises with the inside edges of the door rails. From there I make the jig plate 6 in. longer than the spacing of the outer walls of the hinges. I set stops at the crosscut sled to cut a notch 3 in. from one end of the plate, then rotate the plate to cut the other notch. Once the notches are complete, the process is the same as for the single-mortise jig. □

Michael Pekovich is editor and creative director of Fine Woodworking, and author of Foundations of Woodworking (2021, The Taunton Press).



To make the plate for a two-hinge template, start with an over-length plate and mark the inside edges of the door frame (1). These will be the outside edges of the hinge mortises. Add a mark 3 in. from each hinge and trim the plate to final length (2). This will allow you to cut both notches with the same stop block settings at the tablesaw by rotating the plate end to end (3). On a longer template, I like to cut an access notch at the center which allows me to clamp the template in place at the center of the door as well (4). The first step when using the template is to rout the hinge mortises in the cabinet, or in this case, a hinge strip that will be added to the case afterward (5 & 6). To locate the hinge mortises in the door, trim it to final size and shim it so that it is centered vertically in the case opening. Use a knife to mark the door at the ends of each hinge mortise (7). Technically you only need one mark to place the jig, but it's nice to have more than one in the event that one of the knife marks is off. Clamp the template to the door using the center notch to secure an extra clamp, and rout and chisel as before. (8 & 9).





Contemporary Woodworking in Thailand

The country is rich and rising in fine furniture and woodcraft

BY ROBERT SUKRACHAND

Having split time between the United States and Thailand as a kid, I've always looked out for ways the two places relate. When I found them, those moments made my two homes feel closer to one another. This was the sort of connection I was seeking in 2017 when, as a Brooklyn, N.Y.-based woodworker and furniture designer, I set out on a trip to Thailand to begin collaborating with the country's resurging craft and furniture design communities.

In the years since, I've found exactly those moments of connection in my visits to the studios of Thailand's new crop of woodworking furniture designers. The connections started in Bangkok, the country's capital. Then, as I

transitioned to living part-time in Thailand, my own work in the country as a designer led me farther afield to rural reaches and the country's northern cultural capital, Chiang Mai.

Below are the diverse stories of six leaders in the country's woodworking renaissance. Far from a monolith, this cohort of contemporary Thai makers parallels a broader Thai society constantly in flux—thoroughly modernized and in touch with the West on one hand, but also increasingly introspective as many young Thais look to rekindle a touch of the past and a traditional, slower way of life.

Robert Sukrachand is a woodworker based in New York, N.Y.; and Chiang Mai, Thailand.



A WEALTH OF WOODWORKING TALENT

- 1 Nucharin Wangphongsawasd
- 2 Charnon Nakornsang
- 3 Nanu Youttanakorn
- 4 Phakphoom Wittayaworakan
- 5 Thamarat Phokai
- 6 Moonler Collection Co.

Photos, except where noted: Robert Sukrachand; this page, second from top, and bottom: Pichan Sujaritsatit



**NUCHARIN
WANGPHONGSAWASD**



Ever since she was an undergrad studying industrial design at the King Mongkut Institute of Technology, Nucharin Wangphongsawasd, who goes by Nuch, has had an interest in designing her own furniture. But, as she explains, “traditionally in Thailand we have carpenters who build houses, and then designers who work with fabricators. I wasn’t even familiar with the concept of a woodworker who both designed and built their own furniture.”

Nuch, 37, began exploring this concept in earnest in 2009 after being accepted into the furniture design program at the Rochester Institute of Technology. “I had no clue what I was getting myself into,” Nuch explains. “I remember the first day when my mentor told me what tools we needed to buy for our projects, and I had never even heard of them before. I was scared at that time, but I knew all I could do was give it a try.” That openness and lack of

rigidity seems to have contributed to Nuch’s signature style of free-flowing furniture and wood objects. Rarely static, her technically complex works sway through the thoughtful use of bent-laminated and kerf-bent components.

After returning to Bangkok and setting up her own workshop, Nuch was promptly awarded a Wingate Residency at the Center for Art in Wood, in Philadelphia. There in 2016 her woodworking vocabulary further shifted. “The older I’ve grown the more delicate my work has become.” That development can be seen in her recent series of delicately bent tabletop objects, which she hopes slow the viewer down in order to fully appreciate them. Now Nuch focuses mostly on teaching young people at local universities and deepening her exploration of her preferred bending techniques. “How far can you push it? That’s what excites me now.”



CHARNON NAKORNSANG



In Charnon Nakornsang's home studio on the outskirts of Bangkok, there is little separation between his work and home. His small woodshop is full of the warm and exquisite details many woodworkers save for their most refined pieces of furniture. Just steps away, entering the front door of his home, a visitor's jaw is likely to drop at the grace of his furniture, the visual balance in which he displays his work, and the mesmerizing light.

Charnon, 34, came to woodworking after 10 years as a graphic designer in Bangkok. "Growing up, I didn't get to see furniture with real wood, just built-ins and plastic and metal things," Charnon says while explaining his move into woodworking as a career. While watching the film *The Great Gatsby*, he was enchanted by the walnut clock, wood details, and warm palette of Tobey Maguire's cottage. "I started researching this idea of living with wood all around you, and that's when I discovered Nakashima, Krenov, and Esherick."

Charnon was taken with the workshops and hand tools of these artisans as much as with their furniture. After taking a class in using hand tools to build a chair, he was hooked. "It became a full-time hobby





and I began to sell some pieces. After work and on the weekends, I would work on my furniture projects whenever I had time.”

Around the time of Thailand’s first COVID-19 lockdown in 2020, Charnon left graphic design behind and committed to furniture full time. He continues to make his home life and workshop blend seamlessly, building furniture for daily use, such as a step stool for his daughter who loves to help in the kitchen. Taking a moment to appreciate the fine joinery and details in Charnon’s work, mostly made out of American hardwoods like walnut and cherry, one is struck by the way that wood knowledge and aesthetics travel across the world. Indeed, atop one of his finely finished tables lies a copy of Krenov’s *A Cabinetmakers Notebook*, whose philosophy is as elemental to Charnon’s woodworking style as it is to any student in the Redwoods.



NANU YOUTTANAKORN



In 2012, after 10 years as a graphic designer in Bangkok that he describes as “draining,” Nanu Youttanakorn decided it was time for a change. He was accepted into the master’s of social design program at Design Academy Eindhoven, in the Netherlands. Knowing that his study would primarily be workshop based, Nanu wanted to freshen up his making skills. So he approached Phisanu Numsuriyothin, mentor to many Bangkok-based furniture makers. “Phisanu got me hooked on woodworking,” explains Nanu, 39.

“Even though at Eindhoven we were doing workshops in all kinds of materials, whenever I returned to Thailand, it felt like I was always surrounded by wood.” His mother collects old doors and windows from across the Thai countryside, instilling in Nanu an appreciation for found and reclaimed materials. Determining how to work with these materials, preserving organic forms while leaving his own imprint, has been a core pursuit for Nanu. “I’m trying to find the balance between control and letting go,” he says. “I only want to insert my intention where I need to, for example for a wood joint. It’s the contrast between natural and manmade.” An example of this contrast is his recent commission for the British ambassador’s residence in Thailand, a pair of benches built from a *charmchuri* log that grew on the British embassy’s former grounds (see bottom left photo, p. 44).

His work has a hint of history and nostalgia. “The old way of life in Thailand was tied to wood materials: tools, transportation, buffalo carts, barges,” Nanu says. “These pieces have been worn and contain layers of time and texture. For me, it’s all about adding more and more layers in my furniture designs.”





PHAKPHOOM WITTAYAWORAKAN

‘The world was spinning, and other people were working. Meanwhile, I was doing this work,’ says Phakphoom Wittayaworakan, 43, as he explains the name of his studio, Meanwhile Woodwork. His open-air woodshop, which evokes the feeling of entering a rural Thai rice barn, has become a place for “thinking about what’s going on between body and soul,” he says. “Woodwork gave me the time to explore the inside, and to have a peaceful moment.”

Phakphoom, who goes by Pop, grew up in this same village in Buriram Province located about four hours northeast of Bangkok. After studying to be a veterinarian, Pop moved to the capital and opened a clinic. During the 2011 monsoon season, now referred to as the Big Flood, unusually intense rains made life unbearable for many Bangkokians and stirred Pop to return to his childhood home.

The land that now houses his workshop and fruit and vegetable orchards was then sprawling rice fields owned by his mother. Settling in, Pop built his studio from scratch, slept in the loft above, and began experimenting in making small pieces of furniture and wooden tabletop designs. Carving expressive bowls and trays soon became his focus. “Using hand tools was shaping me, or tuning me, to be more peaceful and calm. If I used a power tool, it had the opposite effect. The noise made me feel more aggressive,” Pop explains. The calm of his studio makes it a frequent pilgrimage point for many of his woodworking compatriots, including the momentous Found Wood workshop in 2015.

“As a kid, I never had a chance to work with tools, build things, or experiment with wood,” an experience many of today’s woodworkers can surely identify with. “I had a feeling that there was something lost,” Pop says, “and I had to go and find it.”





THAMARAT PHOKAI

In 2000, Thamarat Phokai, then a first-year painting major at the Silapakorn University arts program, was walking home as he passed Wat Phra Kaew, Bangkok's famous Temple of the Emerald Buddha. Landscapers were felling tamarind trees, cutting the logs into small pieces, and discarding them. Instinctively, he grabbed as many sticks as he could hold, and brought them back to his studio.

"I thought it would be fun to experiment with wood, because no one else in my program was using the material," he says. Thamarat began carving small toys out of wood for fun. The next summer, while spending time with family in Sing Buri Province, he was taken by the *kraat*, a traditional Thai tool formed out of wood into an elongated arc used for steering buffalo through rice fields. Returning to his university, Thamarat began adapting this arc form into his own wooden sculptures.

After living in Bangkok for 14 years, Thamarat purchased a small plot of land in the mountainous northern region Chiang Dao. Building a small house and separate workshop, he began focusing on working with wood. Thamarat's furniture and murals are built completely by hand with chisels and handsaws. The only electrified tool he owns is a rusty bandsaw, which rarely gets turned on.

"My inspiration comes from the natural materials around me that I live with everyday. Just like a stone in the riverbed here has texture, the pieces of wood that I work with have unusual character," he says. Rather than removing that character, Thamarat preserves it. Averse to glue and sandpaper, he builds every one of his chairs to knock down into individual components. His work life blends seamlessly with the studio surroundings and mountain hamlet. "Even the leaves that I look at outside of my workshop every day provide inspiration," Thamarat explains.

When he's not building furniture, you might find Thamarat carving a massive wooden totem or, as he was on my visit, chiseling traditional finial components for the local temple.



MOONLER COLLECTION CO.



About 15 kilometers outside of Chiang Mai's city center, Moonler Collection's sprawling workshop vibrates as the company's 30-plus employees turn local *charmchuri* lumber into elegant tables and chairs. Having nicknamed themselves the Charmchuri Wood Whisperers, Moonler's team of designers and craftsmen focus on elevating this overlooked species.

Moonler's owner, Phuwanat Damrongporn, moved to Chiang Mai in 2008 to collaborate with local craftspeople. Visiting the craft village of Baan Tawai, Phuwanat was disappointed in the quality of the furniture he found. Knowing that he could improve on

it, he hired his first and longest-serving employee, Kur, and the two began building furniture—at first with minimal tools, as they couldn't afford a full shop.

Phuwanat and Kur found an abundance of wood to work with. In the neighboring provinces of Lampang and Phrae, local entrepreneurs rely on the *charmchuri* tree to harvest the shellac excretions from the *Kerria lacca* bug. The fast-growing trees eventually stop attracting the bug and are felled, creating ample supply of the lumber. "At this time, Thai people only wanted to buy furniture built out of teak and rosewood. They were not interested in *charmchuri* furniture because the material was traditionally seen as cheap and only used for woodcarving," explains Phuwanat, who saw an inherent beauty in the grain and flexibility in the size and color variation. Sensing opportunity overseas, the young brand exhibited its first collection at the Thailand International Furniture Fair in 2010, finding ample interest from buyers in Singapore and Japan. The furniture is now exported across Asia and North America, and most of Moonler's new collections are designed by Thailand's top independent design studios. The Moonler team still sticks to its roots, building everything in-house.



Photo top right, bottom left, and bottom right: Nontarat Hasitapong



Houndstooth Dovetails

A master of this strong
and snazzy joint explains
its secrets

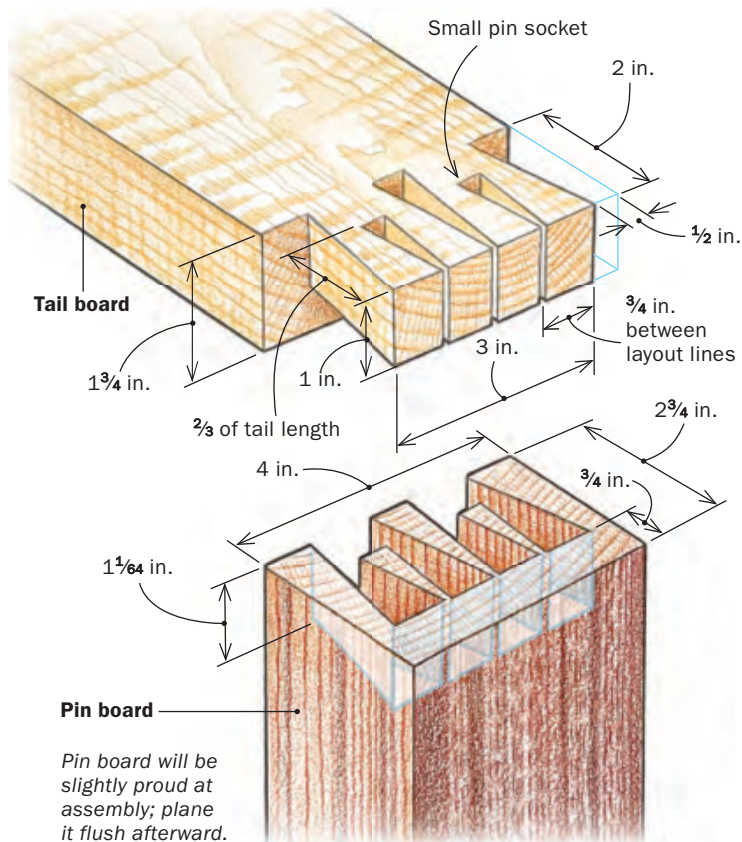
BY FRANK STRAZZA

The houndstooth is a dovetail within a dovetail; its pins, tapering to a rapier point, give an already beautiful joint another dimension of visual attraction—and they make it more challenging to create. I can't remember when I first saw houndstooth dovetails, but I loved them from the start, and I've spent years employing them in custom workbenches. I cut the joint entirely with hand tools. The handsaw is the only tool able to create the fine needlepoint pin sockets that distinguish the houndstooth. People often question the strength of the joint because of the seeming fragility of the narrow points. But in fine old English furniture, where needlepoint dovetails originated, they've stood the test of time. You can use the houndstooth on drawers and cases, but I'll demonstrate the process using the front rail and end cap of a workbench. I often use contrasting woods for this joint to heighten its graphic impact, and here I'm using curly hard maple and walnut. Using species so different in density is also advantageous because the walnut pins will compress slightly when they are fitted to the maple tail board.

A helpful rabbet

The first step is to create a rabbet on the end of the tail board. This will help locate the pin board later, but I do it mostly to reduce the thickness of the tail board so I won't have so much to cut away. With a knife and square, mark a line across the tail board's inside face and on each of its two edges 2 in. from the end. This distance will also be the full length of the tails, but don't mark it

HOUNDSTOOTH DOVETAIL SIZED FOR A WORKBENCH



on the outside face yet. Next, with a marking gauge, scribe the depth line of the rabbet.

Saw the shoulder of the rabbet with a tenon saw or dovetail saw. Then remove the waste with a chisel. You can saw out the waste, but I find it's just as quick and accurate to chisel it away. Start by splitting along the grain well above the depth line. Watch closely and make sure the split doesn't dive down past the line. If the grain is going fairly straight, you can continue closer to the line. As you approach the line, start working across the grain. I



Tails start with a rabbet

Build a little wall. To prepare for the shoulder cut, scribe the crossgrain layout line with a knife, then use a chisel to create a stop to guide your saw.



Saw the shoulder. After marking the rabbet's depth line with a cutting gauge, cut down to it with a tenon saw.



Knock out the waste. You can take out fairly large chunks at first, chopping into the end grain. When you get down near the depth line, pare across the grain to achieve an even surface.



Rabbet for the rabbet. Strazza takes a few light crossgrain passes with a rabbet block plane to flatten and smooth the surface.



Tails layout

Simple setting. Strazza likes a 1:7 ratio for the angle of houndstooth dovetails, and a quick drawing on a scrap guides the setup of his sliding bevel.

Dimensions of the double dovetail. Use dividers to find $\frac{1}{3}$ of the length of the tails; that is where the baseline of the small pin sockets will fall.



Lay down the angles. After drawing the crossgrain baseline lightly with a pencil, mark the dovetail angles for the tails and the pin sockets.



clean up the cheek of the rabbet with the appropriately named rabbet block plane.

Tails layout

The next step is to lay out the tails, which is fairly straightforward. There are two large tails, each with a small pin socket cut within it. Start by making three tick marks at the end of the board, one in the middle and the others $\frac{1}{2}$ in. from each edge; those are the only measurements you need to create the two tails. Before marking the angles, carry the baseline across the face of the board in pencil. Next, mark the angles with a sliding bevel on the face of the board. Then use a combination square to carry the angled lines square across the end of the board.

Next lay out the pin socket within each tail. I find that having the socket two-thirds the length of the large tail makes a visually pleasing joint; I use a pair of dividers to step off those thirds and mark the socket's baseline. After marking the angles and the baseline with a pencil, come back with a square and a knife to mark the baselines on these pin sockets as well as on the large tails.

Cut the tails

As you begin sawing the angled cheeks of the tails, keep in mind that these cuts must be sawn perfectly square across the end of the board or the joint will not fit. If the dovetail angles are slightly off, it won't matter as much, because they will simply be transferred to the pin board.

For consistency's sake, I make all the cuts that are angled in one direction, then reset my body position and make all the cuts angled in the other direction. To make the second cut of each pair that forms a needle point, simply put the saw in the first kerf, press your thumb against the saw plate for guidance, and cut the angle going in the other direction.

With all the angled kerfs cut, I remove the inside waste with a coping saw. It's ideal to leave a heavy $\frac{1}{32}$ in. above the baseline; if you're not comfortable cutting that close, leave more. Then move the workpiece from the vise to the bench and turn it on edge to saw off the waste on either side of the tails with a tenon saw. First deepen the existing cutting-gauge line with a knife and create a stop cut with a chisel to produce a wall for the saw to ride against.



Now it's knife time. With the angles drawn, scribe the tail and pin socket baselines—not cutting continuously across, only where waste will be removed.



Create the tails

The important angles. Strazza tilts the tail board in the vise so he can monitor the layout lines on the end and the face; then he cuts the dovetail angles with a tenon saw.

The rest of the shaping is done with chisels. Start with the baseline and aim to undercut it slightly. You'll be working from both sides of the board, so pinch the chisel tightly between your thumb and fingers, resting your pinky and ring fingers on the workpiece. This is the best way to control the chisel, as you knock it with a mallet, and keep it from going all the way through to the other side. If you hold the chisel by the handle, you won't be able to control the depth of cut. You want to undercut from both sides, which gives the shoulder a shallow V shape.

With the tails complete, I use a small dovetail square with a very narrow blade (made by Sterling Tool Works), which enables you to check between the tails to be sure the cuts are square. Ideally, you won't have to pare any material away; but if the cuts are not square, adjust them by paring with a chisel.

On to the pins

To transfer the tails, clamp the pin board vertically in a vise and lay the tail board on top with the rabbet's shoulder tight against the inside face of the pin board. Use a sharp, thin knife to mark along the sides and the wide ends of the tails. Mark as much as you can reach between the tails, and make tick marks at the needlepoint openings. Then remove the tail board and use dividers to transfer the baseline of the pin sockets to the pin board. Mark the inside



Coping mechanism. With the tail board still in the vise, Strazza removes most of the waste with a coping saw. He cuts to within $\frac{1}{32}$ in. of the scribed baseline.



Saw the sides. After most of the waste is removed from between the tails, Strazza saws off the large chunks on either side.



End-grain cleanup. To cut halfway through from each face, hold the chisel by the blade with a finger or two on the work to act as a brake. That grip lets you control the depth of cut. Slightly undercut this and other end-grain surfaces for an easier fit.



Skinny square. The precise angle of the dovetail kerfs is not vital, since you will mirror the angles when you transfer to the pins. But the kerfs must be square to the face of the board. To check them, Strazza uses a special square with a skinny blade.



■ Transfer the tails

Knifing the outline. After clamping the pin board vertically in a vise, place the tail board on top, registered on its rabbet. Then scribe along the outside angles and the end of the tails.

angles using the sliding bevel set to your dovetail angle. Next mark the depth of cut with a cutting gauge set to the thickness of the tails plus just a hair. Carry the angled lines straight down to the depth line using a square and a pencil.

Since these are half-blind dovetails, they must be cut with the saw's toe angled upward. It can be tricky trying to follow the dovetail angles while cutting straight down and holding the saw at an angle. The key here is to stay on the waste side of the line. When you have sawn as far as you can without touching the baseline and the depth line, it's time to start removing the waste with chisels.

The first step is to remove all the waste above the small houndstooth pins. After establishing a little wall against the baseline, hold the chisel against the end grain with the bevel down and make a good strong mallet hit; the chip will be forced up and toward the wall. Then set the back of the chisel against the knife wall on the baseline and give it another good whack, reinforcing the baseline and creating a stop cut; this sequence is important for each subsequent cut. Get as close as you can to the top of the little pin, then flip the chisel over and pare to the line.

Next remove the waste between the little pins. In those narrow spaces, I chisel straight down with a $\frac{1}{4}$ -in. chisel with the bevel out and slowly work backward.

As you get closer to the baseline, lighten up on the chiseling and pare to the line with the bevel up. Once you are within about $\frac{1}{32}$ in. of the scribed line, slide the chisel into it and push; this should give you a nice clean cut along the line. You can undercut this surface, but don't remove any wood along the outer edge. There is little glue strength on end-grain surfaces, so you can undercut these areas to ease fitting and reduce the potential for gaps.

Fitting the houndstooth

Fitting can be a bit time consuming. I start by hammering home the tail board with a rubber mallet. If it's too tight, back it out. You



Tick marks at the needle points. After marking as much as you can between the tails, make short knife marks at the narrow openings.



Extending the angles. With the tail board removed, use the bevel gauge, set to the dovetail angle, and complete the knife lines from the needlepoint tick marks to the baseline.



How deep are the pins? To scribe the depth line for the pins, set a marking gauge to a hair over the full thickness of the tails. This will produce pins that are just slightly proud when the joint is assembled.



Cut the pins

The houndstooth is half-blind. With the saw's toe tilted upward, saw as far as you can without cutting into the baseline and the depth line.



Clean out the top first. Strazza begins waste removal by fully chiseling out the area above the houndstooth pins.



Going deeper. Next, he chops (far left) and then pares (left) to clean out the recesses on either side of the houndstooth pins.

Putting the houndstooth to bed. Strazza fits the joint by partially assembling it and examining the pins for dark or shiny spots where the grain has been compressed. Then he pares gently in those spots.

can often see where it's too tight by the bruising of the fibers. I usually pare the pin board, as the access is easier.

When you are happy with the fit, it's time to glue it up. I use hot hide glue, which tends to lubricate the joint, making assembly easier. It also fills minor gaps. If you have large gaps, you can make little wedges, add glue, and tap them in. To fill small gaps, you can use the old glue and sawdust trick. If you've tried this with yellow glue, you may have been disappointed with the results. But if you mix a bit of sawdust with hot hide glue, it makes the best wood filler in existence; it scrapes and sands beautifully. □

Frank Strazza works wood in Bandera, Texas, and teaches across the country.

www.finewoodworking.com







The moment I first saw one of these benches in a church in Iowa's Amana colonies, I wanted to build one. After researching the benches' history with Amana historian Peter Hoenle, I discovered that the original benches were made in Ebenezer (now West Seneca), N.Y., in the early 1800s for the churches of the Community of True Inspiration, a communal society that still exists. The benches, with their removable backs, were transported from New York to Iowa in 1846 when the entire community relocated to near Iowa City. The majority of the benches, some upwards of 22 ft. long, are still used each week by members of the church. I scaled down the bench to 5 ft. to better fit in a typical home. I also used hickory for the legs and battens and pine for the rest.

For a seemingly spartan design, the joinery is pretty exciting—and it's all visible. The legs use staked joinery to attach to the seat and battens, which themselves are joined via sliding dovetails. The seat and splat are linked with a knockdown joint, whose angled tenon requires special care. A tapered wedge locks the joint. To top it all off, the back rest connects to the splats with drawbore pegs. It sounds like a lot, but it's worth it; the originals have been going strong for nearly 200 years.

Battens with sliding dovetails

Done right, the sliding dovetails create a solid mechanical joint that also benefits from glue. Cut the housings first. After clearing most of the waste with a dado stack, I use a router and jig to create the flared side walls. I then use the same dovetail bit in the router table to cut the dovetail on the battens. Only light mallet taps should be needed to assemble the joint. I leave the battens about 1 in. long for fitting.

The seat gets angled notches at its back edge to make room for the angled splats. Trace each

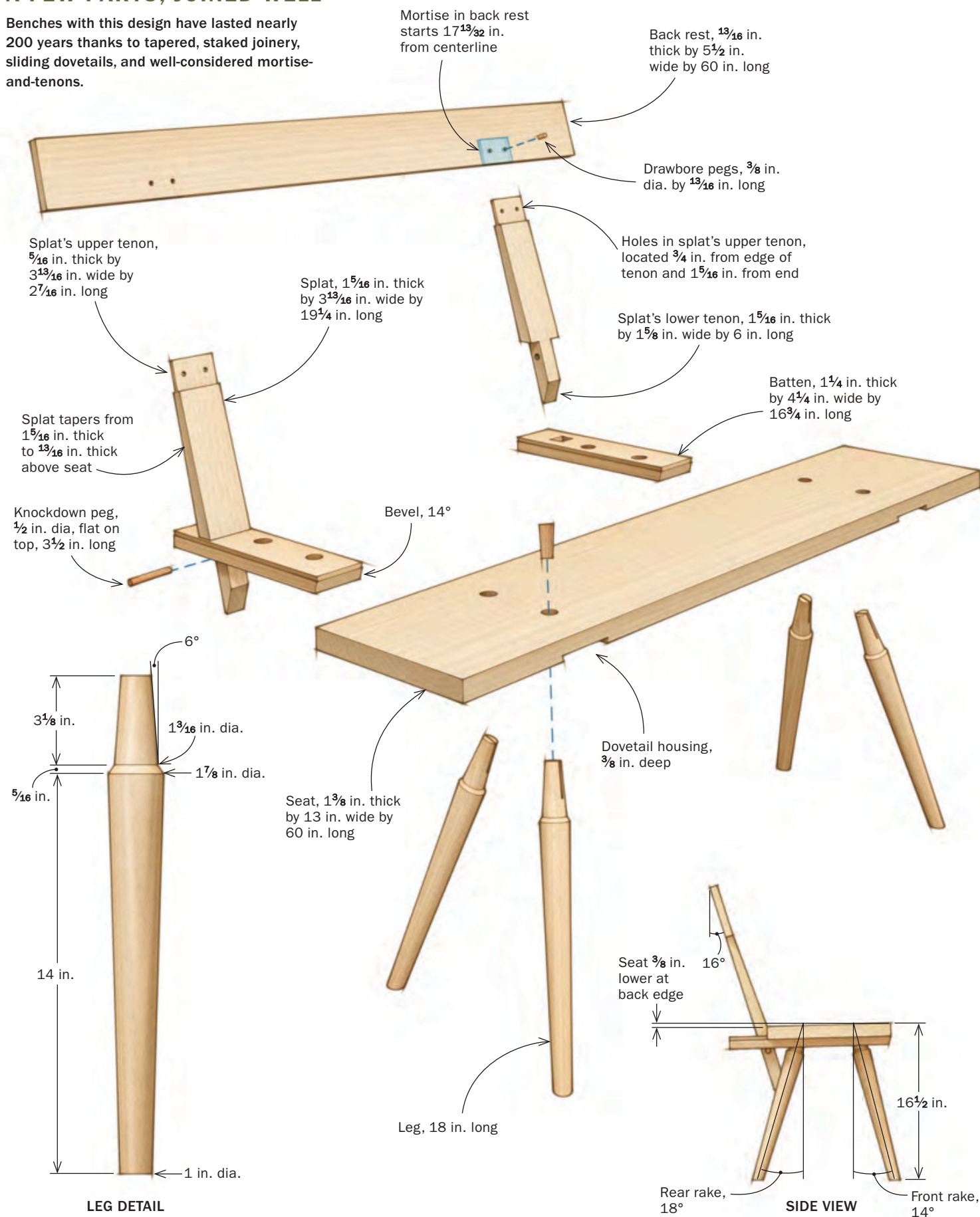
Amana Church Bench

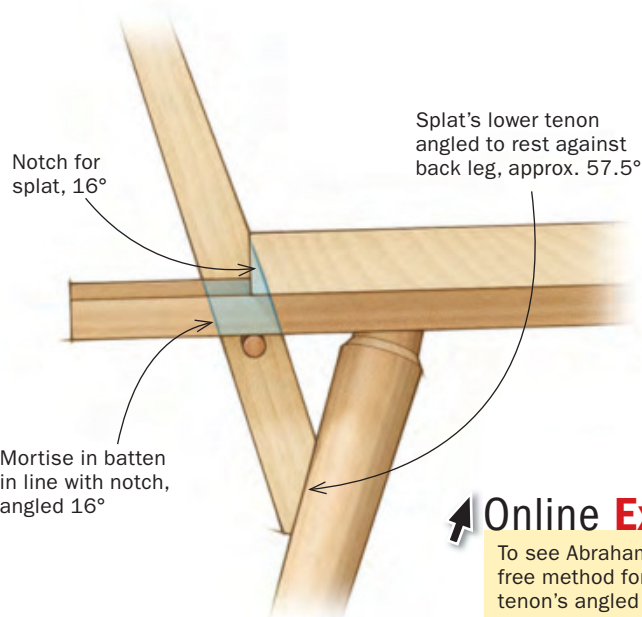
Essential form belies a master class in techniques

BY JAMEEL ABRAHAM

A FEW PARTS, JOINED WELL

Benches with this design have lasted nearly 200 years thanks to tapered, staked joinery, sliding dovetails, and well-considered mortise-and-tenons.

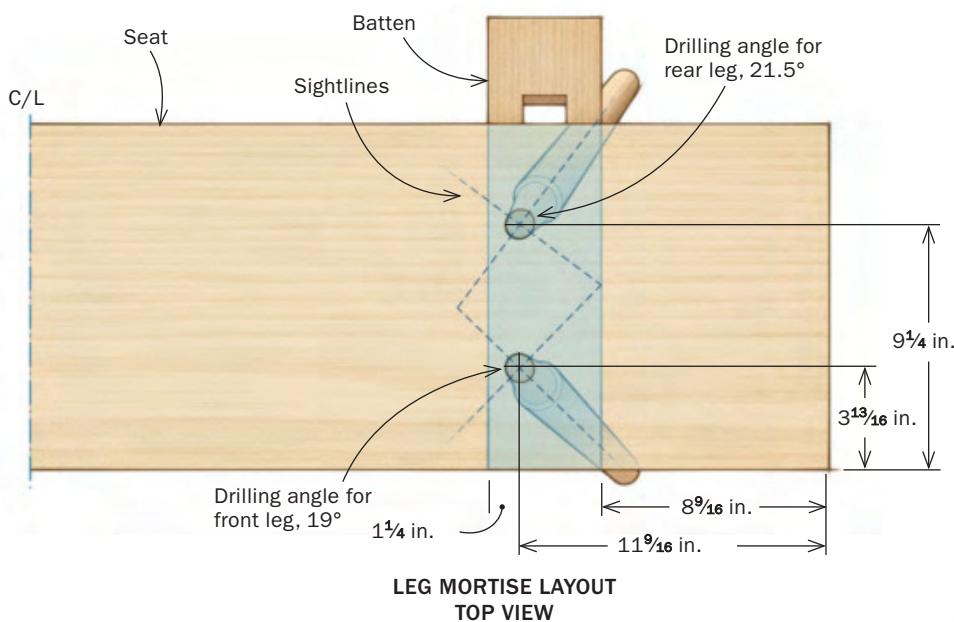




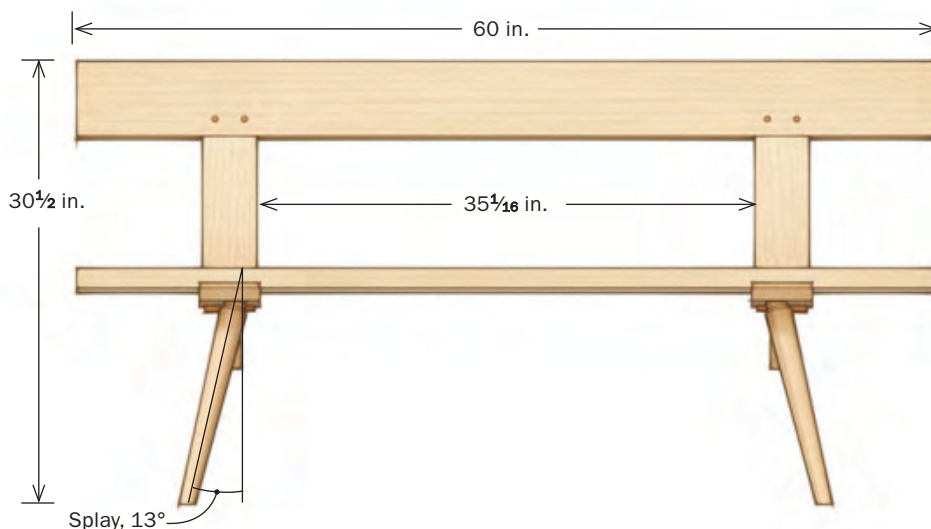
JOINERY DETAIL

Online Extra

To see Abraham's math-free method for cutting the tenon's angled end, go to FineWoodworking.com/298.



LEG MORTISE LAYOUT
TOP VIEW



FRONT VIEW

splat onto the seat to lay out the notch's width. Saw and chop the joint first, then refine it with an angled paring block, deepening it until the notch's top edge meets the top face of the seat at the very corner. Blue tape or a backer strip at the top of the seat can help control blowout. Then chop the ends for nice, crisp shoulders.

Angled mortise-and-tenons

Angled through-mortises in the battens accept the long splat tenons. Although this is a knockdown joint, it yields an incredibly rigid structure.

To lay out the mortise for the splat, I drive a batten into its housing until it's $\frac{1}{8}$ in. proud at the front edge of the seat. Then I knife a line where the batten meets the notch to mark the front of the mortise. To mark the back, I hold a splat blank in the notch and trace against it with a pencil. A pencil line is fine here since I'll plane the future tenon to fit.

After removing the batten to lay out the rest of the mortise, including transferring it to the batten's bottom face, I drill and chop away most of the waste, then carefully chisel the ends with an angled paring guide block clamped to the batten.

With the mortise done, turn to the accompanying tenon on the splat. To make sure the splat lines up perfectly with the notch at the back of the seat, place the splat right on its batten and use the mortise to mark the tenon's width. I cut the cheeks on the bandsaw, chop the shoulders with a chisel, and shave down the thickness with a handplane. Leave this tenon long for now. You'll cut it to length later when the base is assembled. Do check its fit though. Insert the splat into the batten, then tap the batten until the splat tightens up to the notch. There should be no gap where the splat meets the top of the seat.

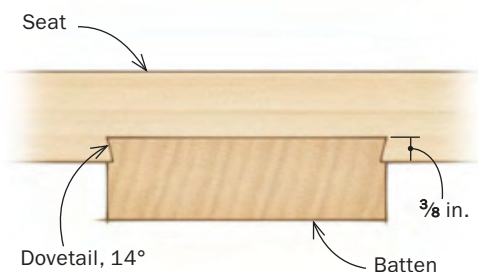
With the splat still tight against the notch, mark the front of the batten to length. After cutting at this mark, I cut the bevel on the batten's front end for a nice shadow line.

Finally, install the batten. When driving it, stop a couple of inches from the front of the seat, apply some glue to the housing, install the splat, then drive the batten until the splat seats against the notch. Clamp the front of the batten to the seat to close any gaps, remove the splat, and let the glue cure.

Back rest is drawbored

The joinery for the back rest, a straight mortise-and-tenon, is a break from the angled work so far. Its drawbore means it's no less interesting though. Again, lay out the joints using the parts

DOVETAIL BATTENS ARE THE HEART OF THE SEAT



Use a jig to shape the dovetail housing. The jig is screwed together, with the narrow front and back pieces secured so they're tight to the seat. They also serve as a backer at the edge to eliminate blowout from routing the dovetails.



Rout the dovetail housing to shape, width, and depth. After clearing most of the waste with a dado stack, Abraham secures the jig in place and routs. The router's base is trapped by the jig's wider side pieces, which determine the width of the housing. The side pieces are parallel.



Use the same bit in the router table to shape the battens. After setting the bit's height with a test piece, Abraham routs his battens. These are $\frac{1}{4}$ in. wider than the slot, and he sneaks up on the tail's width; instead of moving the fence, he handplanes an edge between passes.



Insert batten by hand before lightly tapping with a mallet. If your fit's any tighter, the glue might swell it so much it won't assemble. Additionally, you could blow out the front edge of the seat while inserting the battens.



Saw an angled notch at seat's back edge for angled splat. Saw kerfs every $\frac{1}{4}$ in. or so before carefully knocking out most of the waste with a chisel. This notch makes room for the splat, which runs through the batten and rests against the rear legs.



Angled paring block perfects the slope. The block's angled end is cut to match the notch. By clamping the block to the seat, Abraham can take light paring cuts that start high and, by gently tapping the block down, go deeper until he ends up with a crisp corner at the top of the seat.



Dry-fit the batten to lay out its mortise for the back splat. Use a knife tight to the seat's notch to scribe the front of the mortise (far left) and the splat blank to lay out the back of the mortise (left). Abraham uses a pencil here, which is accurate enough, since he'll plane the splat's future tenon to fit. Transfer the marks to the batten's bottom face, remembering that they angle across the batten's edges.

themselves. Insert the splats into the battens and clamp the back rest to them, using spacers to set the correct height. Even though I haven't cut the splats' upper tenons yet, this setup allows me to use a knife to mark the length of the mortise on the back rest and the shoulder on the splats.

The back rest's mortises are centered in the stock, but the splat's corresponding tenons are offset toward the back so the taper can be cut into the splat's front face.

After the joints have been fitted, dry-assemble the back rest and splats to lay out the splat's taper, which runs from the top of the seat to the back rest. The taper gives the sitter a little ergonomic comfort—a welcome consideration from an austere piece of furniture.

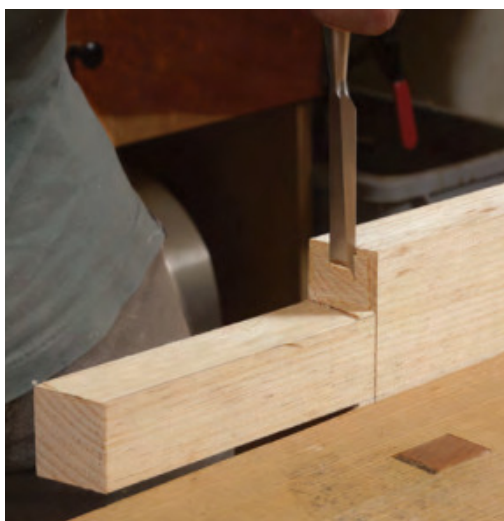
Finally, lay out and drill for the drawbore pegs. I don't glue this joint; the pegs are sufficient. But don't assemble it yet. There's still more to do: the knockdown joint. Here, tapered pegs run



Same angled paring guide adjusts the mortise's angled ends. Remove most of the waste at the drill press and then with rough chops. Finish with light paring cuts while holding a chisel tight to the angled block. Pare from both faces to avoid blowout. Install the battens after this step.

SPLATS ARE KNOCKDOWN AND DRAWBORED

Chisel perfects the splat's lower tenon shoulders. Rather than saw right on the angled shoulders, Abraham cuts close and finishes with a chisel. The cheeks are simply ripped at the bandsaw. Leave this tenon long for now.



Trace the bottom of the batten onto the splat tenon. This line lets you accurately locate the angled hole for the dowel that will lock the knockdown joint.



Drill at an angle above the line from the batten. About a quarter of the hole's diameter should fall within the batten's mortise. To create the angle, prop up the splat with a shim under its tenon shoulder.



Plane a tapered flat along an oak dowel while testing it frequently. This dowel wedges the splat against the batten. When testing it, check that the flat seats firmly and evenly. Trim it to length after achieving a good fit, leaving the narrow end long for easy removal.

through angled holes in the splats' lower tenons. The wedging action keeps the splats tight to the battens—and lets you take the bench apart for cross-country moves.

Staked undercarriage supports back

Even with its little tweaks and added interest, the joinery until now is typical of flat work. The legs, though, are firmly in chair territory, with turned, tapered tenons and matching tapered mortises.

I turn the tapered legs and their tenons. The tenons need to be smaller than the largest diameter your reamer can cut. While you can use the measured drawing as a guideline when sizing the tenon, your individual reamer will determine the actual dimensions.

The rake, splay, and position of the legs were designed so the beveled ends of the splats' beveled tenons rest firmly on the backs of the rear legs. This triangulation is what makes the bench so strong.

I use a pair of inexpensive laser levels, one plumb and one in a shopmade adjustable mount, to cast sightlines onto my drill and



reamer. I usually turn the lights off in the shop so the laser beams are more visible.

Start by drilling through the seat and batten from the top. This will isolate blowout to the bottom, where it will be removed when you flip the seat to ream from below. Hold the drill and your elbows close to your body for the best control.

When reaming, center the lasers on the hole by eye. The lasers should walk up the reamer and meet at the middle of the top of the tool. Ream slowly and carefully, taking frequent breaks to clear out the waste and checking that you're still aligned with your lasers. You could skip the reaming and use straight tenons, like many of the original benches do, but the joint would not be as strong.

Before gluing the legs into the seat, I drive them into the mortises dry and mark the tenon at the underside of the batten.



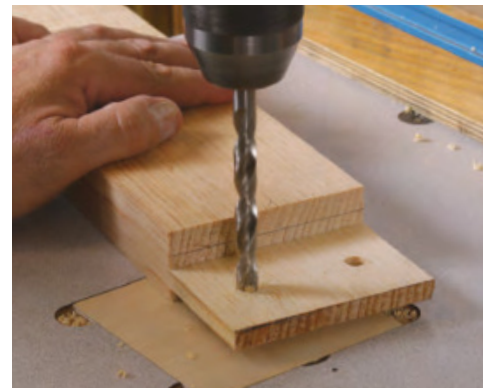
Clamp the back rest to the splats to lay out their mortise-and-tenons. Dry-fit the splats and then clamp them to the back rest with risers for even spacing. Next, remove the risers to knife the bottom edge of the back rest onto the splats. Then, since the splats' upper tenons are full-width, knife the width of the splat onto the back rest to mark the mortise's width.



After mortising the back rest, drill for the drawbore pegs. Two pegs in each mortise guarantee a strong connection.



Mark the drawbore's offset. Use a center punch $\frac{1}{16}$ in. smaller than the hole. Register the punch against the hole's edge toward the shoulder. Drilling at this mark will create a hole offset $\frac{1}{32}$ in. toward the tenon.



Only after that do I cut the kerf for the wedge. This allows me to seat the tenon without the tapered mortise closing the kerf. I apply glue to the tenon and the mortise. I then drive the tenons into the seat, stopping at the marks. I use liquid hide glue for its extended open time. Then I glue and drive the wedges, which should be about $\frac{1}{16}$ in. wider than the tenon so its edges bite into the seat. I apply glue to only one side of the wedge so if the tenon shrinks, it moves away from the wedge on the unglued side instead of pulling away from the mortise. Once the glue cures, saw the tenons flush and smooth the top of the seat.

The bottoms of the legs need to be cut to length. Place the bench on a flat surface (I use my workbench top) and shim it so the seat is level left to right and angled down front to back. Now measure $16\frac{1}{2}$ in. down from the front edge of the seat and set a pair of dividers to the distance between the $16\frac{1}{2}$ in. mark and



Bandsaw the splat's taper. At the top of the taper the splat should be flush with the back rest. Bandsaw close to your line before refining with a plane. Don't assemble the splats and back rest yet.

LEGS ARE TURNED AND STAKED

Turn the tapered tenons while checking them in a reamed test hole. After roughing away most of the tenon with a gouge, Abraham adjusts the fit using a scraping tool. A reamed test hole in a partially resawn block lets you monitor the fit.



Laser level in a tilting carriage lines up angled mortises for legs. Abraham adjusts the carriage to the appropriate drilling angle, then positions it so the laser falls on his sight line. The laser left plumb is set perpendicular to the sight line.



Ream from the underside after drilling through from above. Ream slowly and check your progress frequently. Small changes affect the rake and splay more than you'd expect. Abraham blocks up the plumb laser to allow it to clear the batten.

the top of the workbench. Use the dividers (I use the Accuscribe made by Fastcap) to mark a line around the bottom of each leg. Saw to the line with a backsaw and chamfer the cut.

The back assembly has two final steps, trimming and angling the splats' lower tenons to length and attaching the back rest.

Each splat's lower tenon needs to be cut to precise length and beveled at the end so it rests evenly on the back of the leg. Get this information, both the length of the tenon and the angle of the bevel, from the bench itself. I tend to saw the tenon long, then sneak up on the exact fit with a plane until the bevel rests at the back of the leg just as the splat bottoms out in the batten. Treat each tenon's length and angle independently. With the splats fitted to the legs, drawbore the back rest to the splats.

I gave my bench a soap finish, which is what the original benches have. They're still maintained with soap, and in fact, inside the church in Amana where I first saw them there is a sill cock and central drain for washing the wood floor and benches. □

Jameel Abraham is a woodworker and toolmaker in Cedar Rapids, Iowa.

ASSEMBLE AROUND THE SEAT



Glue the legs in place. Orient the legs so the growth rings are perpendicular to the long grain of the seat. This places the tenon in the most favorable position for seasonal shrinkage, helping the joint to stay tight over time.



Wedges are extra insurance. The kerfs should also run perpendicular to the seat, causing the white oak wedges to push against the seat's end grain. Trim the tenons and wedges flush after the glue dries.



Mark the legs' lengths. On a flat surface, use coins to shim the bench so the seat is level left to right and drops $\frac{3}{8}$ in. front to back. Set the caliper to draw a line $16\frac{1}{2}$ in. below the top front of the seat.



Splat's lower tenon trimmed and angled to rest against legs. It's crucial to get each tenon's length and angle correct, since their contact with the legs strengthens the back structure. Determine these measurements from the bench itself, and plane them to fit. Attach the splats to the back rest afterward.



Back assembly is knockdown thanks to tapered wedge. The original Amana benches were disassembled and traveled halfway across the U.S. in 1846 thanks to this design, and many are still used weekly. Your version should hold up just as well.





MIKE SARASIN

Mystic, Conn.

The PBS Masterpiece series *Downton Abbey* inspired this curio cabinet. The top section has divided light panes of restoration glass. The four diamonds are opaque rain glass. The base has a carved basket-weave apron, a hoofed foot, and Asian-style brackets.

CHERRY AND POPLAR, 14½D X 42W X 74H

STEPHEN J. PADDISON

Knoxville, Tenn.

A combination of influences led to the final design of this bench. The basic form came from Japanese architecture, while the stringing and fans were inspired by the work of Garrett Hack and Frank Strazza.

VARIOUS HARDWOODS, 18D X 43W X 25½H

Photo: Jeff White



BUD JOHNSON

Laytonville, Calif.

Bud thought it would be easy to build a clock around the works, but the design did not come easily, and the engineering added to the complexity. The case door is hinged with adjustable cocobolo hinges. For winding access, the hood door pivots on pins in the left column. With all of life's interruptions, the clock took more than 35 years from inception to completion.

NARRA AND COCOBOLO,
23D X 13W X 72H

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JIM TUTTLE

Pine Mountain Valley, Ga.

This wall display cabinet is a wedding gift. Its asymmetrical openings were designed to display wedding photos and pottery. Jim's hope is that the cabinet will be a special piece of furniture in the couple's new home as they begin their married life together.

SAPELE, BIRD'S-EYE MAPLE, 8D X 16W X 34H

STEVE AHN

Jeju, South Korea

Steve's goal while designing both the writing desk and chair was to achieve simplicity and functionality. The desk can be used closed or opened up into a writing desk.

OAK DESK, 22½D X 37½W X 33H
OAK, WALNUT, AND SYCAMORE CHAIR,
20D X 16W X 31H

Photo: Tony Marsh



GAY MEYERS

Sandy, Utah

The mountain scenery outside the clients' front door became the inspiration for the marquetry and kumiko panels in this floating-top console table.

WALNUT, MAPLE, VARIOUS
VENEERS, 16D X 60W X 30H





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DANIEL SCHNEIDER

Champaign, Ill.

This desk is a combination of European modernist styles from the early 20th century. The basic design is modeled after a 1905 desk by Josef Hoffmann. Daniel made the stained-glass panels in the style of Dutch artist Theo van Doesburg.

RED OAK, HICKORY, MAPLE, 24D X 48W X 42H



AVROM TOBIN

Marblehead, Mass.

This chair is Avrom's version of a Duncan Phyfe chair at the Metropolitan Museum of Art in New York City. He was drawn to its uncommon details, such as the asymmetry of the harp. The chair won first place in its category in the 2021 AWFS Fresh Wood Competition.

MAHOGANY, ASH AND MAPLE BURL VENEER,
20D X 18W X 32½ H

Photo: Lance Patterson



SHANE TREMBLAY

Ste. Anne, Man., Canada

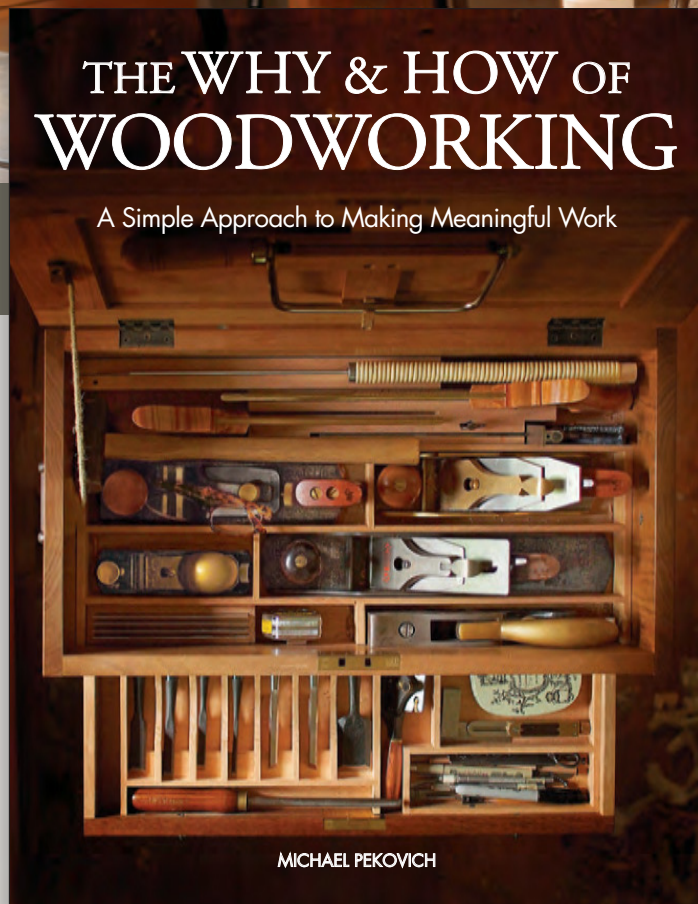
Shane designed this piece to attract the eye from any angle. The facets on the benchtop all oppose each other to present balance and continuity while the facets on the legs are intended to slim the appearance moving upward.

WALNUT, 16D X 41W X 20H



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JIM WALLACE

Cedar Park, Texas

Made to evoke the magic of *The Wizard of Oz*, this cabinet features marquetry panels portraying iconic images from the 1939 movie: the Emerald City; the Yellow Brick Road; the Wizard's balloon nearing the impending tornado; Dorothy, Tin Man, Scarecrow, and Cowardly Lion strolling through the apple orchard; and of course flying monkeys soaring over a field of poppies. When an observer views the outside they easily recognize these black-and-white silhouette images. Then, when the cabinet door opens, the same images appear on the interior, in color, recalling the exciting transition when the film morphs from black-and-white into color as Dorothy steps out of the farmhouse into Oz.

POPLAR AND DYED AND NATURAL VENEERS, 21D X 25W X 51H



MYRL PHELPS

Danbury, N.H.

Myrl set out to make a desk that a large person would be able to use without sitting sideways, as is often the case. The ash is from a tree that he cut down and split by hand to get straight grain for the bent laminations of the legs. The top is a solid piece repurposed from a life as a desktop supported by two filing cabinets.

ASH AND WALNUT,
27D X 60W X 28H

Photo: Charley Frieberg

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A rogue Arts and Crafts finish

BY NANCY R. HILLER

In 1898, when British architect C.F.A. Voysey designed his two-heart chair, he specified that it should be “made in oak and left quite free from stain or polish.” This direction for the finish was not relegated to a footnote, but handwritten in capitals at the top of the drawing.

As anyone who does custom design or builds to order will know, customers often have their own agendas. This is how many examples of the chair came to have a dark finish, long associated with wood species such as mahogany that were considered “higher quality” than English oak. Such sleight of hand was inconsistent with the basic values of the Arts and Crafts movement, which emphasized honesty (for example, through exposed joinery) and encouraged people to ask themselves just why they attributed higher quality to things that were not home-grown or homemade, which implicitly disparaged the simple, local, and not contrived.

In 2017, when I went to England with the primary goal of measuring one of these chairs at The Wilson (formerly the

Cheltenham Museum), the one I spent time with was dark. I don’t know the particular finishing materials or processes used on that chair, but it was a rich, warm dark brown; like a little black dress, the darkness played tricks on the eye, making the chair seem more delicate and spindly than it looks when finished to Voysey’s specifications.

I’ve finished most of my chairs only with linseed oil, but for an article I prepared for an upcoming issue, the editors and I decided to color the chair dark. I use a three-step coloring system to get a warm, layered depth of finish typical of turn-of-the-century furniture and millwork—in other words, exactly the kind of finish Voysey did not want for his two-heart chair.

Begin by sanding the oak to 180 grit. Remove all dust, using a vacuum with a brush attachment, compressed air, or both. Raise the grain with a lightly dampened cloth. Let it dry, then sand again. Then move through dye, stain, shellac, and finally wax.

Nancy R. Hiller is the owner of NR Hiller Design in Bloomington, Ind.

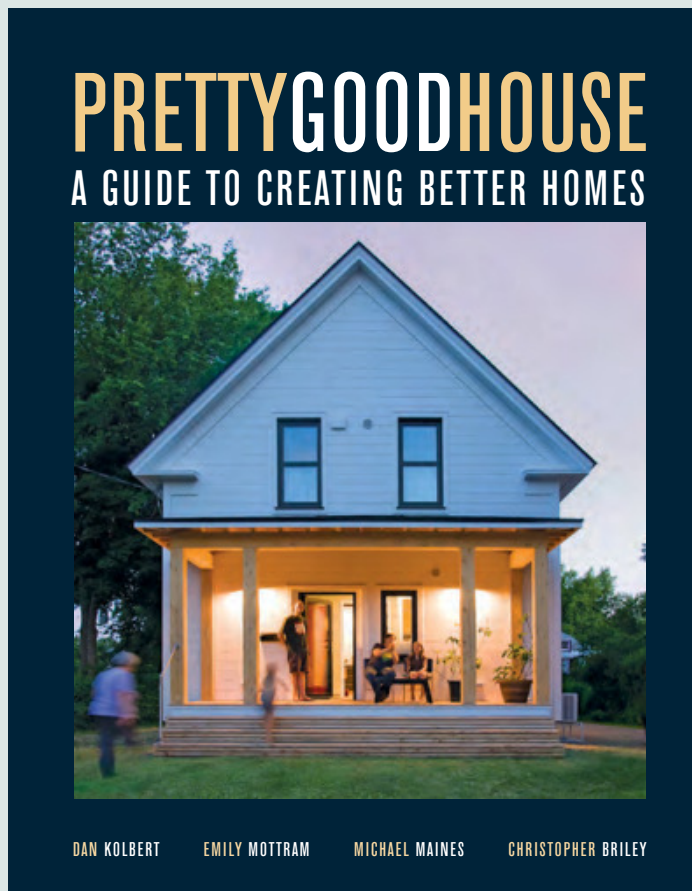


A layered finish

First add color with a dye. Then enhance that color and bring out the wood’s character with a stain. Next, seal all that in with an amber shellac that warms the color at the same time. And finally, add a layer of paste wax to protect it all.

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*by Christopher Briley, Dan Kolbert,
Michael Maines, and Emily Mottram*

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Boost color and grain

Starting with a dye instead of stain pops the grain. The dye darkens uniformly, coloring the medullary rays along with the rest of the wood.



Brush on a base color. Hiller uses TransTint waterborne dye in Dark Walnut #6005. Apply the solution with a foam brush, then use a dampened cloth to spread it evenly on all parts of the piece. Wipe off the excess with a dry cloth. When the dye is dry, check the surface. If it feels rough, carefully scuff-sand with 320-grit paper.



Round out the color with stain

Staining over the dye adds color and dimension, and further defines the grain. Because the oil-based stain will not color the medullary rays, using it after the dye makes the now-dyed rays stand out even more.



Apply a coat of oil-based wiping stain. Hiller uses Minwax Ebony 2718, applying it full-strength with a natural-bristle brush. Allow the dye to penetrate for about 10 minutes, then wipe off every trace. Go back and check for dye seeping out of the pores and remove any you find, using a clean, lint-free cloth.



A final wipedown. Leave the stain to dry overnight, and then use a clean shop cloth to make sure the wiping stain is fully absorbed, dry, and no trace remains on the surface, as it can react with shellac, causing problems.

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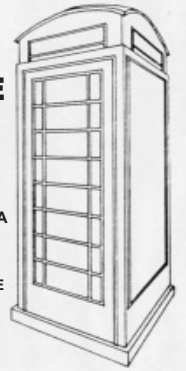
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Seal and protect

Amber shellac brightens everything while adding a sheer layer of color, as well as a protective topcoat. One coat is enough. Hiller is not looking for a built-up finish, but a protective layer of brightness and warmth.

On with the amber shellac. Hiller uses Zinsser Bull's Eye, which is pre-mixed, and applies it with a natural-bristle brush. Be especially careful to avoid “rolling” the finish around a corner, which can cause drips. If you are proficient in the use of a small pad to apply shellac, you can use that method.



Scuff it up. The shellac will dry quickly, but you should still allow it to harden for a few hours. Scuff-sand the shellac with 320-grit paper and remove the dust with a clean cloth.

Add extra protection

Paste wax dries to a hard but very thin finish, giving added protection and a silky smoothness to the touch.



Wax on. Hiller covers the shellac with Old Masters Crystal Clear Paste Wax 30901, simply rubbing it on in small circles.



Wax off. Let the wax sit until it puts up a slight resistance to buffing, then buff it off briskly with a clean, dry cloth until you reach a soft sheen.



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A bag of old chisels

BY MICHAEL CULLEN

It's early January and my first day back at the workshop after a long time on the road. I'm tuning up tools for the new year. It feels so good to be sharpening and taking in the whole feel of being back in the workshop. The focus that sharpening requires always puts me in the right mindset for the many tasks ahead.

After so many years of woodworking, the majority of my tools come with a story. Twenty-five years ago, I was still working with my apprentice chisels, a set of Marples with blue plastic handles that were anything but fine tools. They were made from soft steel that required constant sharpening. The result, over time, was a set of chisels that had become so short they required special setups on the grinder. In spite of their metallurgical shortcomings and generic looks, they did perform well if kept sharp.

Around that time I gave a talk at my workshop for a local woodworking club. One of the people who attended was John de Marchi, a sculptor, woodworker, and collector of old tools. We had never met, and I learned that evening that John had once owned my classic 1920s Avey drill press, one of my favorite tools. In fact, it turned out that John was the one who did the beautiful restoration of it. That revelation set the tone, and we became good friends. During John's early visits to the workshop he'd constantly make comments about my blue-handled chisels. He truly disliked them and made sure I knew it. Usually, he'd just say, as he shook his head, "How can you work with those things?" Other times he'd simply make a face, which said pretty much everything he felt about them.

Then one day, Wayne, an old student of John's from his days teaching art, dropped by my workshop. I knew Wayne because he had a space in an antique collective right around the corner from my shop where he sold vintage woodworking tools. I had bought quite a few things from him, though never a chisel. On this particular day he arrived carrying a grocery bag and set it



New handles on old iron. Cullen's windfall chisels got fitted with London-pattern handles; all but this one, in pearwood, were made from bocote.

on my bench. The only thing he said as he glanced at one of my blue-handled chisels was, "You shouldn't be using those things. Here are some chisels." Then he left.

It was obvious that he and John had been talking and more than likely had hatched a plan. Inside the bag was an amazing assortment of chisels; they were old, and all of them were made of cast steel, before or during the war. The majority were from England and Sweden. There were all different widths; and then along with the bench chisels was a large set of the finest pattern-making chisels I had ever seen. All of them were in decent condition but needed work.

A week later I commissioned John to make London-pattern handles for all of them while I set aside time to flatten the backs, hone the edges, and slowly bring each chisel back to life. I chose bocote as the material for the handles because of its density and toughness. It proved to be a good choice. The weight of the wood brought balance to the tool and the beauty of the rich, dark grain

handsomely complemented the cast steel. I soon discovered that the octagonal design of the London pattern not only made the chisel stay put on the bench, but afforded a good grip for stout cuts with the mallet, whereas the narrow neck of the handle down by the ferrule was an excellent place for the fingertips when making very fine cuts.

When I think back, it seems the bag of chisels arrived exactly at the right time. I cut my teeth with the blue-handled ones—sharpened them down to nothing and made countless fine pieces with them. I may not have realized it, but I was ready to do good work with good tools; ones that not only looked beautiful simply resting on the bench, but really held an edge. Now all these years later, there they are, lined up in a tool chest drawer, sharp as can be, and a delight to use. □

After many years in Petaluma, Calif., Michael Cullen has brought his chisels to Kent, Conn., where he is setting up a new workshop.



LAGUNA CLEAN**AIR**

2022 Lineup



Reflections on Rococo

Allan Breed, who carves with mesmerizing fluidity, has been building American period furniture for nearly 50 years and teaching his craft for more than 30. Yet he's still learning. Carving this 5-ft.-tall looking glass, which re-creates a white painted pine one made in Philadelphia in 1770, was for him a revelation in the Rococo style. Examining the original at the Metropolitan Museum of Art in New York, he found it at first "dauntingly complex." But he says that partway through carving it, "I suddenly realized what this guy had been doing—that all the complicated carving was actually completely modular and predictable." Breed saw that in its essence the design was about opposition: a textured leaf beside a smooth one, a dished leaf beside a pillowed one, a convex form beside a concave one. "And if you erase the leaves and foliage," he said, "you have opposing C-scrolls that chase each other around the frame; they're the basic grid that the design is built on." He also noted that the original had been carved at speed with large tools. "This kind of carving can't be labored over and chipped away at. It has to look spontaneous and quick. I learned a ton by doing that mirror—I'd like to carve another!"

—Jonathan Binzen

