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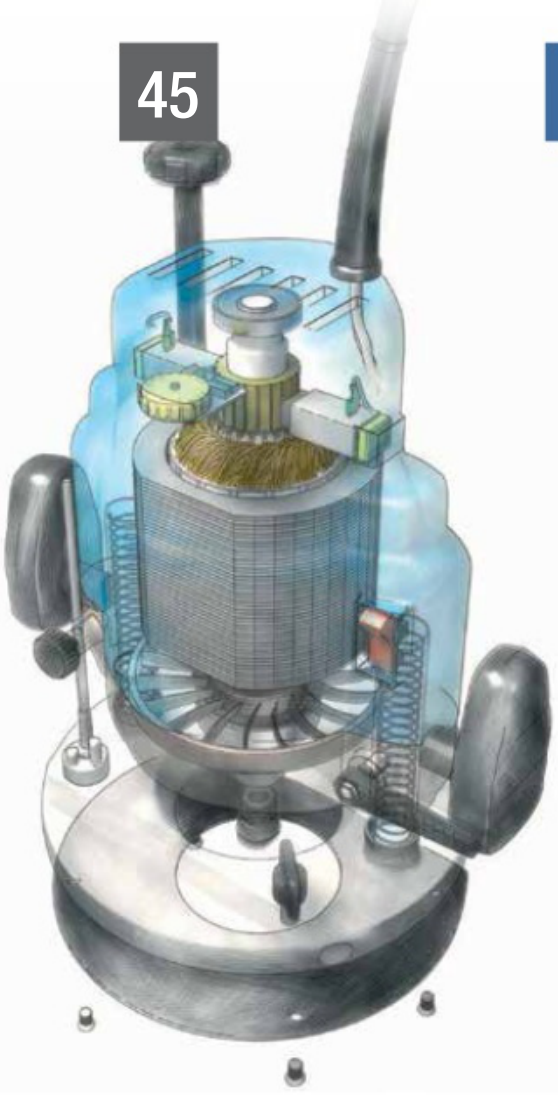
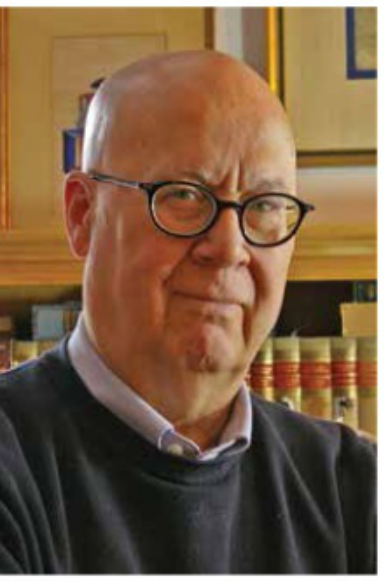


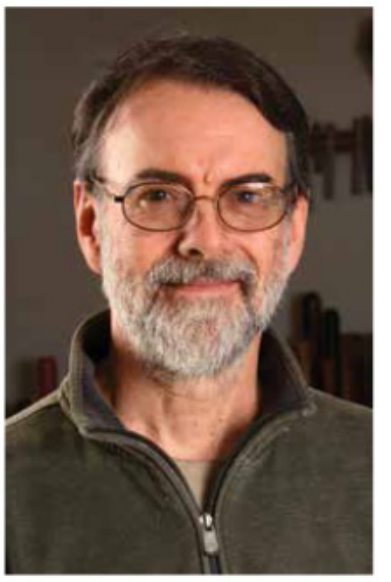
Cover photo: John Hamel

Contributors

Ken Burton is a very talented, very busy fellow. Over the past few decades, this award-winning Pennsylvania woodworker has produced beautiful commissioned pieces and written several woodworking books and dozens of magazine articles, appearing on our cover four times. In addition to teaching woodworking at various venues in the northeast, he has also managed to hold down a full-time position as a high-school industrial arts teacher. Whew! (We suspect he takes speed, although his hair loss *may* be entirely natural.) We're delighted to announce that Ken has retired from the state school system to come to work with us as *Woodcraft Magazine*'s newest senior editor. He's already all over this issue with his psaltery on page 35, the Steve Butler profile on page 8, and the Woodsense column on page 64. Stay tuned for more!



"I like watching people work," says **David Heim**, who contributed two articles to this issue (pages 30 and 60). He's been keeping a close eye on talented furniture-makers and woodturners for fifteen years, highlighting their work in magazine articles, books, and how-to videos. David has also written and illustrated two of his own books, *SketchUp Success for Woodworkers* and *Woodturning Patterns*, both published by Spring House Press. An avid woodturner (and a board member for the American Association of Woodturners), David also enjoys making small pieces of furniture.



Michael Kehs has come a long way as a woodworker since his youth spent building birdhouses with his father in their home woodshop. The award-winning artist has been carving since 1980 and turning wood since 1986. These days, he lives in upper Bucks County, Pennsylvania, where he also writes for *Woodcraft Magazine*, *American Woodturner*, and the British magazine *Woodturning*. See his story on making a turned table on page 50.

On the Web

A bounty of bonuses. We work hard to pack each issue with quality projects, sound techniques, practical tool reviews, and woodworking inspiration. As part of that, we scour our archives for valuable related content that you can take straight to the shop.

We unearthed an abundance of extras for this issue: A clever shop-made jam chuck will help you to turn the elegant table on page 50. For the psaltery (p. 35), see a story on signing your projects. And a shooting board just ain't gonna work if you don't have a properly tuned plane and a sharp blade. To assist with that, master woodworker Craig Bentzley penned a pair of important stories that will get your plane operating at peak efficiency. Go online to expand your woodworking know-how with these free articles.

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A word on wonder

Some months back, close friends asked my wife and me to be godparents to their youngest son, Declan. I was humbled, and wanted to do our friends—and my godson—proud. Despite my questionable character, I immediately decided that I would try to be a good influence on the youngster and perhaps even impart some wisdom to him. But in spending more time with this amazing infant, I realize that I'm the one who's getting schooled. Declan has inspired me to try to adopt some of his still-unconditioned behavior. No, I'm not putting into my mouth whatever I find on the floor, but I am practicing cultivating the boy's child-like wonder in my day-to-day life.

Children are relentlessly curious. Unburdened by opinion and cynicism, they appear fixed in a state of wonder, which seems rather sage for people who wet themselves. Nevertheless, I've been practicing this alternative perspective as best I can. At the office, at home, and among friends and family, I grant myself amazement at what we typically consider mundane. I find that it makes me more mindful of the world around me, and more grateful for all that I have.

I carry this attitude-adjustment into the shop as well, striving to tap into the inherent wonder of our medium while performing something as simple as hand-planing a board. I pause to savor the sight and scent of a cedar curl sprouting from my smoother in the same way that I might scrutinize a newfound tulip in my backyard. I find myself marveling that such relatively simple tools can convert a rough plank into a dead-square board. In the right state of mind, my shop seems a bit like a wonderland filled with remarkable things.

Woodworkers tend to be an inquisitive lot. For many of us, it was a curiosity about how things work and fit together that sparked our flame for woodworking. Surrendering to wonderment feeds that fire. So go ahead and be astonished at the magic in your woodworking hands. We're here to help. Plenty of wonders await on the pages ahead if you're open to them. You'll find projects, techniques, and stories to inspire and capture your imagination.

As for Declan, you can bet that I'll invite the boy into my shop as soon as he's old enough to not drool on my tools. I don't have to wonder whether we'll learn a great deal from each other. ■

Share your ideas.

We love hearing from readers! And there are all kinds of reasons to get in touch with the crew at *Woodcraft Magazine*. Check out the details below.

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Share a slick tip to win cash or a prize.

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Email us at *tips@woodcraftmagazine.com* and put "Tips & Tricks" in the subject line or visit *woodcraftmagazine.com*, and click on Contact.

Important: Please include your phone number, as an editor may need to call you if your trick is considered for publication.

Have a tough woodworking question?

We'll do our best to find the expert and provide the answer. Email us at *editor@woodcraftmagazine.com* and put "Expert Answers" in the subject line.

News & Views:

This catch-all column is where we do our best to correct mistakes, publish feedback from readers, and share other noteworthy news items. It's easy to participate in this discussion. Just email us at *editor@woodcraftmagazine.com* and put "N&V" in the subject line.

Submit an article idea:

Do you have a story idea? We'd love to hear about it. To find out how to submit an article, email us at *editor@woodcraftmagazine.com* and put "Submission" in the subject line.

Share photos of your projects:

We'd like to see what you're building. To show off your work send your photos to *editor@woodcraftmagazine.com*, or find us on social media.

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April/May 2020 Vol. 16, Issue 94

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Safety First! Working wood can be dangerous. Always make shop safety your first priority by reading and following the recommendations of your machine owner's manuals, using appropriate guards and safety devices, and maintaining all your tools properly. Use adequate sight and hearing protection. Please note that for purposes of illustrative clarity, guards and other safety devices may be removed from tools shown in photographs and illustrations in this publication.

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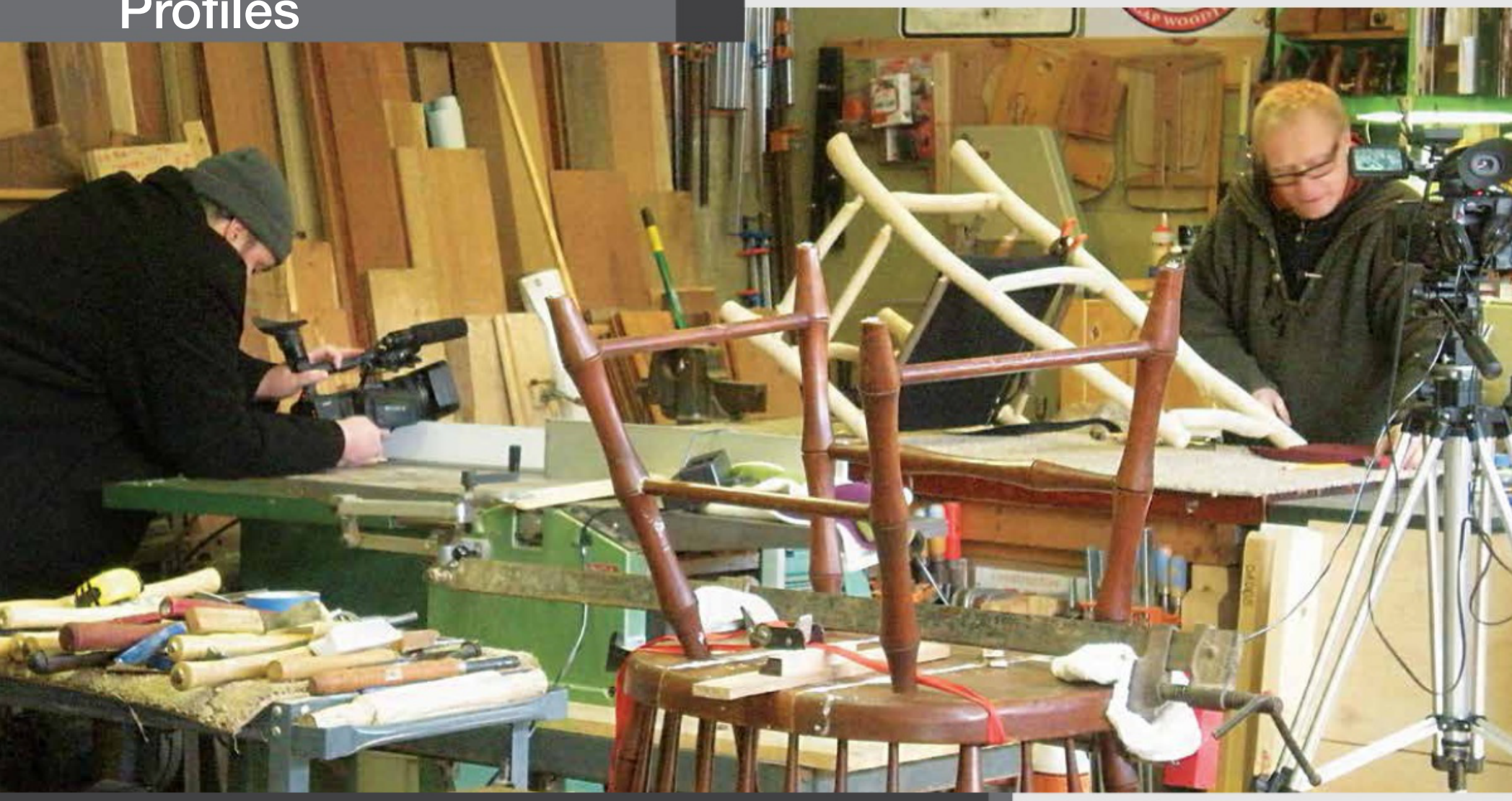


STEVE BUTLER

A humble approach to woodworking education

A recent commercial names several famous companies that started in a garage, wisely concluding, "You never know what kind of greatness can come out of an American garage." Enter Steve Butler, the host of *The Garage with Steve Butler,* a televised woodworking show that's starting to garner attention. Steve lives in Massachusetts with his modest shop housed in—you got it—a garage.

The show features a quirky mix of woodworking, music, and maker ethos. It has slowly built an international audience on cable-access TV. But recently, with sponsor support, Steve hired a professional crew and jumped to public television where the show now broadcasts to over 250 stations.

Steve trained at Sheridan College in Ontario and has what it takes to make woodworking accessible to anyone with an interest. The show centers on modest but thoughtfully designed projects within reach of most amateur woodworkers. And interspersed with the how-to information are philosophical nuggets on "making" as a creative outlet, revealing Steve as a maker, artist, and teacher.

I've known Steve for years and recently reconnected with him to chat about the show.
—Ken Burton

WM: Where did the idea for the show come from?

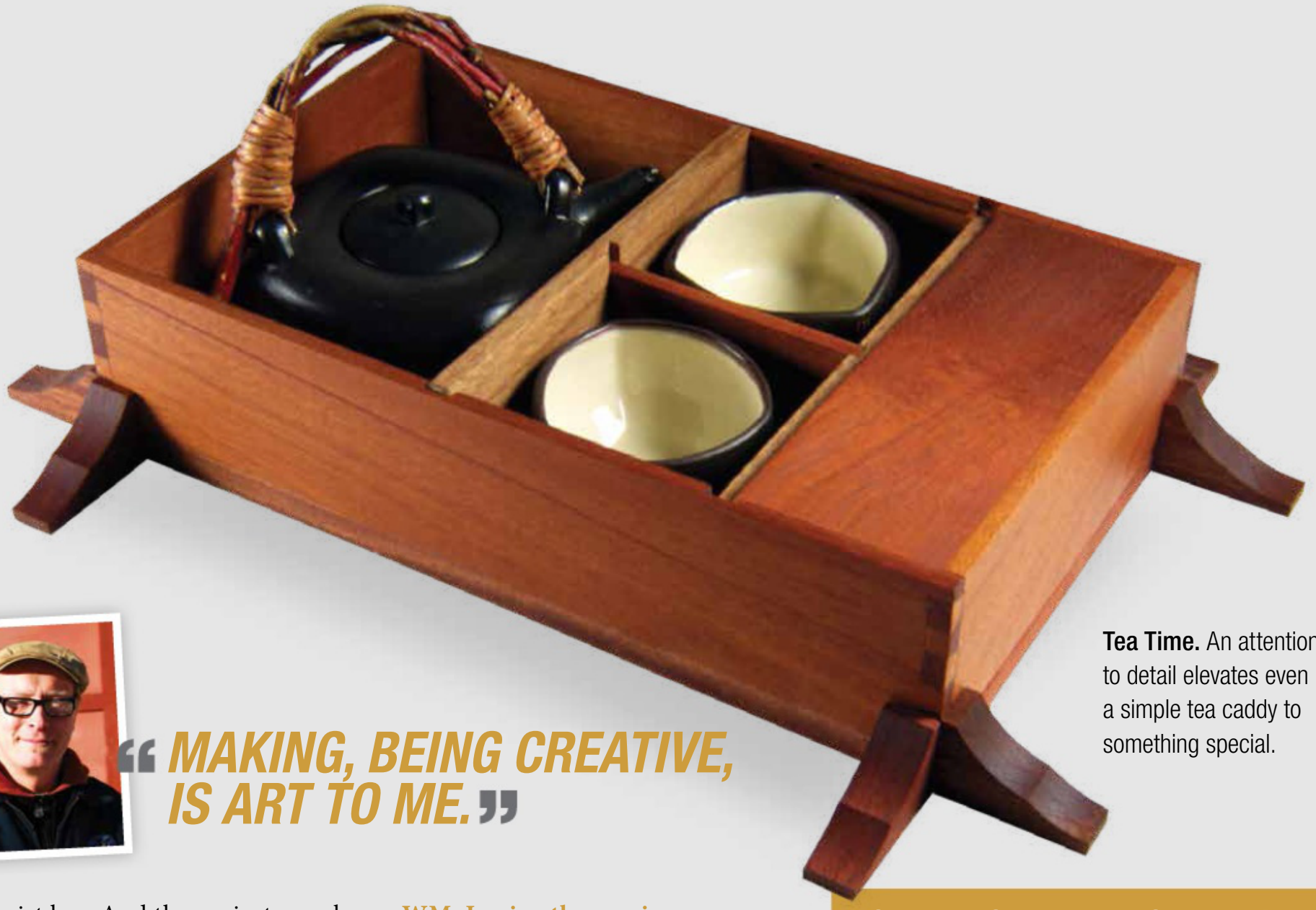
SB: It was one of those crazy, late-night things. I couldn't sleep and was watching local cable-access TV when an ad came on looking for people who wanted to make their own show. I thought, how hard can that be? It combines the two things I love: making and teaching people to make.

WM: Why the garage?

SB: The show is humble, and that's the appeal. It has a sense of nostalgia that harkens back to days when folks would roll up their sleeves and work in their basement or garage workshops.

WM: You don't use a lot of fancy tools.

SB: The premise of the show is to teach woodworking in an accessible way, both technically and economically. My equipment is what I could afford on a budget—the kind of things a



Tea Time. An attention to detail elevates even a simple tea caddy to something special.

"MAKING, BEING CREATIVE, IS ART TO ME."

hobbyist has. And the projects can be made using materials and hardware easily obtained at a home center, or neighborhood hardware store.

WM: But your projects are more than just "ordinary."

SB: Some of them are, but I try to incorporate nice details into everything I do. So even if a project isn't particularly grand, there are elements that elevate it to become more than the sum of its parts. For example, look at the feet on my tea box—they're quite simple, but really add to the design.

WM: You get into some of that when you cut away from the "action" and talk about your approach to making.

SB: Yeah, I feel that anytime you use your hands to make something, it's art. That's what it's all about. Making, being creative is art to me. And teaching others how to do it, that's where I'm coming from.

WM: I enjoy the music you play during the show.

SB: I always have music on when I'm working in the shop. So the music you hear on the show is just what I like—surf music, rockabilly, that sort of thing. I like to support independent musicians—guys like me who are struggling to be heard—by playing them on the air.

WM: What's next for you?

SB: Right now, I teach woodworking at the Austen Riggs Center in western Massachusetts four days a week to pay the bills. The rest of my time is devoted to the show, my labor of love. We have several great projects lined up. I'm excited to be working with a professional crew to make the second season even better.

The Garage with Steve Butler is distributed by NETA (National Educational Telecommunications Association). ■

Steve's Shop on a Shoestring

"I have always said that if you have a table saw, a band saw, and a router you're in the cabinet making business."
—Steve Butler

Start with:

- **A 10" contractor table saw**
- **A 14" bandsaw**
- **A two-base router kit.** Keep the plunge base for handheld use and mount the fixed base to a piece of plywood for a router table. Place this on saw horses or on top of a trash can (for dust collection).
- **Two cordless drill/drivers.** This way you don't have to change between bits.

As money permits, add a small jointer and a portable planer—you can often find a local shop that will allow you access to these tools until you can afford your own.

While no one likes to do without, you don't need to have all the bells and whistles to make quality work. You just have to be resourceful.

Photos: Courtesy Steve Butler

Alternative air filtration install

I enjoyed your Expert Answer (p. 66) in the Feb/Mar issue and wanted to share how I hung my air filtration system in my basement shop. Instead of chain, I used hobby horse extension springs that did away with any vibration up the floor joints into the kitchen. They cost only $4 apiece, so it's not an expensive alternative to chain. Plus it's well worth it to not be blamed for the collapsed bread in the oven.
—Bob Spear, via email

Take a tree, leaf a tree

My compliments to Paul Anthony on a very well-written and heartfelt Outfeed column in the Dec/Jan 2020 issue (p. 72). As a woodworker and chairman of our local municipal tree commission, I found that the article aligned with our goals to manage and restore the urban forest. Paul's article encapsulated the benefit trees offer to humanity.
—Roger DeGood, Swanton, OH

Climate control

My adventures as a woodworker runs parallel to that of Edwards Smith (Feb/Mar 2020, p. 4). After retiring, I filled my home and my daughters home with furniture that I made. The family fully stocked with tables, chairs, and cribs, I turned to scroll sawing and lathe work. Like Mr. Smith, I work from a "climate controlled" barn (hot in the summer and cold in the winter). Our winter temperatures in the Willamette Valley of Oregon are not as cold as Vermont; Smith's grit is to be admired. At 87, I plan on continuing this most enjoyable part of my life for as long as I can stand at the tool and see the cut line. ■
—Richard Vannice, Albany, OR

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Solid value in a new saw

Rikon 10-205 Left-Tilt Contractor Saw

Rikon has a new "contractor saw," but this designation doesn't do the tool justice. Instead of hanging the motor off the back of the saw and relying on a long V-belt to transfer power to the blade arbor pulley (standard contractor saw configuration), Rikon has located the motor inside a fully enclosed cabinet. The resulting powertrain, with its short, segmented V-belt, minimizes vibration, and the 1¾-hp, dual-voltage motor provides ample power for general woodworking tasks. The saw's smooth-running performance is also due to well-machined parts, a cast iron top, and an overall weight of 260 lbs.

Overview

- Hybrid saw design
- 1¾-hp, dual voltage motor
- 29½" rip capacity (to right of blade)
- ¾" maximum dado capacity
- Left-tilt blade
- Integrated retracting casters
- Magnetic insert plate
- Effective dust collection
- Good power, low vibration.

I tested a prototype model of the 10-205 identical to the production model that Rikon now sells. There are plenty of parts to assemble, but the owner's manual provides clear instructions. In a few hours, I was able to make my first cuts.

In spite of its table-mounted trunnions, many of the machine's characteristics reflect cabinet saw design. Height and bevel adjustments are rock-solid, thanks to stout, well-machined trunnions and other internal components. The sturdy plastic dust chute that covers the entire bottom of the fully enclosed cabinet funnels sawdust to a 4"-diameter port, allowing efficient sawdust capture, which is a marked improvement over traditional contractor saws.

The box-style rip fence locks down solidly at both ends and incorporates all the necessary adjustments to keep it true in use. I also appreciate the convenient onboard storage for the rip fence, miter gauge, and blade guard, as well as an included plastic push stick.

The machine's few shortcomings don't come close to

being deal-breakers, especially at this price point. The miter gauge that came with my saw slides without slop in both T-slots, but it doesn't have any slot-fit adjustment in the bar. And you might have an issue with the retractable caster assembly that's incorporated in the base. The foot-actuated mechanism provides excellent mobility for this heavy tool. But the 260-pound saw comes down hard on the floor when you retract the wheels.

All in all, if you're a serious woodworker who can't justify the expense of a high-end cabinet saw, Rikon's new offering will allow you to stretch your dollars without having to settle for sub-par table saw performance.

—Tester, Tim Snyder

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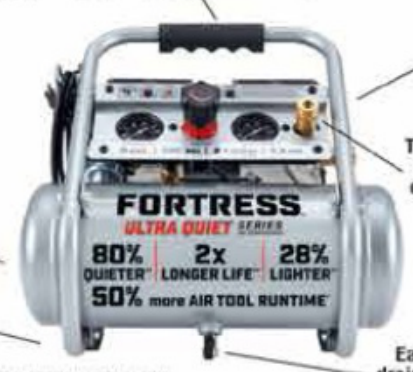

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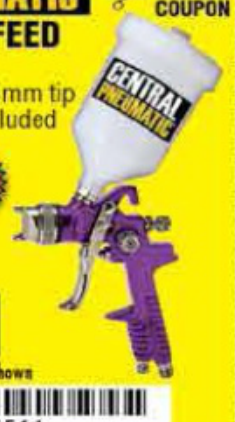

COMPARE TO HUSKY MODEL: H4840GHV5B $49.98

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12" x 33-3/8" WOOD LATHE WITH REVERSIBLE HEAD

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56775/61970
61969 shown

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Customer Rating

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16" VARIABLE SPEED SCROLL SAW

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- Wireless, tool-free and easy installation

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These teeny turners are simply the best

Easy Wood Tools Mini Hollower Tools

Hollow-form turning has been around for some decades, but largely as the sovereignty of professional turners. However, in recent years, the technique has become more widespread as woodturners in general push the boundaries of what they can do on a lathe. And, as always, Easy Wood Tools is here to help.

With EWT's new mini hollowers, turners can more easily shape tiny hollow forms such as delicate sculptural vessels and vases. Such forms were once reserved for only the most experienced turners, but with these snack-sized utensils, anyone can play.

The numbered tools indicate the order in which you use them. The straight #1 plunges into the workpiece to hollow its center. The 45° #2 removes the inner bottom portion of the cavity. And to clear the top near the mouth, the 90° #3 moves into action.

We've come to expect stout, quality tools from EWT, and these little hollowers are no exception. Despite the tools' relative heft, they aren't made to turn vessels larger than 3" in diameter.

The tools are a good size and well balanced. The bars are 3¼" long and 5⁄16" thick with rounded edges and flat bottoms. The handles are 12" long. On the business end, you'll find EWT's Ci5 rotatable negative-rake carbide cutters. The negative rake reduces catching, making these handy hollowers even more suited to their task.

In addition to hollowing work, you could use the #1 to excavate small bowls, turn coves on petite spindles, or even to shape pens. And the #2 could clear material near the rim of a small bowl. But these tools are designed specifically for turning small hollow forms, and work well as advertised. There's nothing quite like having the right tool for the job. ■

—Testers, WM staff

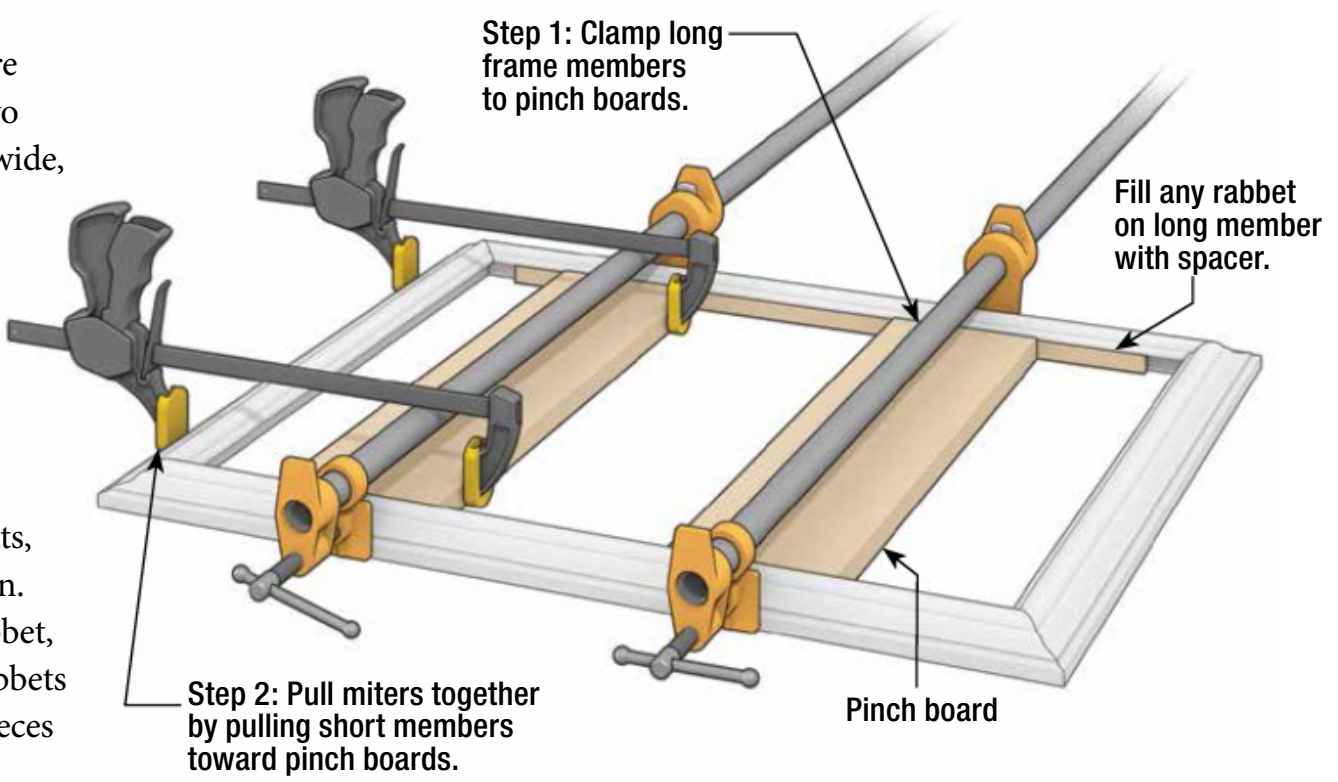
Easy Wood Tools Easy Mini Hollower #1 #167922, $99.99
Easy Wood Tools Easy Mini Hollower #2 #167923, $99.99
Easy Wood Tools Easy Mini Hollower #3 #167924, $99.99

TOP TIP

Clamping mitered frames in a pinch

If you don't have commercial miter clamps, here's an effective way to glue up a mitered frame without them. First, dry-fit the pieces to ensure that the frame is square and the miters are tight. Then make two squarely crosscut boards a few inches wide, and as long as the shortest inside dimension of the frame. Tightly clamp these "pinch boards" between the long frame members, offsetting them from the ends to allow for glue squeeze-out. Double-check the joint fit, making adjustments if necessary, then apply glue to the joints, and clamp the miters together as shown. Note that for frames with an inside rabbet, you'll need to temporarily fill in the rabbets on the long members to prevent the pieces from cocking under clamp pressure.

—Rick Melpignano, Enfield, Connecticut



Illustrations: Christopher Mills

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- Fits standard 3/4" wide x 3/8" deep miter gauge slots

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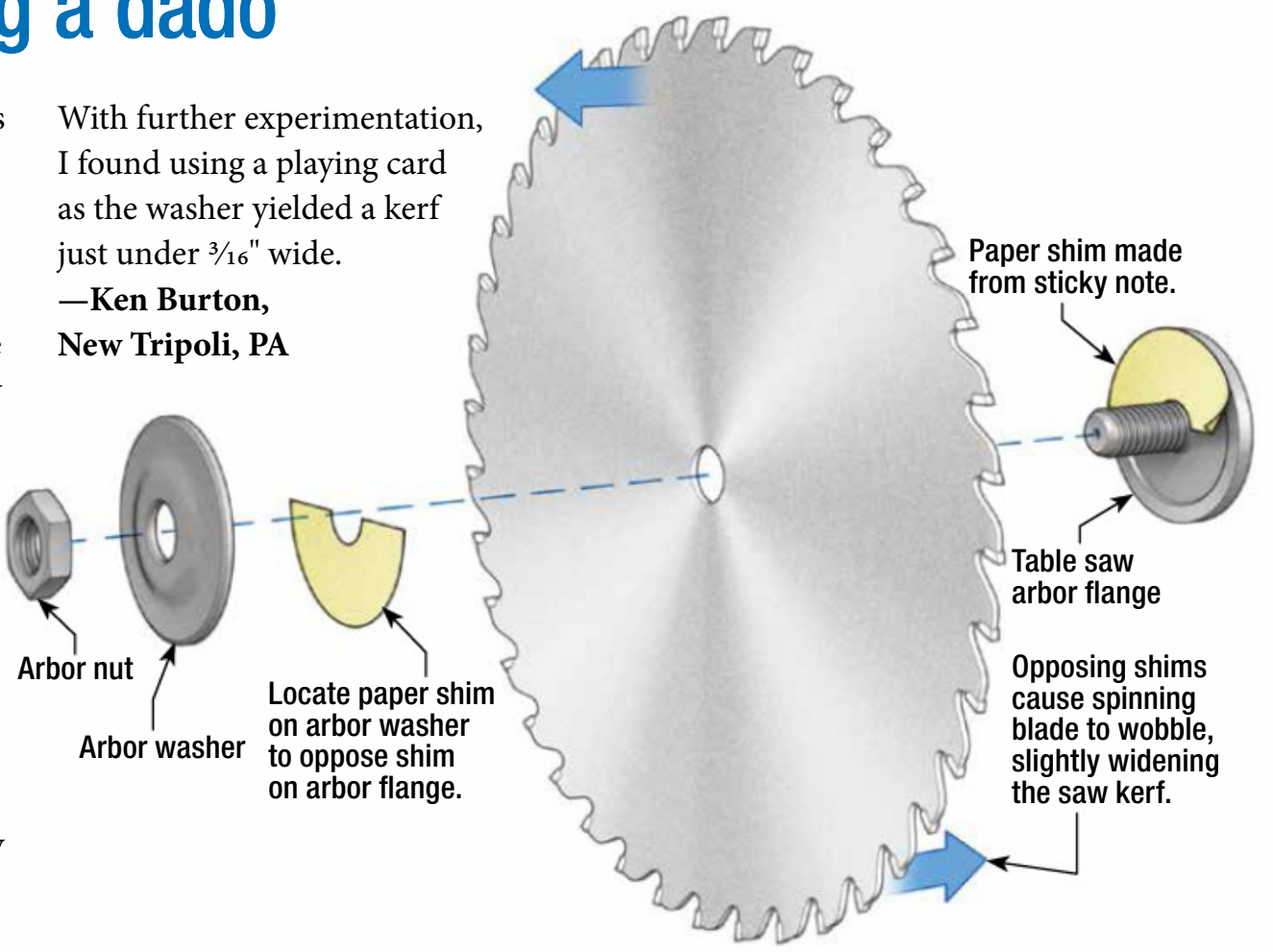
Wobble-widening a dado

I recently had to outfit a set of drawers with ⅛"-thick dividers. I needed the dadoes in the drawer sides to be snug, but not so tight that the dividers couldn't be removed easily by hand. A standard, ⅛"-wide saw kerf was a little tight. To get the saw to make a slightly wider cut, I made a "washer" from a 2 × 2" sticky note that matched the diameter of my table saw's arbor washer. I then cut this paper washer in half and stuck one half to the arbor flange and the other to the arbor washer. I then installed the blade as usual, taking care to align the two shims opposite each other. The shims turned my saw blade into a very subtle "wobble dado," which made a kerf about 5/32" wide—just what I needed for the dividers.

With further experimentation, I found using a playing card as the washer yielded a kerf just under 3/16" wide.

—Ken Burton,
New Tripoli, PA



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Easy pattern removal

It can be a hassle to remove glued-on pattern material from pieces after they've been sawn up. I find that a much easier approach is to completely mask a workpiece with wide painter's tape before applying the pattern with spray adhesive. It sure makes removal much easier.

—Dan Martin, Galena, Ohio

A boring dowel trick

Faced with the prospect of having to drill a ¼"-diameter hole through the center of four dozen short lengths of ¾"-diameter dowel, I needed to come up with a way to quickly position the pieces without having to find the center of each one. To do so, I clamped a piece of 1½"-thick scrap to my drill press table, and drilled a ¾"-diameter hole about half way through it. Then I swapped out the ¾" bit for a ¼" bit, and popped each of the dowels in turn into the hole for drilling. No layout was required as the hole was already perfectly centered under the bit.

—Kelly Burns, Minneapolis, MN

BOSCH

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- MULTI-HOLE PAD SYSTEM
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- SLIM-GRIP DESIGN

GET65-5N

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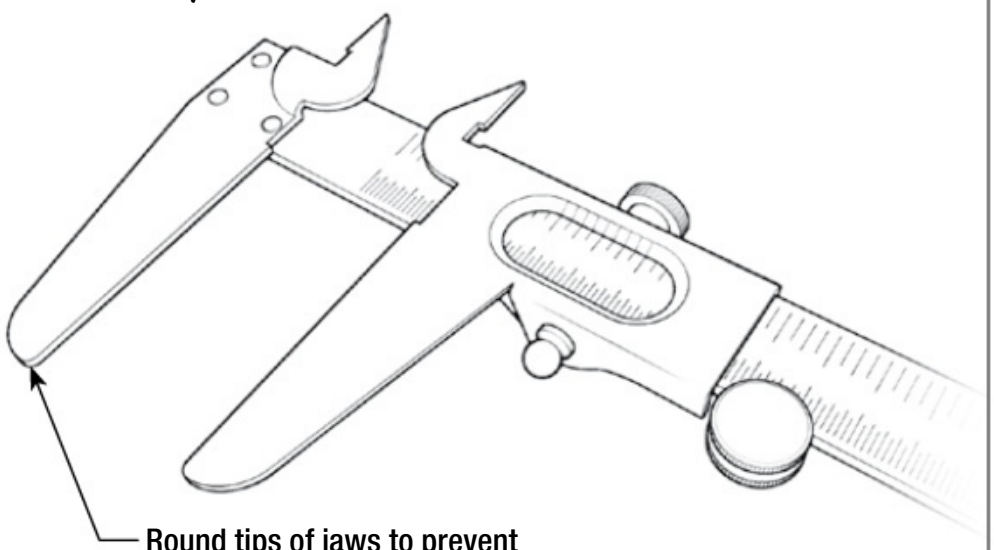
BOSCH

CLASSIC TIP

Non-catch calipers

I use Vernier calipers to measure my progress when turning tenons. I set the caliper jaws to the desired diameter of the tenon, and then hold the jaws against the turning in progress until they slip over the tenon section. To prevent the tips of the caliper jaws from catching on the spinning workpiece, I grind a slight radius on them. This also allows them to easily slide onto the tenon once it reaches the proper diameter. ■

—Judy Silfer, Tucson, Arizona



Share a Slick Tip. Win Cash or a Prize!

Here's your chance to help someone become a better woodworker and get rewarded for the effort. The winner of next issue's Top Tip award will receive a Woodcraft Gift Card worth $250. All others will receive $125 for a published illustrated tip, or $75 for a non-illustrated tip. Published tips become the property of *Woodcraft Magazine*.

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visit *woodcraftmagazine.com*, and click on "Contact".

Important: Please include your phone number, as an editor may need to call you if your trick is considered for publication.

Basic BUILDS

3-in-1 SHOOTING BOARD

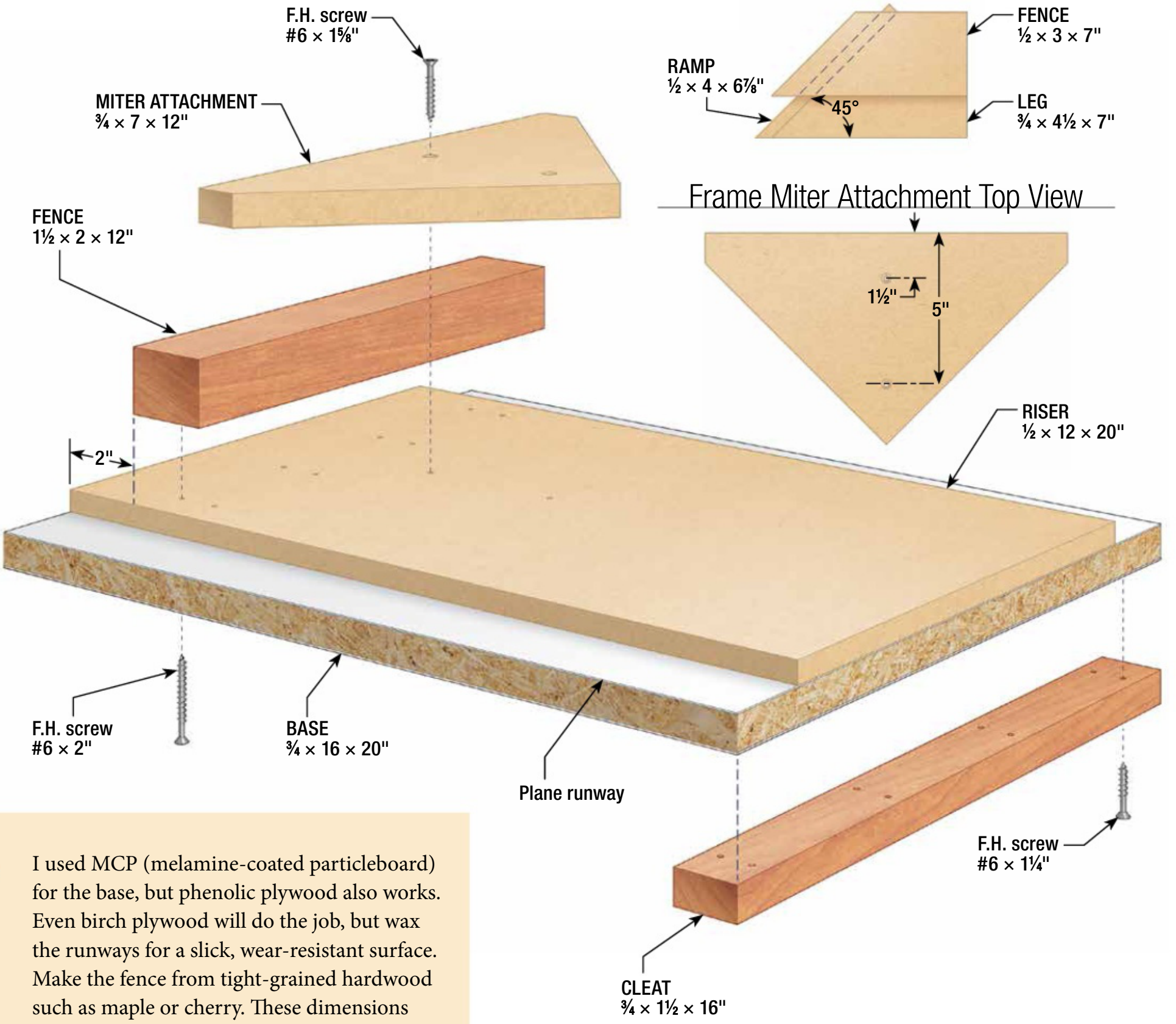
A basic bench appliance that yields precision performance

Designed by Craig Bentzley, built by Chad McClung

Square Ends

Several of my recent projects called for a shooting board—a jig that facilitates sneaking up on perfect-fitting joinery by shaving the end grain of a workpiece with a hand plane. I had used a few over the years in other shops but never got around to making one of my own. I'd always find a workaround, even setting up makeshift shooters at my bench. Finally fed up with shortcuts, I decided to build a board that was stout and able to accommodate the kind of work I do. But where to start? I did what any good woodworker does and asked other woodworkers. My research led to a chat with master craftsman Craig Bentzley, on whose invaluable expertise I've come to rely. His go-to jig is easy to make, versatile, accurate, and will last a long time – just what I was looking for. With Bentzley's blessing, I got building.

Simple yet versatile



Case Miter Ramp Side View

Frame Miter Attachment Top View

I used MCP (melamine-coated particleboard) for the base, but phenolic plywood also works. Even birch plywood will do the job, but wax the runways for a slick, wear-resistant surface. Make the fence from tight-grained hardwood such as maple or cherry. These dimensions aren't critical so build to suit. Nevertheless, all 90° and 45° angles must be dead-accurate.

A plane runway on both sides makes your jig ambidextrous, which is useful when trimming miters on frame pieces that don't have two flat faces. The frame miter attachment secures with two screws for quick on-and-off. The ramp, which clamps to the fence when needed, provides a means to shoot case miters for boxes and other small projects with mitered walls.

Order of Work

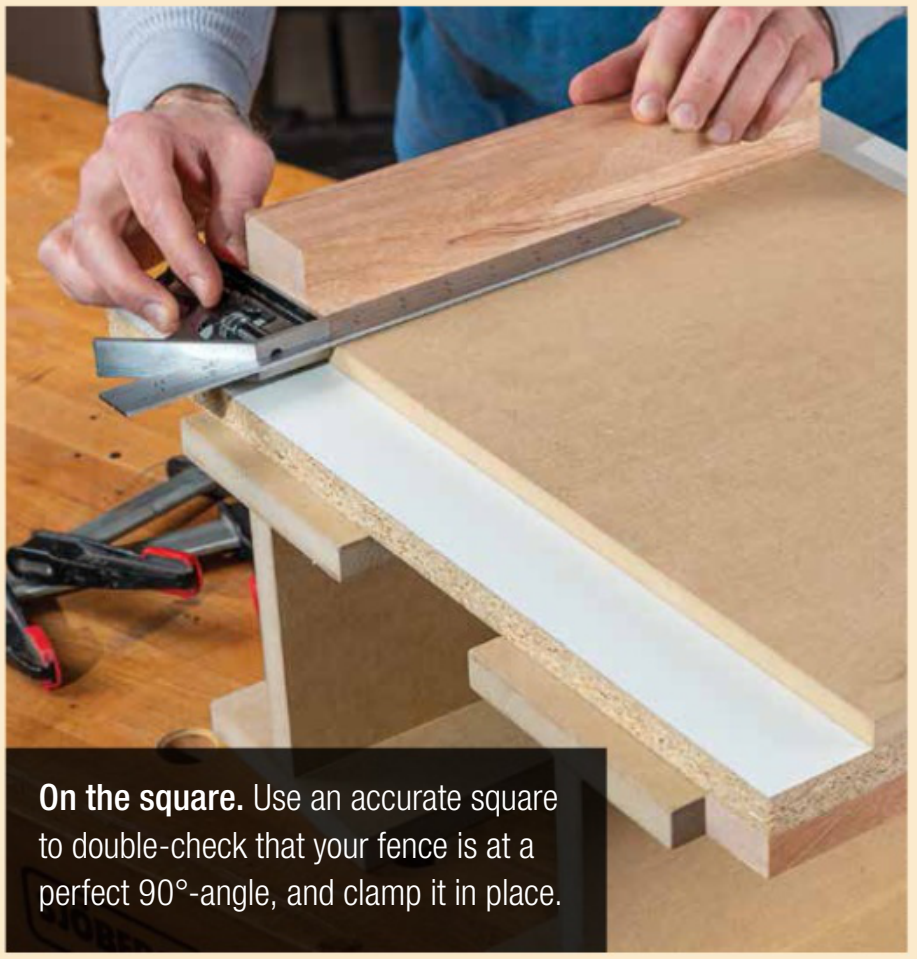
- Assemble base and riser, cut to size
- Make and attach cleat and fence
- Make miter attachment
- Build case miter ramp to suit

Photos: Larry Hamel-Lambert; Illustrations: Greg Maxson

Make the jig

Riser-to-base connection. Center the riser on the base to create a 2" runway on each side, and clamp the parts together. Connect the pieces with 1"-long 18-gauge brads through the bottom of the base, avoiding screw locations for the cleat and fence. Use your crosscut sled to saw the jig to size.

Attach the cleat. Mount the cleat on the underside of the base, flush to its front edge. Drill pilot and clearance holes, followed up by a countersink, then drive the screws.



On the square. Use an accurate square to double-check that your fence is at a perfect 90°-angle, and clamp it in place.

Flip and attach. With the assembly turned over, attach the fence from underneath.

Cut some ¾" MCP to 16 × 24" for the base, and some ½" MDF to 12 × 24" for the riser. Nail the parts together. Then saw the jig to 20" using your crosscut sled, saving the offcut to function as an outboard for supporting longer workpieces (p. 26). Cut the cleat and fence to size and attach them where shown in the drawing on p. 27.

Make the attachments

Frame miter attachment. Tack temporary fences to your crosscut sled at 90° to each other and 45° to the cut line. Make the cut, then trim the acute corners at the chop saw, leaving the length at just over 12". Screw the centered piece to the riser, and trim the ends flush with your hand plane.

Case miter ramp. Use the jig's fence to hold the case miter ramp pieces square as you pin them in place using ¾"-long pins.

Lay out a triangle on a 12 × 12" piece of ¾" MDF, and cut it to size as shown. The blunt ends of the miter attachment help to keep your workpiece miters crisp and clean. Push the miter attachment against the fence, clamp in place, and secure with woodscrews where shown in the drawing (p. 27).

Use whatever available scraps you have to make the case miter ramp, but keep it lightweight. Size it to accommodate the work you do.

Shooting Board in Use

Using a shooting board isn't difficult, but it does require some dexterity. Here are a few tips that will ensure accurate joinery.

- With one hand, press the workpiece against the fence, pushing the jig away from you so the cleat catches squarely on the bench. Simultaneously, sneak the piece toward the runway.
- With your other hand, slide the plane on the runway against the riser. Keep the plane's toe against the workpiece.
- Don't push the plane away from the riser with the workpiece.
- Push the plane through the cut, so the blade passes the fence.
- Use a plane with some heft (I recommend a #5½).
- Wax the runway and the sole and sides of your plane before you shoot.
- A tuned plane with a sharp blade makes all the difference. Visit our website for free articles on plane maintenance and use. ■

Feel the human hand at

HANCOCK SH

By David Heim

The western Massachusetts area known as the Berkshires is home to dozens of summer music festivals, art museums, and trendy restaurants. It's also where you'll find Hancock Shaker Village, a carefully curated living museum that offers an in-depth look at how the Shakers lived, worked, and worshiped (see sidebar, p. 33). Anyone who loves finely crafted furniture, beautiful cabinets, and graceful oval boxes will enjoy a day here.

Don't expect to see actors recreating activities from a century and a half in the past. The Shakers themselves left in 1959 and sold the property to an organization that turned it into a museum. Docents in the main buildings answer visitors' questions and give brief informative talks about the Shakers' daily routines, philosophy, and worship.

There's plenty to see at Hancock Village, including thousands of objects ranging from small oval boxes to 20-ft.-long communal dining tables. Rooms are set up as they would have been in the 1800s, largely uncluttered

Chair detective. The ladderback chair with a woven-tape seat is one of the most recognizable pieces of Shaker furniture. Here, Jeff Brace, a former timber-framer who has been with Hancock Shaker Village since 2008, explains how subtle differences in the finials and back splats identify the community that made the chair.

Photos: David Heim, except where noted

AKER VILLAGE

Everyday life frozen in time. The rooms in the village display the furniture, cabinets, and objects the Shakers used every day. Here, the table is filled with some of the paraphernalia used to make herbal medicines.

Inside the Round Stone Barn. A veritable forest-canopy of rafters meeting at a central column hold up the barn's roof.

fastFACTS

The most distinctive of the 20 buildings at Hancock Shaker Village is the Round Stone Barn that was built in 1826. It's the only Shaker structure of its kind. The barn housed 52 milk cows and was in use until the 1950s. It's said that Nathaniel Hawthorne and Herman Melville staged a footrace there. No word on who won.

but with explanatory labels and placards. Workrooms are arranged as the Shakers used them for weaving, broom-making, woodworking, and other endeavors. In the Laundry and Machine Shop building, for example, one room houses two lathes, two planers, a scroll saw, a table saw, and a massive bandsaw. Most are belt-driven and powered by a 3.5-hp water turbine in the bowels of the building. Chuck Wales, the interpreter in this room, is a retired mechanical engineer who has been explaining the machinery since the museum opened more than 50 years ago.

Touring the site is a vivid experience. As my traveling companion said, "You can feel the human hand. It's as if the Shakers are still here." And their attention to detail is always close by. It's difficult to walk through the buildings without marveling at the examples of skilled furniture-making, like the chair and candle stand shown on the previous page.

Hancock Shaker Village has 20 buildings that are open daily from mid-April through mid-November. The museum hosts an ambitious roster of art exhibits, demonstrations, lectures, workshops, and other events scheduled throughout the summer and fall. On the day we visited, for example, young children lined up for pony rides and a chance to pet young lambs and goats in the Round Stone Barn. At the end of the day, master woodworker Christian Becksvoort gave a talk about Shaker furniture to a standing-room-only crowd.

Throughout the summer, activities include goat yoga sessions, calf cuddling for the kids, and workshops on basket weaving or making a Shaker carrier (an oval Shaker box with handles). A day at Hancock Shaker Village is certain to give you a new (or renewed) appreciation for the Shakers' craftsmanship and attention to detail, and how those talents continue to influence us today.

Work rooms galore. Two massive benches dominate a second-floor woodshop in the Tannery building. Although the bench shown here probably dates from the early 19th century, it's still usable today.

The plane life. Like other 19th century woodshops, the one at Hancock Shaker Village has a large complement of handplanes—small ones on the shelves for decorative moldings and rabbets, larger ones atop the cabinet for flattening and smoothing boards.

Shaker shop tales. Chuck Wales has been explaining the workings of the machine room to visitors for some 50 years. He's holding an innovative double rolling pin.

Water-driven woodworking. At Hancock, the Shakers harnessed water power for manufacturing. All the woodworking machines shown here are belt-driven from a 3.5-hp water turbine beneath the floor.

Visiting Information

- **Address:** 1843 W. Housatonic St., Pittsfield, MA 01201
- **Phone:** (413) 443-0188
- **Website:** *hancockshakervillage.org*
- **Hours:**
  - April–late June, daily ..... 10 AM–4 PM
  - July–October, daily ..... 10 AM–5 PM
  - Extra holiday hours in November and December; see web site.
- **Ticket Prices:**
  - Adults $20
  - Seniors (65 and over), AAA members, MTA cardholders, U.S. military $18
  - Youth (13-17) $8
  - Children (12 and under) ..... Free
- ***NOTE:*** *Visitors can take photos and videos for personal use, but tripods aren't allowed in the historic buildings.*

The Shakers: Living in Heaven on Earth

Formally known as the United Society of Believers in Christ's Second Appearing, the Shakers have been a presence in American society since their founder and a handful of followers emigrated from England in 1774.

This small group, led by Ann Lee, the illiterate daughter of a blacksmith, settled near Albany, New York. Over the next quarter-century or so, they attracted hundreds of converts and established 19 settlements in New York, New England, Ohio, and Kentucky. At their height in the 19th century, they could claim some 5,000 believers. Now, though, only a few Shakers remain, at the community in Sabbathday Lake, Maine.

Although the Shakers were a Christian sect, they didn't have churches or pulpits. Worship, for the Shakers, was part of everyday activity. Work ("laboring," in Shaker parlance) was the same as the worship ceremony. They held Sunday services in large meeting rooms, with men seated on one side and women on the other. Music was important to the Shakers, who wrote some 25,000 songs. So was dance; they earned their nickname from their ecstatic moving to "shake off" sins.

Photo courtesy Hancock Shaker Village

Sunday go to meeting. Sunday worship was a joyous time for the Shakers. They assembled in a large meeting room, filled with light from large windows. The service always included men and women trembling, whirling, and shaking ecstatically.

The Shakers lived in communal agricultural societies, apart from the world at large. Their aim was to create heaven on earth. Women were equal to men in all respects and shared leadership duties. A set of strict rules governed their activities and warned against superfluous ornament; this fostered the clean, unadorned look that we associate with Shaker furniture today.

Shakers were sharp business operators. For example, the ladder-back chairs that some communities made were best sellers of their day. Other communities were well known for their seeds, tanned leather, and herbal medicines. The Hancock community's business ventures included a thriving dairy farm and leather tannery.

The Shakers were also relentless innovators. Among their creations: The flat broom, the metal pen nib, the apple peeler, and the circular saw. ■

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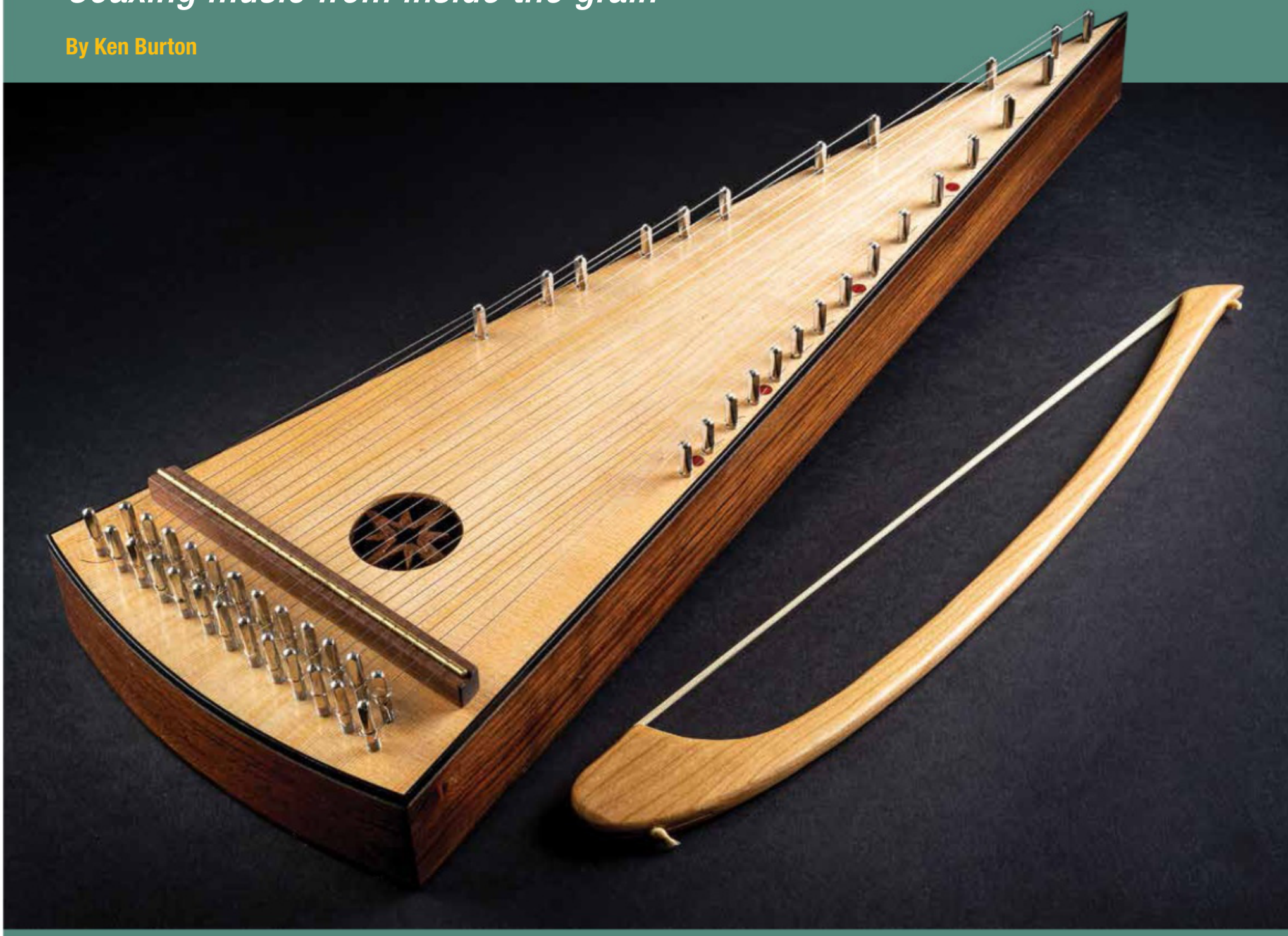
Bowed PSALTERY

Coaxing music from inside the grain

By Ken Burton



Not only is making a psaltery a great gateway into the craft of instrument making, it is also an easy instrument to learn to play. So if you're a bit musically challenged, as I am, building one may open doors for you. The instrument, which features 25 distinctly tuned strings, is typically played one note at a time, making a psaltery perfect for noodling out the melody of many traditional songs.

The build is quite straightforward. The only tricky parts are cutting accurate angles and laying out the pin holes precisely. Start by making the triangular frame, then prepare the bookmatched soundboard and back, and glue them to the frame. Rout for the binding strips, install them, lay out and drill for the pin holes, and apply a finish. Finally, make the bridge, add the pins and strings, and then tune up for your first recital.

You'll need to acquire a few special supplies, including zither pins and music wire. (See Buyer's Guide on p. 70). Also, consider ordering special wood for the soundboard. (See sidebar on p. 38). I used Peruvian walnut for the sides and back, but you can make them from nearly any hardwood. However, use a clear piece of hard maple for the pin block in order to firmly secure the tuning pins.

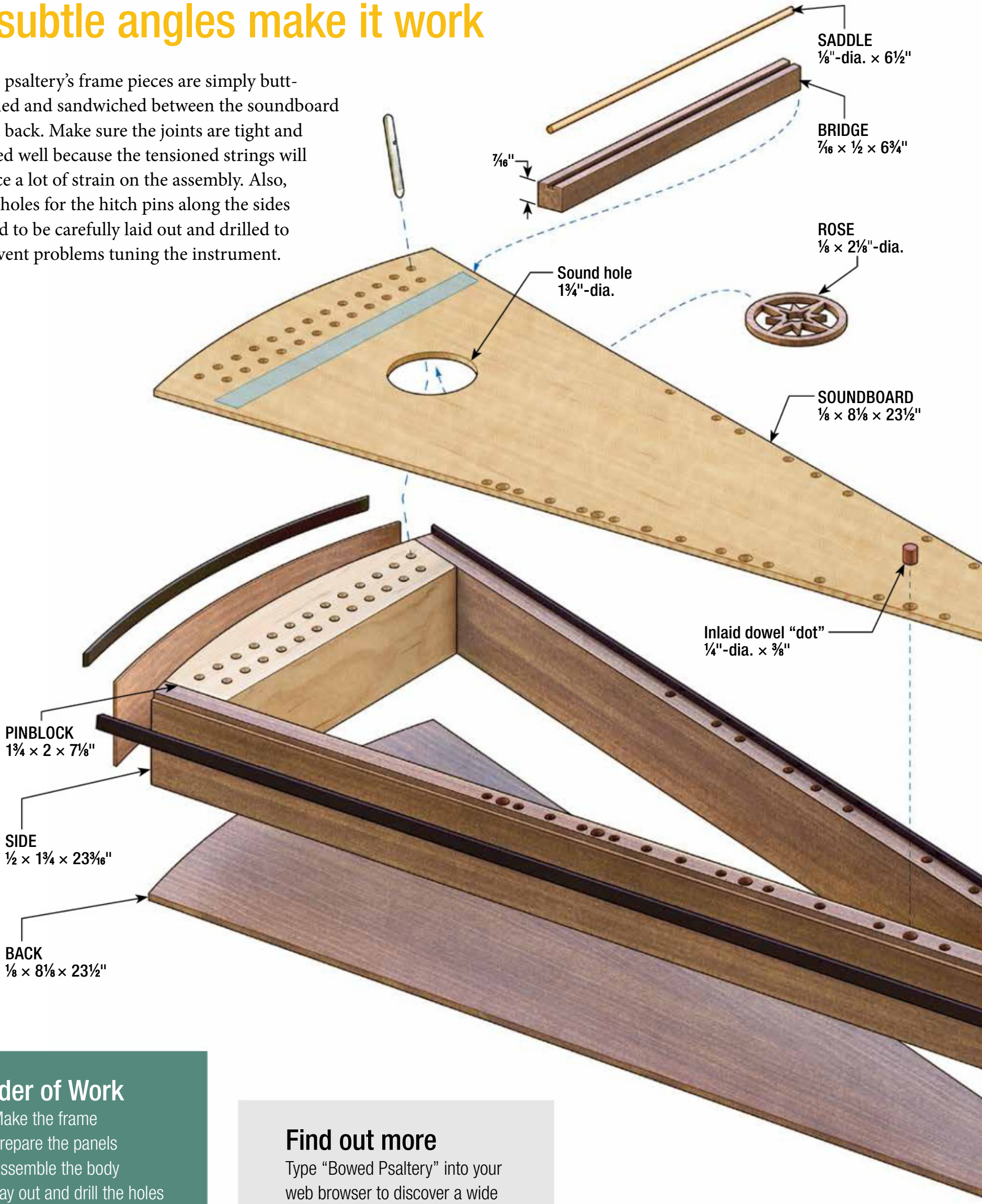
onlineEXTRAS

- Full-sized hole layout pattern
- Full-sized rose patterns

Opening photo: Larry Hamel-Lambert ;

Psubtle angles make it work

The psaltery's frame pieces are simply butt-joined and sandwiched between the soundboard and back. Make sure the joints are tight and glued well because the tensioned strings will place a lot of strain on the assembly. Also, the holes for the hitch pins along the sides need to be carefully laid out and drilled to prevent problems tuning the instrument.



Order of Work

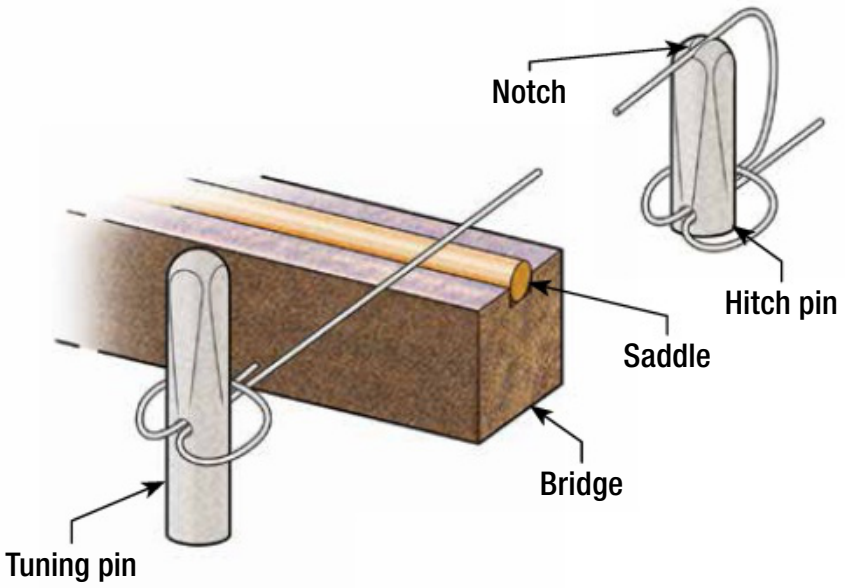
- Make the frame
- Prepare the panels
- Assemble the body
- Lay out and drill the holes
- Install the binding
- Finish and string up

Find out more

Type "Bowed Psaltery" into your web browser to discover a wide variety of tunes that demonstrate the instrument's wonderful sound.

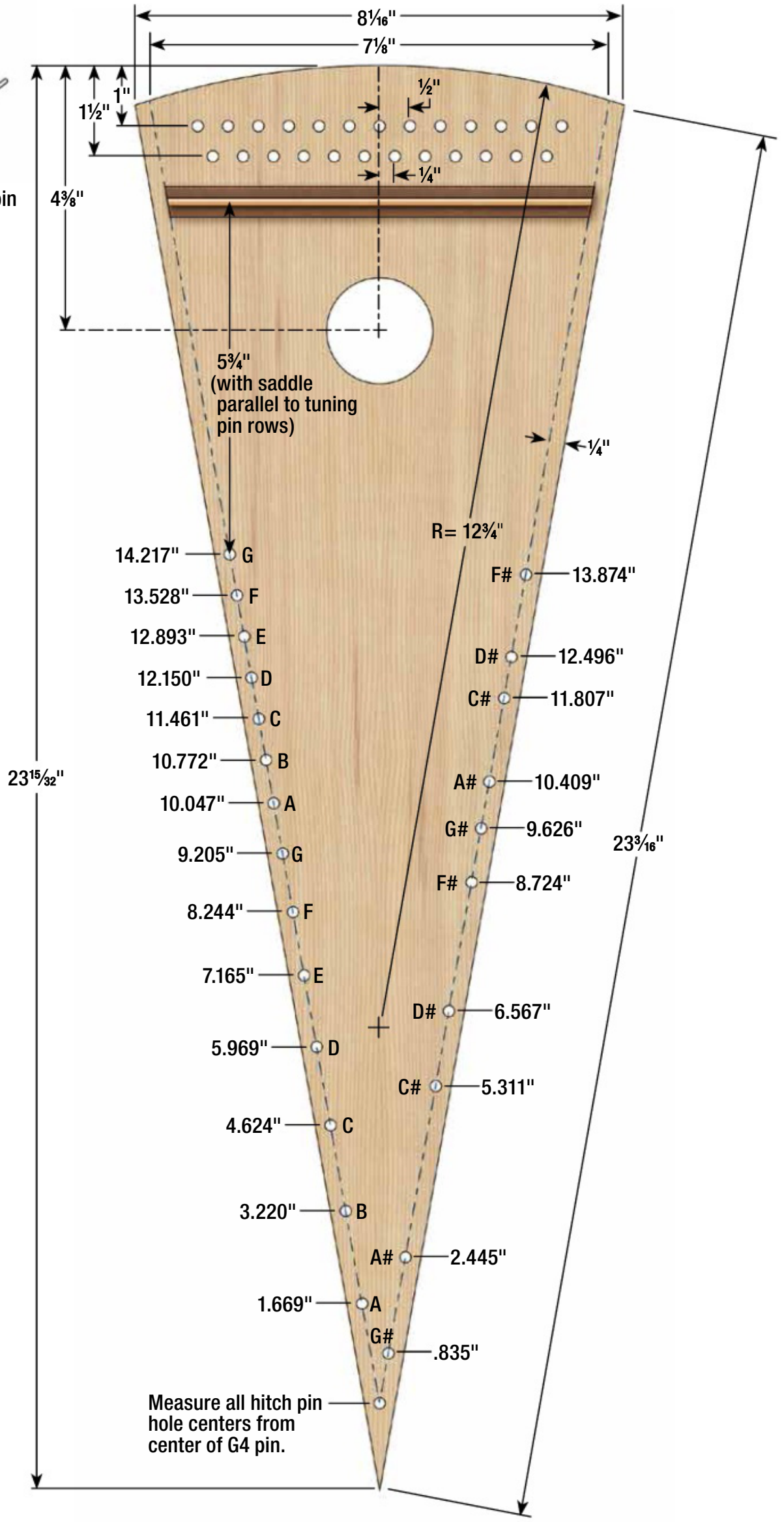
Illustrations: John Hartman

Stringing up



Trim excess after string is under tension.

Pin hole and bridge layout



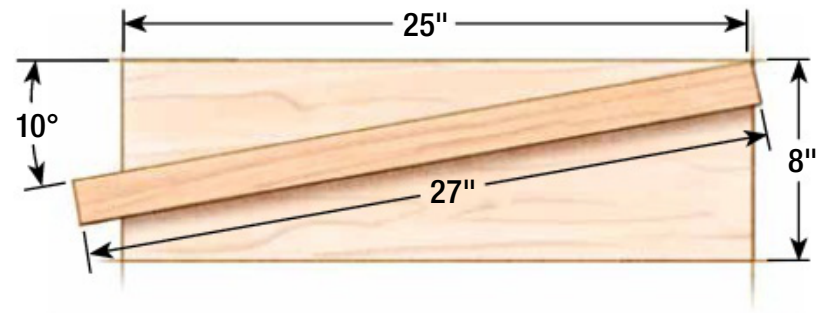
Play the angles for a strong frame

Mill the sides and pin block to thickness and width (see drawing, p. 36), but leave them oversized in length for now. Taper one end of each side at the table saw using a jig as shown. Clamp the sides together to get an actual measurement for the pin block, then cut the block to fit. Take care to get the angles just right, as this is critical for frame strength. Once the pin block fits, bandsaw the curve along its outer edge.

Musical Woods

If this is your first foray into instrument making, you may want to save yourself some time and money by using ⅛" Baltic birch plywood instead of solid wood for both the soundboard and back. Your psaltery will sound okay and you won't have invested a lot of time and effort into its construction, making it perfect for a child's instrument. On the other hand, if you want an instrument that truly sings, it's worth seeking out good soundboard material. Traditionally, stringed instrument soundboards are made from quartersawn softwoods, with Sitka spruce enjoying a reputation for producing a particularly sweet sound. There are many online sources for soundboard material, but most pieces are cut at about 20" long for guitar builders. Here, you'll need pieces at least 24" long. I got my spruce from Stewart MacDonald, which sells it for making dulcimers. (See Buyer's Guide on p. 70).

Tapering jig



Trustworthy tapers. Making the severely acute miter cuts on the ends of the sides can be tricky. This task-specific tapering sled makes the process easy and accurate. Save the taper offcuts to use as glue-up pads later. After tapering the frame sides, cut them to length.

Draw from the source. Dry-clamp the tapers face-to-face and use the opposite ends of the sides to mark off the length and matching angles on the pin block (left). After registering the angle with a bevel gauge, use it to set a table saw miter gauge for cutting the ends of the pin block (above).

Project photos: John Hamel

Glue up the body with angled clamping blocks

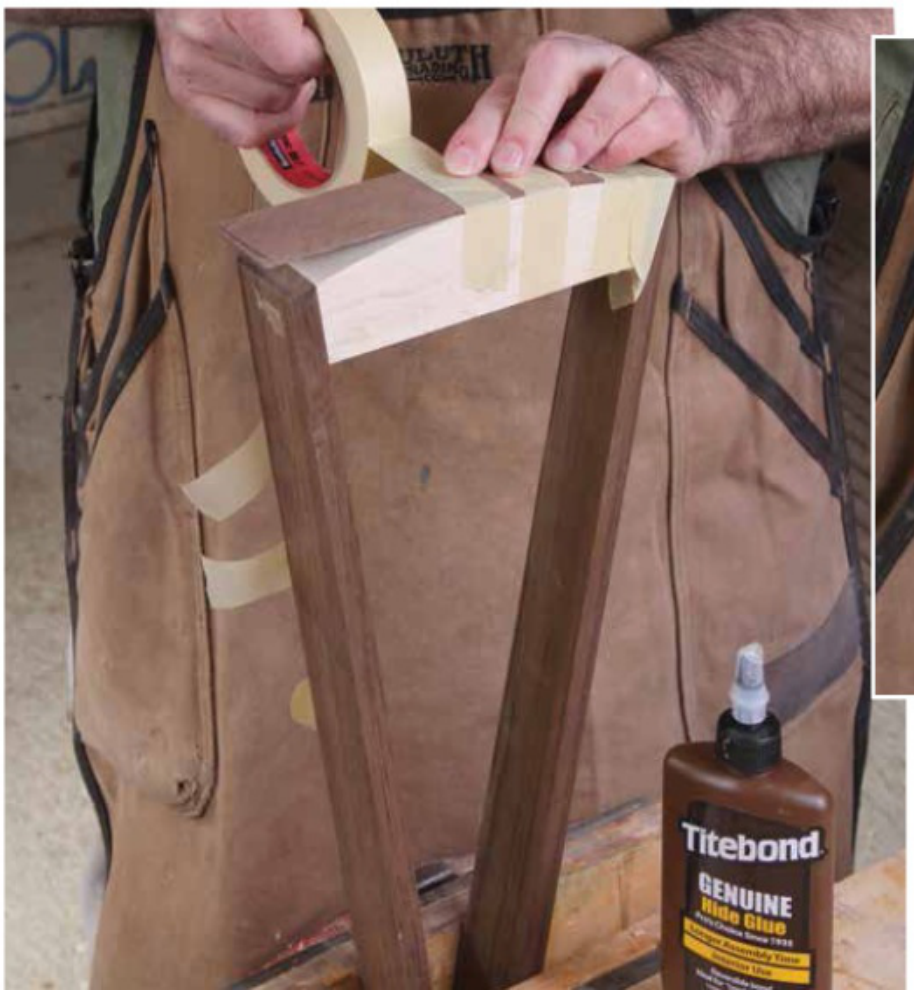
Glue the frame together using hide glue or epoxy, as noted in the sidebar at right. (Keep in mind that hide glue is repairable, but epoxy isn't.) Make the necessary clamping blocks to ensure a hassle-free glue up, as the angled pieces are sure to slip out of position if you try to wing it. Once the glue is dry, fair the rounded part of the pin block with a stationary sander to remove the saw marks and flush the ends of the sides with the outer edge of the pin block. Cut a 3/32"-thick slice of the same wood as the psaltery sides, and use it to veneer the curved end.

Eschew Creepy Glues

Instrument strings can exert a lot of tension on glued-up parts. For this reason, it's best to use hide glue or epoxy, and to avoid yellow (aliphatic resin) glues, which tend to "creep" under constant pressure. If you must use yellow glue, stick with the original formulas (e.g. regular Titebond or Elmer's), as additives in the more advanced formulas make those versions even more susceptible to creep.

Make your point first. Use the wedged offcuts from tapering the sides to create parallel clamping surfaces for gluing the point together. Use double-sided tape to affix them to thicker clamping blocks for manageability when applying the clamps.

Then attach the pin block. Again using your wedged offcuts, glue the pin block between the sides. Then, using a clothespin-shaped clamping block to protect the point, add a clamp length-wise to keep the pin block from slipping outward under clamp pressure.



Tape and cover. After fairing the curve, use masking tape to clamp the shop-made veneer in place across the curved end of the psaltery.

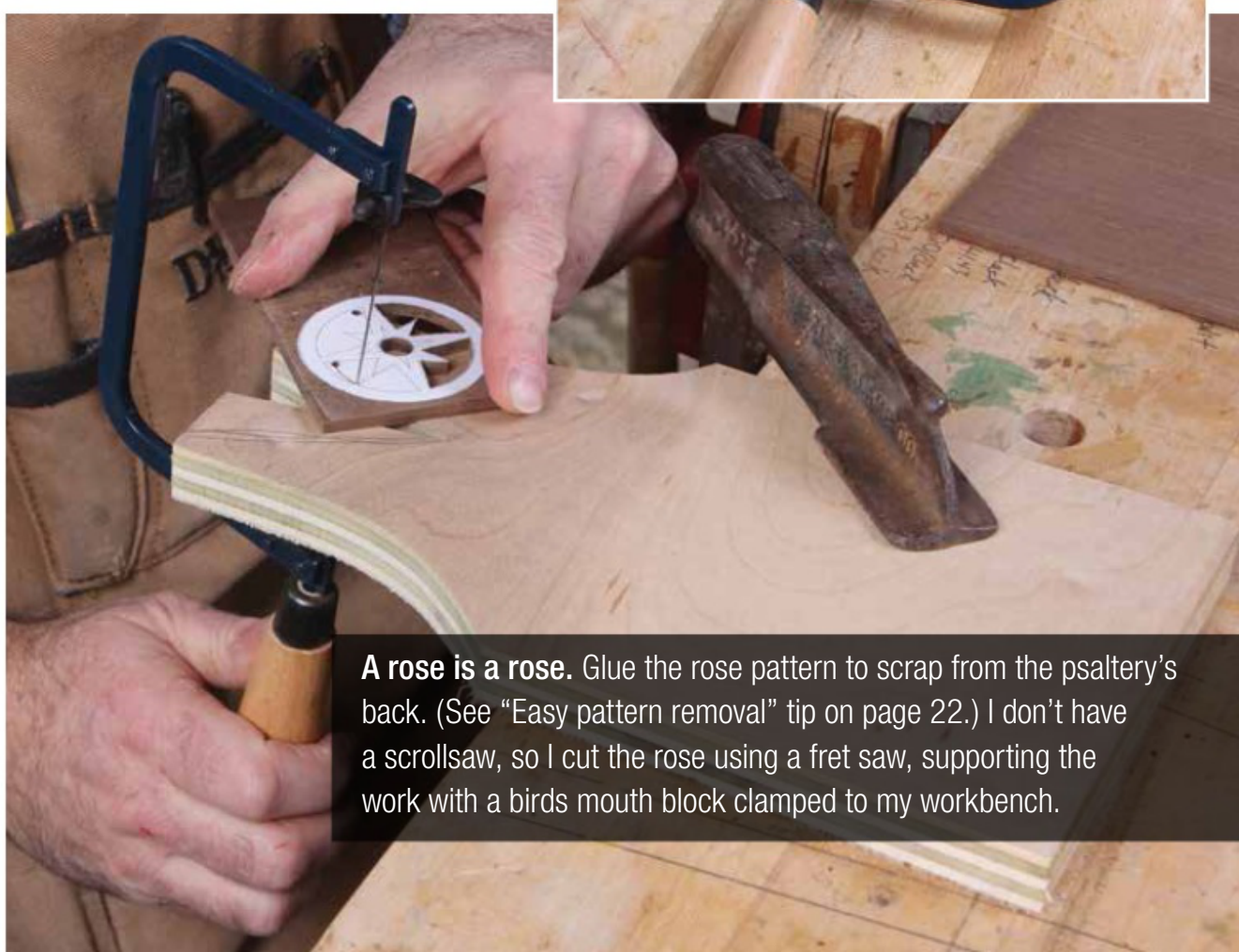
Prepare the soundboard and back

Traditionally, the soundboard and the back of a stringed instrument are made from thin, bookmatched panels. Unless you have purchased thin stock for the purpose, resaw two 4½ × 24" boards to make the panel halves. Clean up the saw marks, but allow for a bit of extra thickness to be removed later when cleaning up the glue joints. Joint the adjacent edges (see p. 26), and then glue up the panels as shown. (Note that I tapered my pieces so the grain would echo the triangular shape of the instrument.) After the glue cures, a stationary drum sander will make short work of bringing the panels to final thickness. Alternatively, scrape and sand the panels to flatten the seam. Trace the frame onto the panels and cut them to shape, staying about ⅛" outside the lines to allow a little play when gluing them to the frame.

Look, Ma, no clamps! Edge-gluing thin stock with bar clamps can be tricky. Instead, "spring" the joint together. Begin by placing a 3⁄32" × 1" strip of scrap under the joint, with the pieces lying on a scrap plywood panel. Then drive 4d finish nails every 4" along the edges.

Create the sound hole

There is quite a bit of physics behind determining the ideal size for instrument sound holes. For this psaltery, suffice it to say that a simple 1⅜"-diameter unadorned hole would do the trick. However, I like to add a decorative *rose*, which I glue to the underside of a 1¾"-diameter soundboard hole as shown. The bigger hole makes up for the area lost to the rose. (See onlineExtras for additional rose designs.) Before gluing the psaltery together, you may also want to include a makers label that will be visible through the sound hole. I print mine on heavy cover stock that I glue to the inside surface of the back.



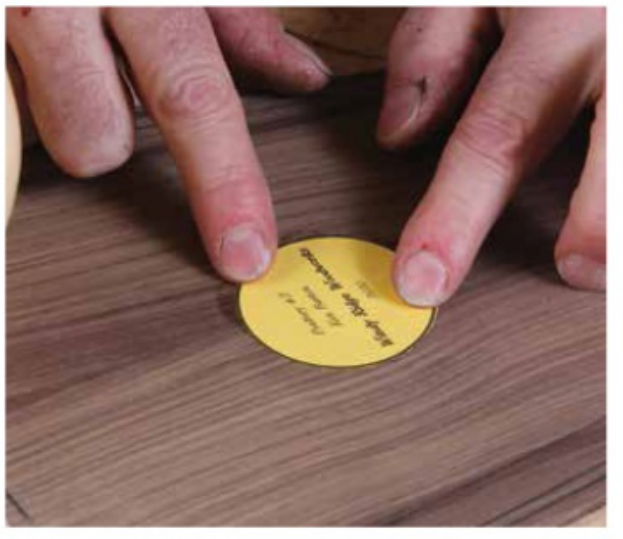
A rose is a rose. Glue the rose pattern to scrap from the psaltery's back. (See "Easy pattern removal" tip on page 22.) I don't have a scrollsaw, so I cut the rose using a fret saw, supporting the work with a birds mouth block clamped to my workbench.

Rose Pattern

Spring 'em together. Slide the strip out, and the pieces should snap flat with enough pressure for glue up. When satisfied with the dry-fit, pop the pieces free, apply glue, and spring them together again. Weight down the assembly as the glue sets. It's wise to run a strip of tape underneath to act as a glue resist.

Sound target. Mark the center of the sound hole on the top side of the soundboard, and drill through it with a 1/16" bit. Then draw a 2⅛"-diameter circle on the opposite side, pivoting on the hole as shown to provide a target for attaching the rose. Finally, drill the 1¾"-diameter sound hole from the top side.

Plant the rose. Apply glue to just the outside edges of the rose to avoid visible squeezeout, and then clamp it to the underside of the soundboard. A circular clamp pad with a recessed center puts pressure just where you need it.

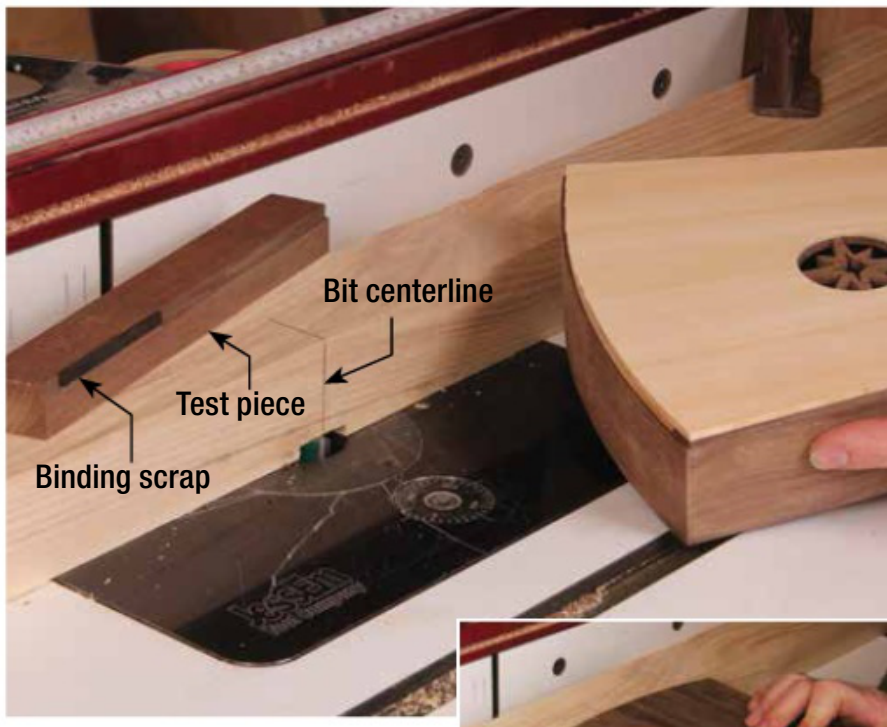


Give credit where credit is due. A lot of luthiers add a maker's label inside their instruments that is visible through the sound hole. Print your own on some cover stock and glue it to the inside surface of the back. For more information on maker's marks, see the Dec/Jan 2020 issue.

Assembly and decorative binding

To wrap up construction of the body, glue the soundboard and back to the frame, and then rout away any overhang with a flush-trim bit. Next, rout a rabbet around the edge of the soundboard to accept the binding, which is a thin, decorative strip of material that also protects the edges of the soundboard against chipping or other damage. For this project, I used a .080"-thick ebony binding with a white stripe, but many other types are available in various thicknesses and materials. I cut the rabbet using a simple shop-made fence at the router table.

Psaltery psandwich. Prepare for final glue-up by making two triangular pieces of ¾" sheet material to serve as clamping cauls. Apply glue to the edges of the frame, and sandwich it between the soundboard and back, bolstered by the cauls. Locate clamps about 2" apart all around the edges.



Rout the binding rabbet. Chuck a 1"-dia. straight bit in your router table and set the cutting depth to match the width of the binding. Clamp one end of a sacrificial auxiliary fence to the table. Pivot the fence's free end into the spinning bit to cut a recess that buries the majority of the bit. Using scrap to test the cut, clamp both ends of the fence so the bit projects a distance equal to the binding's thickness. Then cut a rabbet into the edges of the sound board. When routing the curved end, take care to keep it pressed against a bit centerline drawn on the fence (inset).

Stick 'em up. Saw the binding strips to length, and chisel miters at their ends to meet at the psaltery's corners. Glue the pieces in place, stretching short lengths of masking over them to serve as clamps.

Precision drilling sets the tone

It's time to drill for the hitch pins in the sides and the tuning pins in the pin block. First, mask off the sound hole and the areas to be drilled. Then lay out the hole locations as per the Pin Layout drawing on page 37. Precision spacing of the hitch pins is critical for an instrument that plays in tune, so work carefully. It's also very important to outfit your drill press with a fresh, sharp 3⁄16" brad point bit, as the zither pins have very shallow threads that may not seat well in roughly drilled holes.

Bore all the holes 1¼" deep, beginning with the hitch pin holes, which sit square to the top. Then use wedges as shown to set up for drilling the angled pin block holes, remembering to reset your depth stop. Angling these holes helps the strings wind neater. Afterward, sand and finish the body. For best sound transmission, use a surface finish like shellac or lacquer rather than a penetrating finish such as oil. (I used aerosol lacquer.) Avoid getting finish in the sound hole.

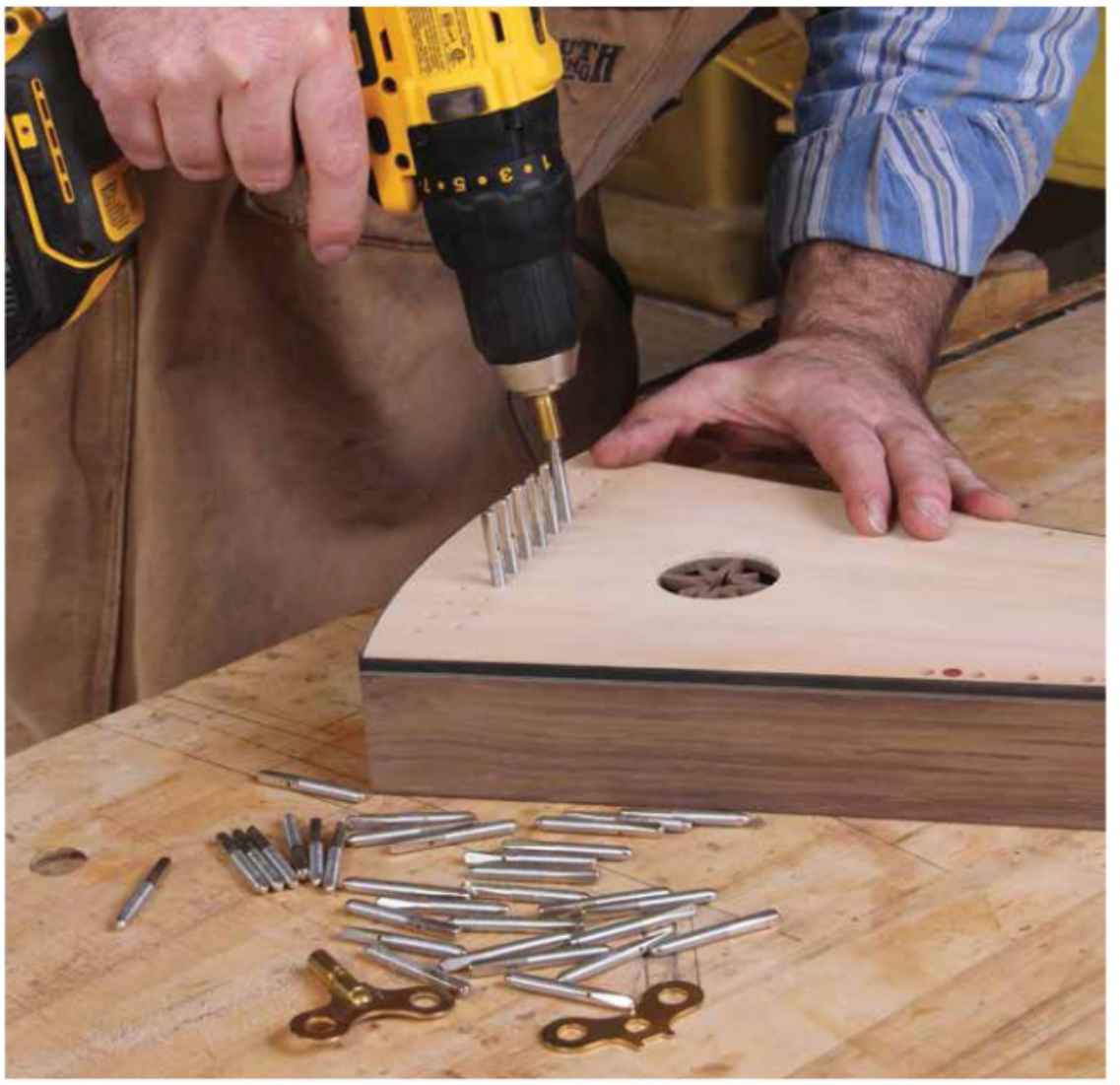
Digital layout. Draw a layout line ¼" in from each side, then mark for the initial hole at the point where the lines intersect. Lay out the remaining holes using a digital caliper, measuring each from the center of the initial hole location. When you reach the end of your caliper's range, clamp a ruler to the soundboard aligned with the initial hole to continue your layout.

Ramp up for angled holes. Set up to drill the angled tuning pin holes in the pin block by making two 10"-long wedges that taper from 1" to 3⁄16"-thick. Fasten these to the back of the psaltery with double-sided tape, and then drill the holes, keeping the body oriented 180° to the front of the drill press column.

Inlay for better play. Many luthiers inlay dots between the hitch pins to indicate certain notes. I usually mark the "C"s and "F"s using ¼"-dia. plugs cut from a contrasting wood such as the redheart shown here.

String it up

All that's left is to make the bridge, install the pins, and string up your psaltery. Cut the bridge to the size indicated in the drawing on page 36. Note that its ends should rest atop the sides to help withstand string pressure. Cut a 1⁄16" deep × 1⁄8" wide groove centered in the top surface to hold your 1⁄8"-diameter shop-made brass rod saddle. The bridge doesn't need to be glued down; the string pressure will keep it in place. However, its position is important. It should sit parallel to the rows of tuning pins, with a distance of 5¾" between the center of the shortest G-string hitch pin and the midpoint across the saddle's diameter. (See "Pin hole and bridge layout" drawing on p. 37.) Attach the shortest strings and lightly tighten them. Double check the 5¾" dimension before adding and tuning the remaining strings. ■



Fast fifty. Buy an extra tuning key and detach its "ears" to make a driver for quickly installing the 50 zither pins. Drive in the hitch pins so their holes rest just above the soundboard surface while pointing toward the mating tuning pin. For the tuning pins, set the hole about 3⁄8" above the surface.

Notch and conquer. The strings run over the tops of the hitch pins. To keep them in place, file a shallow notch in each pin with the corner of a triangular file. Orient the notches parallel to the string holes.

Tune 'er up. There is a number of digital tuner apps available for your smart phone, including *gStrings,* shown here. To use the program, simply dial in the desired note, pluck the string, and the meter will indicate how close you are. Tighten the pin for a higher note, loosen it to go lower.

6 Tips for ROUTER RESUSCITATION

Maintenance and cures for an ailing tool

By Bill Sands

For many woodworkers, the router gets the hands-down vote as the most capable and convenient portable power tool in the shop. Whether handheld or mounted in a table, it excels at tasks ranging from profiling edges and cutting joints to pattern-routing and creating decorative inlays. The tool's design and engineering are just as impressive as its multifaceted usefulness. Considering all the tricks this workhorse can perform, it's not surprising that it requires regular care and occasional first aid.

I'll first touch on preventive maintenance and then run through six potential problem areas to help you diagnose router ills and perform the necessary cures. Use the illustration on this page to locate the key problem areas on your router. To assist with the inspection and repairs, I've prepared a router "first aid kit" consisting of the items listed in the sidebar on the next page. Finally, should the repair be too major, I'll steer you to the nearest tool service center for professional help.

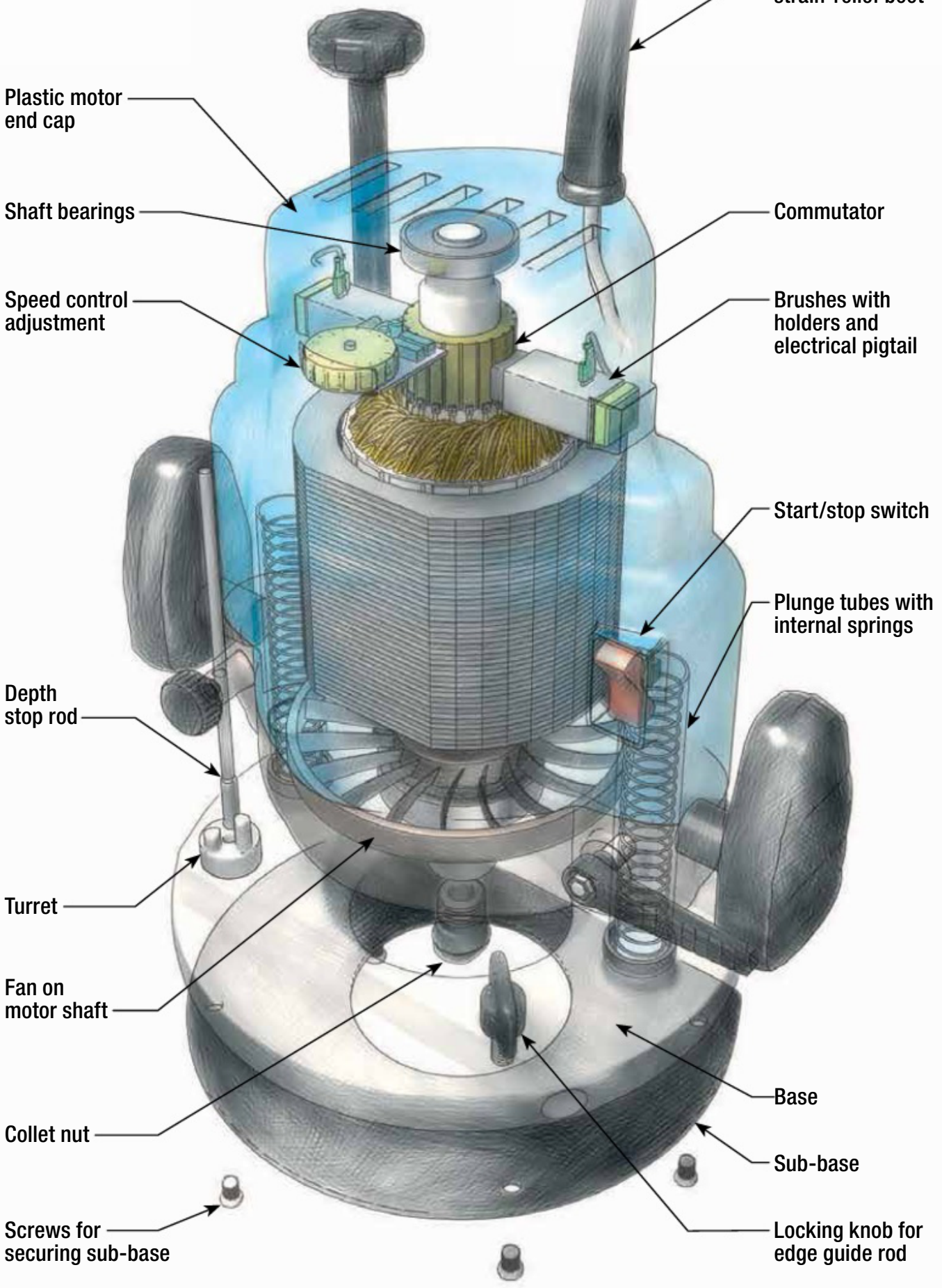


Illustration: Chris Glowacki

1 Preventive maintenance

As part of your router's health care program, preventive maintenance can help ward off problems due to normal wear and tear. Surprisingly, fine dust and debris are your router's worst enemies. They can lead to switch failure, accelerated brush wear, and overheating. It's a good practice to regularly blow out accumulated debris with low-pressure air. (High-pressure air from a compressor can force dirt into previously uncontaminated parts.) A quick visual inspection before each use will help you identify developing problems.

When a router ailment causes poor performance or no performance at all, it's time to reach for the first aid kit. Always unplug your router before making any repair.

First aid kit. Use the tools and supplies in this kit to keep your router running smoothly and efficiently.

3 Power cords and strain relief

A missing prong or cracked plug can be easily fixed. Replacement plugs, like the one shown below, are available at most hardware stores.

Plug replacement. Assemble the plug, making sure the black (hot) wire connects to the darker brass screw.

Damaged cords can be more difficult to diagnose. Misuse, wrapping the cord too tightly around the router, an accident, or old age can expose or sever the conductors within the cord's outer sheath or loosen the connections at the plug or switch. If you can see bare wire, it's time to replace the cord. If the cord appears to be intact, you can sometimes pinpoint a trouble spot by powering on an unarmed tool and then wiggling the cord. Broken conductors can cause a router to run intermittently as the cord is flexed.

When replacing a damaged cord, solder the wire ends or install "crimp-on" connectors before tightening the terminal screws. Note and follow the cord's color code for the wiring. In the U.S., green is the case ground, white is the neutral, and black is the "hot," or powered, wire.

Correct cord connections. At the motor, carefully fit and screw the tinned wire ends of a replacement cord under the terminal screws, paying attention to the wire's color code. Tinning results in a better mechanical and electrical connection.

Photos: Jim Osborn

2 Switches and electronic controls

A power switch or speed control that has been compromised by accumulated dust and dirt may cause a router to run intermittently or not at all. Closely examine these parts and their cord connections and try cleaning them with low-pressure air. Then test the tool. If the problem persists, you can order a new switch or speed control and replace the parts as shown. Alternatively, you can ship your router to a service center for diagnosis and/or possible part replacement and repair.

Switching out a switch. To install a new switch, orient it properly and reattach the wires in their original configuration.

Quick Tip

When disassembling a tool for repair work, take photos of the wiring, hardware, and part arrangements for reference during reassembly.

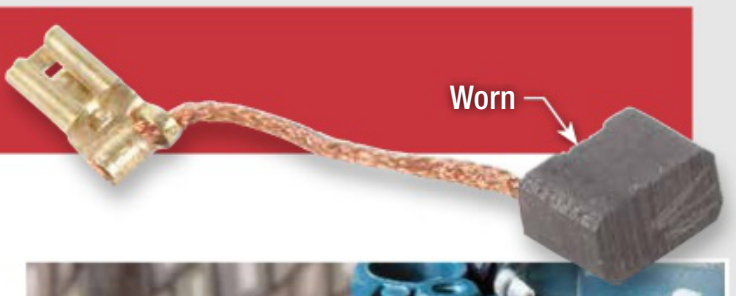
4 Brushes

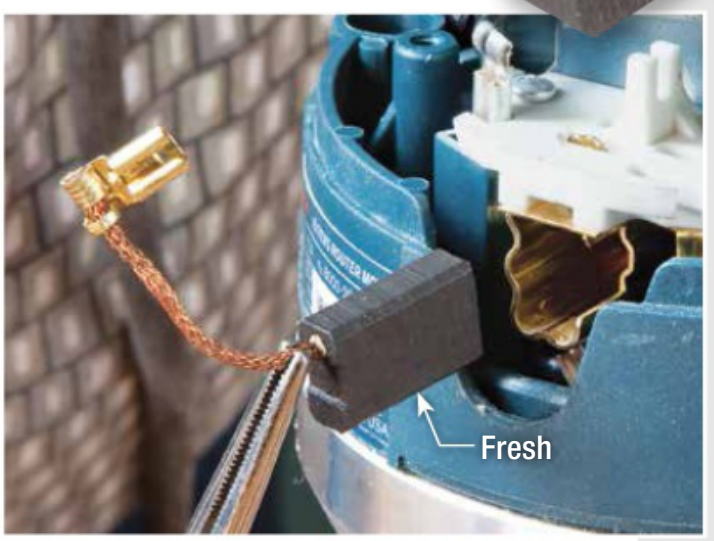
Manufacturers recommend checking brushes every 50 to 100 hours of running time. This isn't easy to track, so make a point of checking brushes once a year or before starting a major job. Brushes typically need replacing when worn to one-fourth of their original length. If your brushes don't have a wear line, consult the manual or check with a service center for minimum length specifications. Signs of impending brush death include increased noise levels and excessive sparking. Ignoring the problem for too long risks damage to the commutator's soft copper surface.

On some routers, the two brushes sit under threaded plugs in the motor end cap. On others, the cap itself must be removed to expose the brush holders. With the brushes exposed, disconnect the brush's electrical connection and carefully reposition the end of the spring that presses the brush to the commutator.

After removing the brush, blow away any carbon dust on the commutator, and then inspect it with a strong light. A healthy commutator should reveal a clean copper surface. If it appears burned or excessively worn, get a repair estimate from your service center.

Fit a new brush in each holder, and reconnect the pigtails. Make sure the brushes contact the commutator and move freely in their holder. Reassemble the parts and test the router.





Brush replacement. Always replace brushes in pairs. A hemostat clamp works great for maneuvering brushes, springs, and connecting wires.

Quick Tip

If brushes removed for inspection don't need replacement, be sure to reinsert them in their original orientation.

5 Locks, stops, and plunge mechanisms

Routers employ a variety of locks and stops to position and guide the cutter. These function best when they are clean, lubricated, and properly adjusted.

On fixed-base routers, a locking mechanism secures the motor in the base while allowing depth-of-cut adjustment. Whatever the particular mechanism, clean and lubricate it occasionally to ensure smooth operation. On some routers, a pin projecting from the motor casing rides in a spiral groove in the base to raise and lower the motor. These grooves need occasional cleaning as shown in the photo below.

Metal hygiene. Clean the spiral height-adjustment grooves using a toothbrush and rag dampened with pitch remover.

Plunge bath. Disassemble a depth-stop rod and turret to properly clean and lubricate them, ensuring smooth plunging operation.

Plunge routers employ telescoping tubes with internal springs that allow the cutter to be plunged into the workpiece. The mechanism should operate smoothly without catching or wobbling. The plunge lock should engage easily and hold the depth of cut securely. Any problem with the plunge mechanism usually stems from an accumulation of dirt and debris. The fix is to disassemble the moving parts, clean them, and then apply dry lubricant prior to reassembly.

Mechanical depth stops allow presetting the maximum depth of cut. For trouble-free operation, clean them as shown at bottom left and apply dry lubrication such as Bostik DriCote (Woodcraft #124626).

Stripped Screws, Broken Castings, And Missing Knobs

Router castings are made of strong, lightweight materials like aluminum, but they're not indestructible and may crack or break when dropped. To reduce the possibility of breakage, surround your workbench with rubber mats to soften the blow when a router or other tool falls to the floor. You can repair minor cracks with J-B Weld epoxy or similar metal repair products. However, if a casting is completely broken, gluing the part together is risky; order a replacement. Stripped screw threads in aluminum castings are another common problem. Used for attaching sub-bases or accessory fences, these threads can strip out if you over-tighten or cross-thread a screw. To "fix" stripped threads, you can either redrill the holes and tap them for a larger size screw, or drill and tap a new hole at a different location to serve the same function. Alternatively, you can replace the casting. In any case, never operate a router with broken or missing parts.

6 Collet, cutter, and bearing problems

The business end of a router consists of a removable sleeve called a *collet* that fits into a chuck, or tapered recess, in the motor's shaft. Tightening the collet nut forces it to grip the bit, holding it securely for a routing operation.

If you encounter rough cuts when using a sharp, high-quality bit with a clean, unmarred shaft, the problem may be caused by a dirty or worn collet and/or chuck, which can allow bit slippage. Use pitch remover to clean the collet, chuck, and nut (right). Scrutinize the nut and chuck for damaged threads, and replace the nut if needed. Inspect the collet for rough edges, which can be lightly smoothed with 400- or 600-grit wet/dry sandpaper. If your router has additional collets, clean and check them as well.

Excessive tightening of the nut can deform a collet, reducing its grip and allowing bit slippage. Worst case scenario is that a spinning bit could drop from the router. Telltale indications of collet and bit slippage include galling and score marks on the bit's shank. In some cases, simply cleaning the collet and chuck with solvent and steel wool will remedy the problem. But if the collet surfaces are rough or rusted, replace the part. On some routers, the chuck is actually a separate part that threads onto the end of the spindle. Special tools may be needed to remove it, possibly requiring a trip to the repair center.

Spindle wobble, or *runout*, can also cause rough cuts. Check for runout using a dial indicator pressed against a centering bit or a short piece of appropriate-sized drill rod (from industrial supply houses such a McMaster-Carr or Fastenal) chucked in the collet. A dial indicator with a magnetic base as shown top right requires a ferrous attachment surface. To create one, use double-faced tape to attach a tablesaw blade to the router's sub-base covering the blade's teeth with tape for safety.

With the dial indicator shaft pressed against the bit about 1" above the collet nut, rotate the shaft by hand and note any movement of the indicator's dial. There should be little or no runout (.001-.002). Excessive runout could indicate bad bearings that require professional repair or replacement of the tool.

To check for bad bearings, remove the nut and collet and turn the motor shaft by hand. It should rotate smoothly and with no discernable side play or noise. If you detect a problem, weigh the costs of repair versus replacement. ■

Cultivate crud-free collets. Clean the collet and nut to remove dirt and debrris and keep them trouble-free.

Turning true? Use this setup of a dial indicator, saw blade, and drill rod to check collet runout.

Where To Turn For Help

Most major manufacturers' websites will point you to your local authorized router service centers that can help you asess your service needs. Alternatively, call the manufacturer directly using the following numbers.

Manufacturers' Numbers:

Bosch (877) 267-2499
Craftsman (800) 549-4505
DeWalt (800) 433-9258
Festool (888) 337-8600
Freud (770) 458-0870
Hitachi (800) 448-2244
Makita (800) 462-5482
Milwaukee (800) 729-3878
Porter-Cable (888) 848-5175
Rigid (800) 474-3443
Ryobi (800) 525-2579
Skil (877) 754-5999
Triton/HTC (800) 624-2027

Turned TABLE

The sum of four discs, one spindle, and a day's fun at the lathe

By Michael Kehs

Some furniture designs have funny inceptions. The idea for creating a turned table like this came from my father, who asked me to make a small table by mounting a turned disk atop a 24"-tall antique fire extinguisher made of copper. He wanted me to inlay the design of a snake into the top, explaining that it was for his Ruby. Now I know that Ruby doesn't like snakes, so when I inlaid the reptile, I surrounded it with dyed blades of greenery. If he was gonna play a joke on his Ruby, I wanted to make sure she knew it was from my snake-in-the-grass Pop.

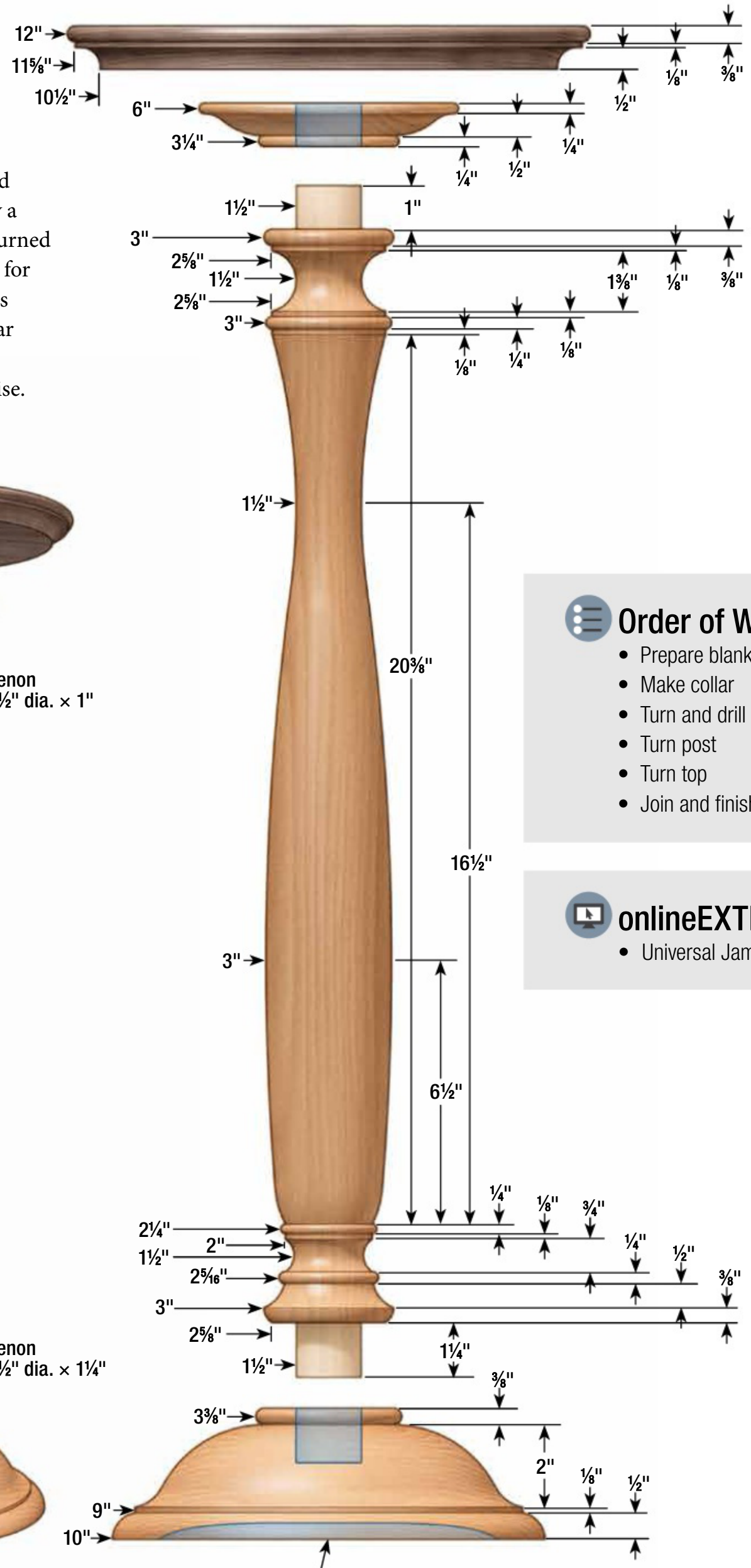
Since then, I've made these tables in many different configurations and heights, replacing the fire extinguisher with a turned column and base. The one shown here is a good height for an end table, while I've made some as tall as 42" for standing-deck-party drink pedestals. The post can be classical or contemporary, and as simple or complex as you like. As for the base, also shape it to suit; just make sure it has decent weight for good footing.

As with this table, you can inlay the top with a design of thin material for decorative purposes. (See page 57.) You can also employ a thick piece to serve as a reinforcement for a split in an otherwise pretty piece of turning stock. If you're inlaying, do it to the rough-bandsawn top blank before building the table. I dyed the top on this table to really make the curly maple grain sing. Whatever you do, have fun turning the tables!

Opening photo: Paul Anthony

A stack of rounds

This table consists of a face-turned base, collar, and top connected by a spindle-turned post. The base is turned slightly concave on the underside for firm footing, but otherwise retains its solid heft for stability. The collar serves as a visual transition while allowing for a deeper tenon mortise.



Order of Work

- Prepare blanks
- Make collar
- Turn and drill base
- Turn post
- Turn top
- Join and finish parts

onlineEXTRA

- Universal Jam Chuck

Illustrations: Christopher Mills

Start with the collar

You have two choices for making the top: You can either turn it from one thick piece, which involves a lot of wasting, or you can make it from two pieces, which involves a glue-up. I prefer the latter, which I'll discuss here. Lay out the top and collar discs and rough-bandsaw their perimeters. Drill a center hole through the collar blank and mount it as shown. Turn the collar's profile and then true the area that will contact the post. (Medium-grit sandpaper adhered to a straight stick held against the spinning piece finesses the surface nicely.) Glue the collar to the underside of the tabletop, then set the assembly aside for now.

Define the contact flat. After drilling a 1½"-diameter hole through the collar blank, mount it on the lathe using #1 jaws on a 4-jaw chuck. Set a compass to ⅞", register the point leg against the edge of the hole, and mark off the flat area that will contact the top of the post.

Turn the base

Lay out and bandsaw the blank for the base. Mount it between a flat jam chuck (see onlineExtras) and a live tail center, and turn a shallow recess and tenon on the underside as shown. Afterward, invert the blank and grip the tenon in the chuck. Mark out the perimeter of the flat where the post will meet, then shape the profile, leaving the top bead unfinished for the moment. Drill the post mortise, true the upper face, then roll the upper bead using ½" and ⅜" bowl gouges. Sand the entire profile, then dismount and invert the base, remounting it through the mortise hole. Finally, turn away the tenon on the underside, and set the piece aside for now.

Recess time. The first step to shaping the base is to turn a shallow recess into what will be the underside, leaving a ⅜" × 2½"-dia. tenon for attachment to the four jaw chuck in the next step. I use a ⅜" bowl gouge for the job.

Shape the profile. After mounting the inverted blank on a 4-jaw chuck, use a ⅝" bowl gouge to do the majority of the profile shaping. Detail the bottom perimeter with a ½" bowl gouge. Don't round over the top bead yet.

Turn up your collar. Use a ½" bowl gouge as shown here for the general shaping of the collar. Use a ⅜" spindle gouge to undercut and round over the bead at the perimeter of the flat that contacts the post.

Two-part top glue-up. Mark out the location of the collar on the underside of the top using a compass, then glue the collar to the top using deep-jaw clamps.

On-board mortising. Using a 1½" Forstner bit in a lathe-mounted Jacobs chuck, drill a 1¼"-deep mortise into the topside of the base to accept the post.

Tenon turn-away. Finish off the base by turning away the tenon on the underside. No need to be too neat here.

Project photos: John Hamel

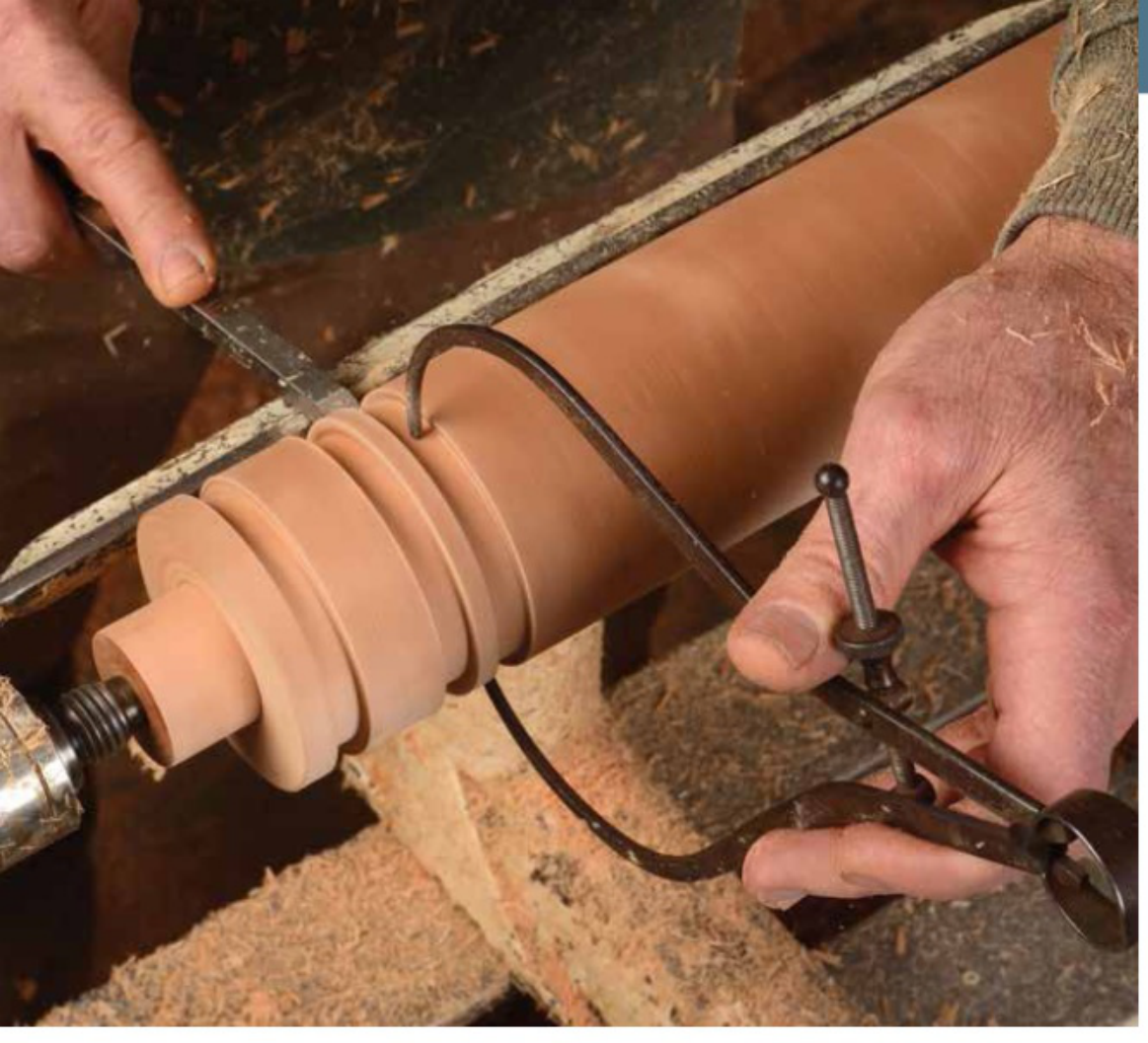
The post completes the parts

Mount the post blank between a drive center and a live center, and turn it to a cylinder. Start by marking off the lengths of the tenons on the ends, and then turn them to final diameter as shown, test-fitting them in their mortises. Make sure the tenon shoulders are square to the post axis. Turn the profile shape in a series of steps, referring to the drawing on page 51. Keep in mind that the dimensions provided are just guidelines. Don't fret if your results are off by a bit. After shaping the post, sand and dismount it.

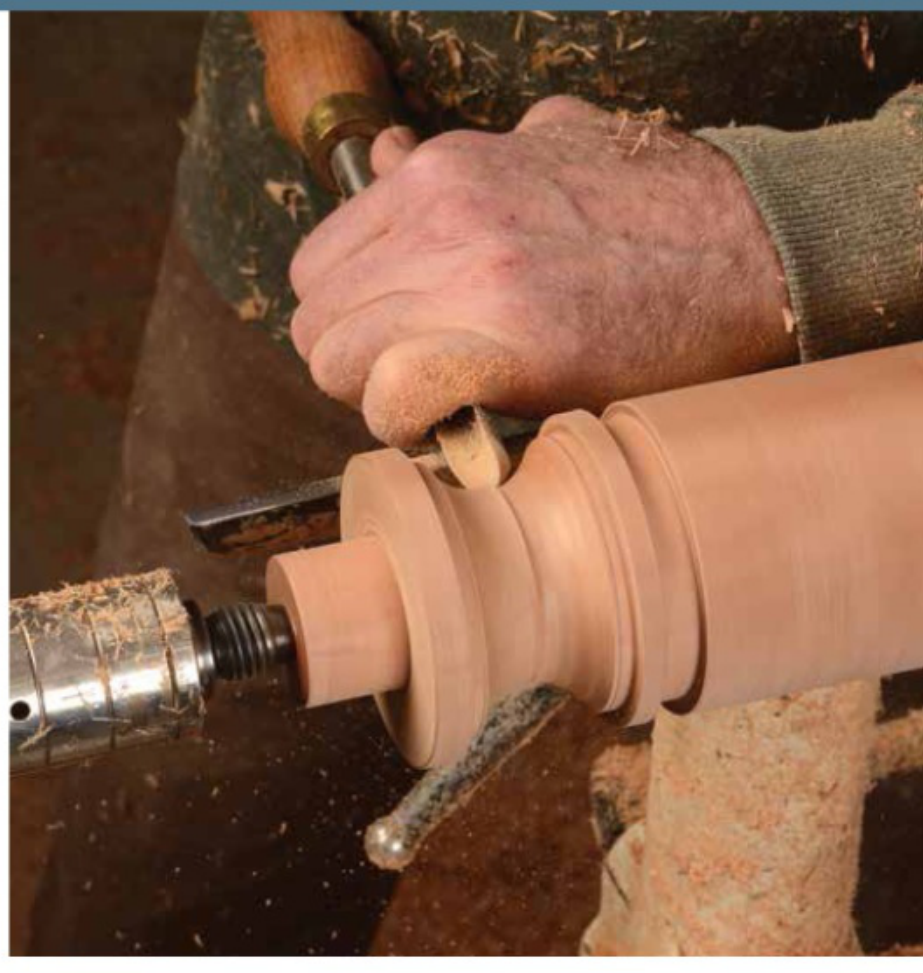
Test-fit tricks. Use a bedan to turn the entire length of each tenon slightly fat. Then use a calipers to gauge turning the endmost ⅛" to final diameter, as shown here. Dismount the post and test each tenon in its mortise. Recut if necessary, further reducing the endmost section if it's too fat. If it's too small, try again by moving inward another ⅛". Having established the proper diameter on each tenon, turn the remainder of the length to match.

Roll the beads. A ⅜" detail gouge with a fingernail grind is a great tool for rounding over the beads and finessing their intersection at the shoulders.

Begin the center section. After turning the details at the bottom of the post, mark off the major and minor diameters on the main post section. Then sweep from the major diameter to the post bottom using a 1¼" spindle roughing gouge, switching to a ½" spindle gouge as shown to finesse the transition point at the bead.



Establish the bead shoulders. After penciling off the locations of the two beads at the top of the post, use a bedan to turn their adjacent shoulders a hair oversized in diameter.

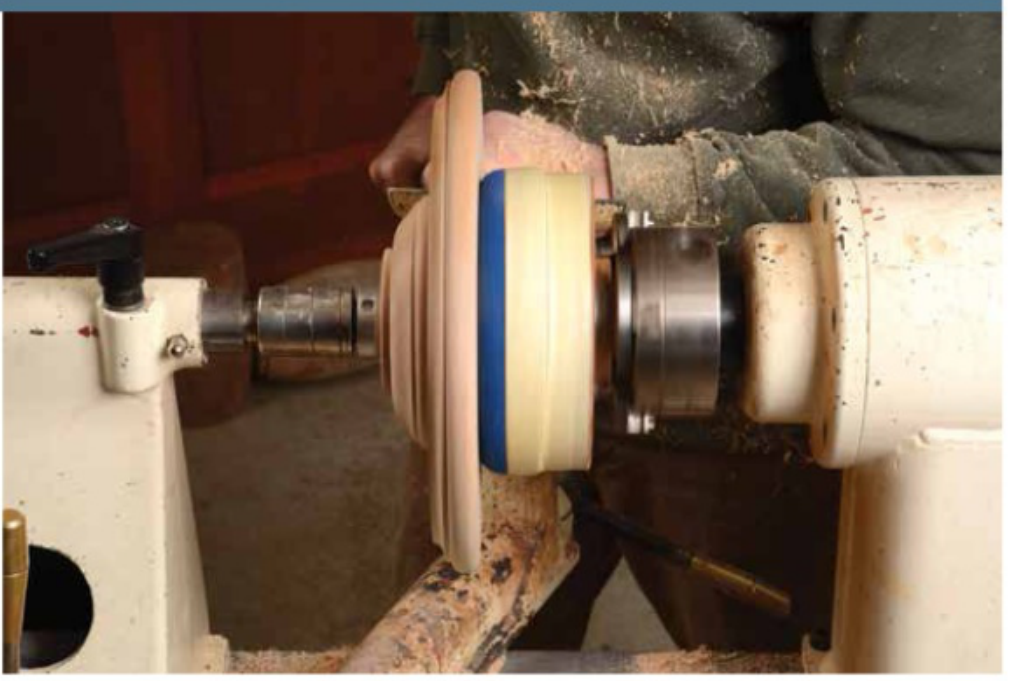


Excavate the cove. Use a ½" spindle gouge to shape the cove, sweeping down and inward from each end toward the center, leaving a ⅛"-wide shoulder at each end.

Finish the center section. Use a ⅛" parting tool to establish a 1⅝" diameter at the location of the post's minor diameter, making the groove about 3/16" wide for safety. Then switch back to the 1¼" spindle roughing gouge to shape the top section of the post.

Profile the top, and glue up and finish in stages

The collar-and-top assembly glue will be well-cured by now, so mount the piece on the lathe and turn the top's profile, sanding it to finish it up. Next, glue the post to the base. After leveling the assembly as shown, I dyed the detached top, and applied a few coats of Danish Oil to it and to the post/base assembly. To complete the finish work, I applied a few additional coats of wiping varnish to the top assembly for better durability. Finally, I glued the top to the post/base assembly, checking it for parallel to the floor as before. ■



Turn the top profile. Mount the collar-and-top assembly between your flat jam chuck in the headstock and a live cone center in the tailstock. Then turn the profile of the top.

On-the-level glue-up. To ensure that the top and base are perpendicular to the post, lay a straightedge across the table and measure to the floor from each cantilevered end. If necessary, adjust the lean of the table until the measurements match. Make sure to check east-and-west as well as north-and-south.

Bevel-edge INLAY

Prettify and personalize your projects

By Michael Kehs

Everyone loves a project that has been personalized for them. Inlay provides a beautiful way to reflect someone's interests or personality, and it doesn't have to be complicated or expensive. Using a simple butterfly design as an example, I'll show you how you can augment just about any project with tools you probably already have. (See page 50 for the table that displays this butterfly.) As for the materials, it's not likely you'll have to buy any, as you have here an opportunity to finally use some of those small scraps of precious wood you've been so jealously hoarding.

The sweet thing about the beveled-edge technique I'll show you is that it allows you to finesse the fit, creeping up on a perfectly sized recess to ensure near-gapless results. Beveling the perimeter of the inlay material causes it to effectively wedge into its recess in the same manner that a tapered cork snugs itself into a bottle opening. Also, the relatively thick inlay material will stand up to abuse much better than thin veneers. If this is your first time making and installing inlay, not to worry. This butterfly motif is simple enough to guarantee success at first try, while introducing you to the basic techniques that will allow you to expand your design repertoire going forward.

Order of work

- Saw the design profile
- Trace profile onto surface
- Rout recess in surface
- Glue inlay into recess
- Level inlay to surface

Online Extra

- Butterfly pattern

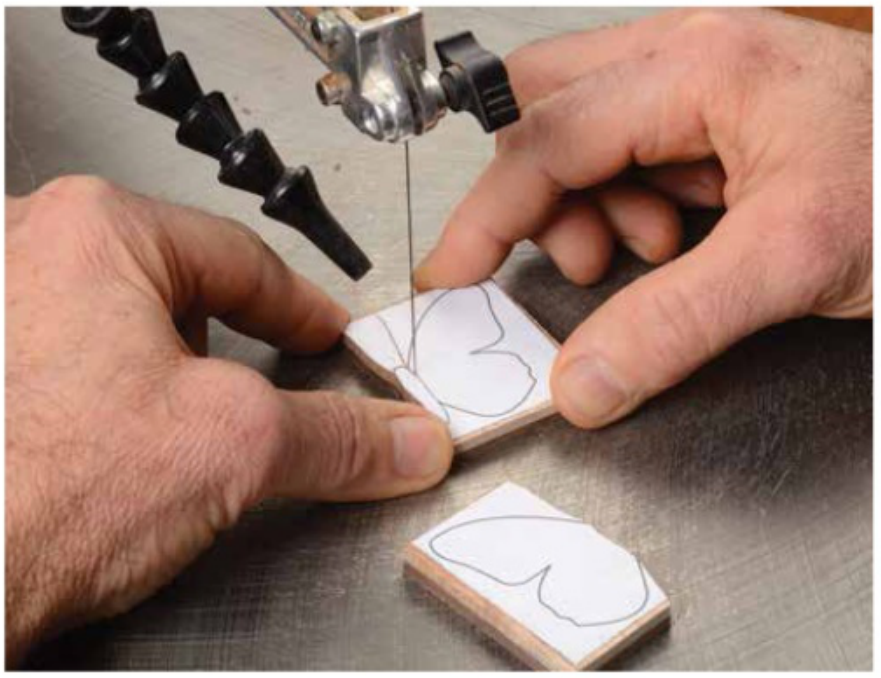
Photos: John Hamel

Construct the inlay assembly

For this simple 3-piece design, it makes sense to glue the parts together before inlaying them as a whole. When cutting out the parts with a scrollsaw, keep in mind that the mating edges where the wings connect to the body must be cut at 90° for good gluing contact. All of the other edges constitute the perimeter of the assembled piece, and should be beveled at a 3° angle.

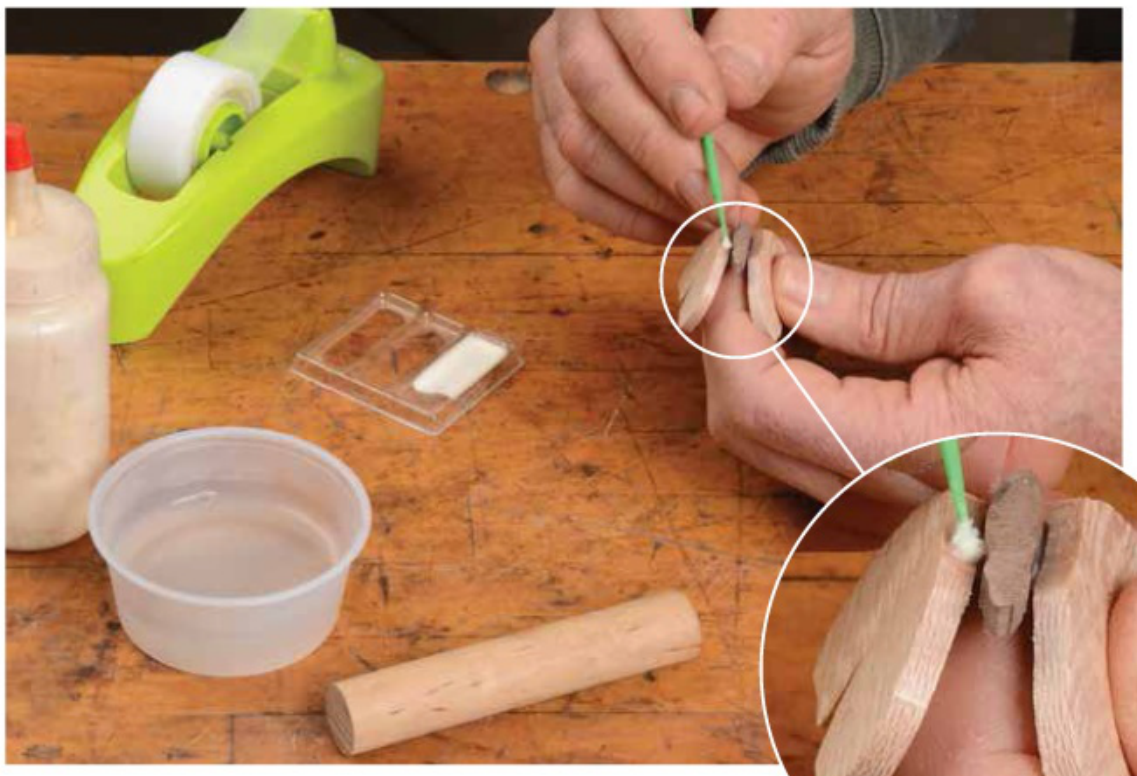
After printing out the pattern, mill blanks of your selected wood species to a little over ⅛" thick. Stack the blanks, attach the pattern, and then cut out the parts as shown. (I use a 28 tpi blade.) Separate the pieces (drizzling denatured alcohol between them to soften the tape, if necessary) and mark the top face of each. Then assemble the reconstituted parts as shown to complete your inlay assembly.

Blanks at the ready. After milling the inlay blanks (here, sycamore for the wings, and walnut for the body), tape them in a stack with the pattern glued to the top piece. Stack-cutting a design like this will actually yield two sets of parts, with the woods reversed for the second assembly.



Saw seams square. Set the scrollsaw table at 90° to the blade when separating the discrete sections of a design, such as the butterfly body and wings here, which will be glued together as a unit before inlaying the assembly.

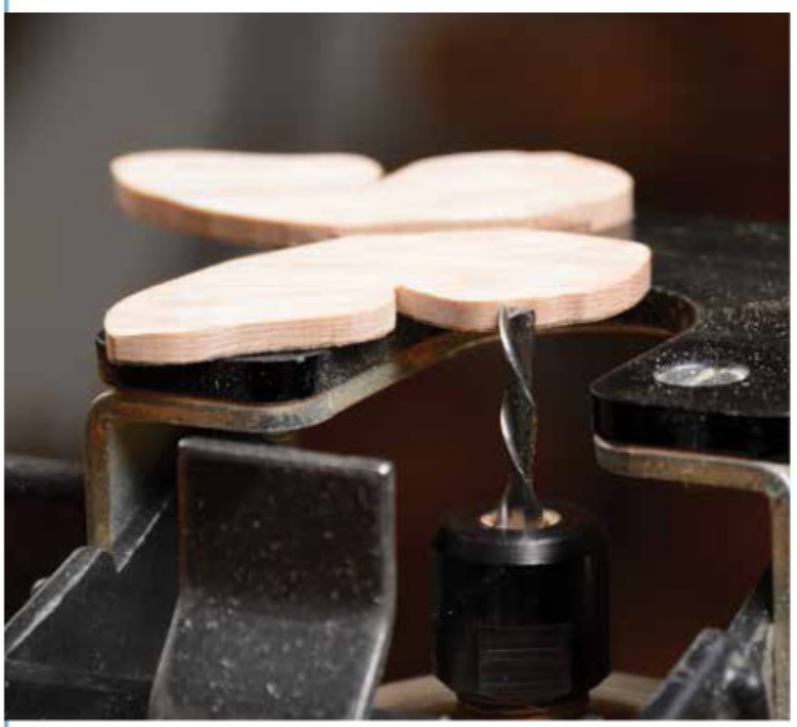
Bevel the perimeter. Saw all perimeter edges with the scrollsaw table tilted 3° downward to the right, keeping the workpiece oriented to the right side of the blade as you cut. This creates a beveled edge at the design perimeter.



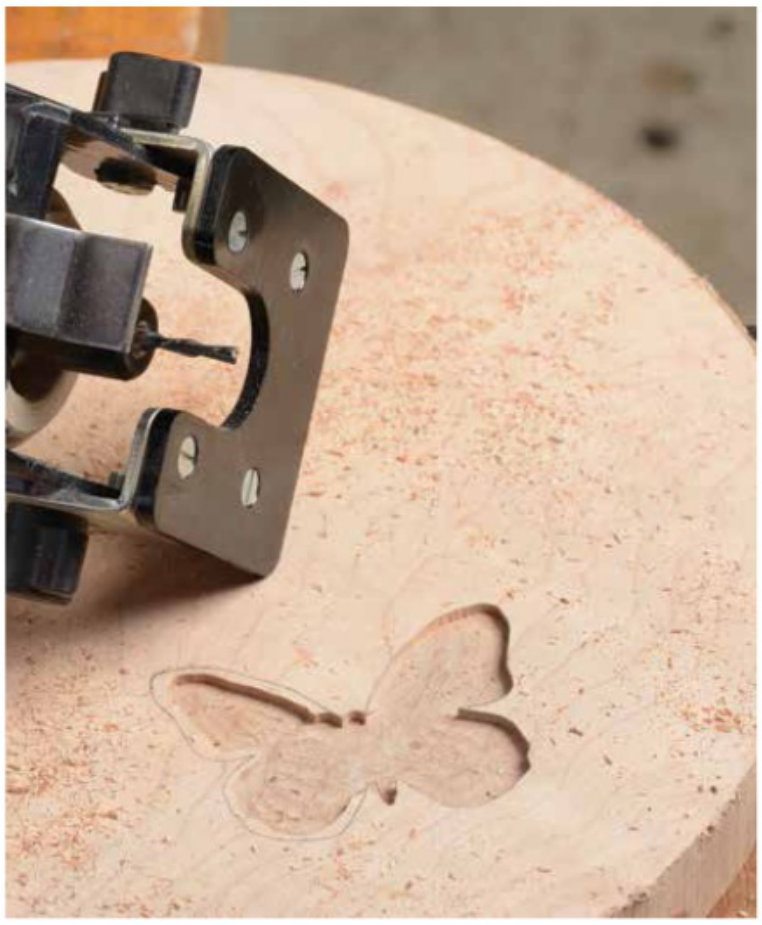
Taped and ready for glue. After separating the stacked sawn parts, place the body between the wings, and tape the parts together across the top faces. Prime the mating edges with diluted glue (50% H_2O), then lay the assembly on a dowel with the joints open for 45 minutes. Afterward, apply full-strength glue and lay the assembly flat to dry.

Recess, inset, and level to finish up

Place the assembled inlay top-side-up on your target surface, and use a very sharp pencil to trace around the perimeter. Outfit a small router with a ⅛"-diameter down-cut spiral bit, and set the cutting depth to 1/32" less than the inlay thickness. Then rout out the recess. Test-fit the inlay in the recess, using graphite as shown to indicate any areas that may need further cutting. Ever so slightly re-rout these areas until the inlay fully seats in the recess. Glue the inlay in place, and trim it flush to the surface. Then fill any gaps with a mixture of fine sanding dust and CA glue, sanding the excess away after the glue dries. When bridging two different woods, use dust from the darker wood, which will make the filler less noticable. ■

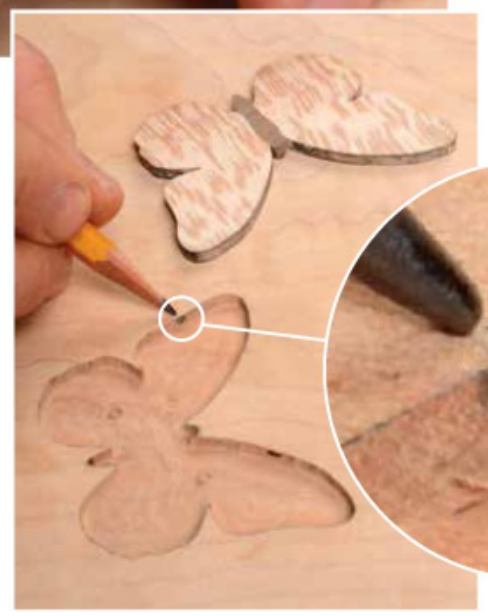


Adjust for a shy cut. To set the cutting depth of the recess, unplug the tool, lay the butterfly on the base of an upended trim router, and adjust the bit to project 1/32" shy of the piece's thickness.



Cutting up at recess. To rout the recess, first hog out the majority of the waste, staying a safe distance from your layout lines. Then blow out the chips and rout as close as possible to your perimeter without broaching the pencil lines. As when sawing, good light, a magnifying visor, and a steady hand all contribute to accurate work.

Getting tight with graphite. Rub a soft-lead pencil around the perimeter of the inlay (above). Then press the piece into the recess. The graphite will transfer to any areas that still need a bit of trimming, as noted at right. Press the tip of a craft knife into the edge of the inlay to lift it.



Flush with success. After gluing and clamping the inlay in place, trim everything flush to the surface using a plane or scraper and sandpaper.

HANS J. WEGNER'S "THE CHAIR"

By David Heim

Hans J. Wegner rose from humble beginnings in a small town in Denmark to worldwide renown as one of the most important Danish Modern designers. In a career spanning nearly a half-century, he designed tables, breakfronts—and some 500 chairs.

Born in 1914, the son of a cobbler, Wegner began a three-year apprenticeship with a local cabinetmaker when he turned fourteen. He made his first chair at age fifteen. A few years after that, he attended the School of Arts and Crafts, in Copenhagen. There, he was able to rub shoulders with many established designers—including Kaare Klint, regarded as the father of modern Danish design.

Wegner began designing chairs for commercial production during World War II. Some of them are well known and still in production, including an early design based on a chair from the Ming Dynasty, and a Windsor called the Peacock Chair, which features an outsized back. But his most successful design by far is known as the PP 503, the Round Chair, or simply "The Chair."

Wegner debuted the piece at the 1949 Cabinetmaker's Guild Exhibition in Copenhagen, but it drew little attention. That changed when America greeted the chair. In 1950, it made the cover of *Interiors* magazine, which crowned it "The world's most beautiful chair." The accompanying article noted that Wegner, "devotes himself to perfecting the shape and scale of the parts. The top rail, a complicated collection of twisted curves and joints, was wrestled into quiet obedience. The sturdy legs are tapered just enough to seem muscular rather than overfed, and the seat dips slightly to look willing but not seductive."

Two years later, the chair was featured in the Good Design exhibition at New York's Museum of Modern Art and soon found its way into the museum's permanent collection. It became one of the most desirable pieces of furniture in the country and helped drive an increase in the export of Danish furniture to the U.S. While Americans dubbed Wegner's piece "The Chair," he preferred to call it the "Round Chair."

The Chair is at once both simple and complex. It consists of four legs, four rails, and a piece combining the backrest and arms. But that's like saying a bottle of Beaujolais is just old grape juice. The turned legs taper subtly and gracefully at each end and splay outward toward the floor, while the chair's near-vertical backrest flows organically into the horizontal arms. This component is by far the most complex part of the chair. Sometimes likened to the propeller on an old airplane, it consists of three pieces connected with large finger joints. Blanks for the backrest and arms are roughed out of fresh-cut slabs 5" thick, which are left to season for one to two years. A CNC machine then cuts the finger joints and performs the initial shaping. A great deal of handwork follows to refine the shape with rasps and spokeshaves before sanding the assembly smooth.

Wegner enjoyed a long-standing relationship with PP Møbler, the Danish cabinetmaking firm that manufactures many of his chairs. There are two versions of The Chair, one with a cane seat (PP501 in the Møbler catalog) and one with a thin upholstered seat (PP503). Wegner made the original chair in oak. Today, Møbler makes it in oak, ash, cherry, and walnut. Finishes include oil, lacquer, and a treatment with soap flakes.

25" W, 20½" D, 30" H.
Seat height: 18"

Wegner, who died in February 2007, once said of The Chair and its Danish roots: "The objective was to make things as simply and correctly as possible, to show what we could create with our hands and try to make the wood come alive, give it soul and vitality, and to get things to appear so natural that they could only be made by us."

Photos: Except as noted, courtesy of PP Møbler (*www.pp.dk*). Postage stamp from *coinect.com*.

fastFACTS

- Sustainably grown 200-year-old trees provide the wood for The Chair’s back and armrests.
- Wegner’s career took off in the early 1940s, when he helped design all the furniture for a new city hall in Aarhus, Denmark—while the Nazis occupied the town.
- The Chair was featured on a postage stamp in 1991, a rare honor.

The human touch. Chair parts initially carved by machine get a final shaping by hand.

Deconstruction. The disassembled parts reveal joinery masterfully designed for strength and visually simple elegance.

Creator and creation. Hans Wegner with his most famous piece, mimicking how the backrest and arms are joined.

Resolved: Chair a Hit at First Debate

These days, our presidential debates often feature elaborate patriotic scenery, with lecterns apparently borrowed from the Starship Enterprise. However, the first nationally televised presidential debate, on September 26, 1960, was a much different affair. Broadcast from a Chicago studio, the set featured a plain backdrop, a small desk for the moderator, simple lecterns perched atop thin poles, and PP503 chairs for John F. Kennedy and Richard M. Nixon.

Kennedy, who requested the chairs to help alleviate his chronic back pain, seemed much more at ease. Nixon hunched forward stiffly in his seat, looking like a wayward teenager awaiting punishment from the principal. The 70 million people watching saw a tanned, confident Kennedy and a pale, sweaty Nixon, prompting Kennedy’s fortunes to rise and Nixon’s to sink. On election day, more than half of those polled said the debate had influenced their vote.

The debate also brought new notoriety to The Chair. If Kennedy was the star who won the debate, that piece of furniture was clearly his costar. ■

Chair parts image courtesy of Danish Design Review (*danishdesignreview.com*).

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PERUVIAN WALNUT

Dark horse of the family

By Ken Burton

Several species of walnut *(Juglans spp)* are sold as Peruvian walnut. These include *Juglans peruviana, J. australis, J. neotropica,* and *J. olanchana.* You may also see it marketed as "tropical walnut" or "Nogal" (Spanish for "walnut"). The wood tends to be darker and with a somewhat coarser grain than its more temperate cousins such as black and claro walnut.

Where the wood comes from

The name Peruvian walnut is a bit misleading, as the source trees are spread throughout Central America and the northern part of South America. As tropical trees go, these are modest in size—30 to 60 feet tall, and 2-3 feet in diameter. As of this writing, none of the species are on the CITES list, though *Juglans neotropica* is listed on the IUCN Red List as being endangered, with a population that has declined significantly over the past three generations.

History in woodworking

While you won't find a lot of antique furniture in the U.S. made of Peruvian walnut, the wood has been used extensively in Central and South America for furniture and cabinetry. It also makes excellent interior trim, though it is on the soft side for high traffic flooring. It is gaining popularity stateside for those seeking the rich color of walnut without the color variations and knots typical of the domestic species. The wood is also valued for its shock resistance, so it makes excellent gun stocks, provided you can find thick enough pieces.

Favored flavor. This southern cousin of the walnut family is well regarded for its rich, dark-chocolate coloring.

TEXTURE	TOXICITY	ROT/INSECT RESISTANCE	STABILITY	HARDNESS	DENSITY
MEDIUM	MEDIUM	MODERATE	MEDIUM-HIGH	MEDIUM	37 LBS./CU. FT.

Hue clues. While quite dark, there is still a lot of color variation from board to board. The end grain provides a clue to colors potentially hidden beneath the surface.

Selecting the best stock

The boards that make it into the United States tend to be straight grained with minimal knots. The wood is tricky to dry properly, especially thicker stock, so most is cut at 4/4. On the plus side, wide boards (12"+) are frequently available. While the wood is quite dark, the heartwood can contain lighter streaks that can make grain matching a challenge (see photo above right). Expect to pay $12-$15/board foot.

Working and finishing

Like its domestic cousin black walnut, Peruvian walnut is a joy to work with both hand and power tools. Its straight grain makes for clean machining once you determine which way the grain is running. The wood accepts glue readily, and finishes well with both water- and oil-based stains and topcoats. It also holds mechanical fasteners well, but be sure to predrill pilot holes for screws.

Peruvian Walnut Uses

- Furniture
- Cabinetry
- Interior millwork
- Turnings
- Musical instruments

Photos: Ken Burton

Peruvian Walnut Working Notes

When I first cut into Peruvian walnut, I knew I was going to enjoy working with it. (I used the wood for both the bowed psaltery on page 35 and the vase shown here.) Having used black walnut extensively throughout my woodworking career, I immediately recognized the same sharp smell, but found that the grain is a little coarser than on black walnut and more splinter-prone. My initial impression of the boards I had was that they were very uniform in appearance and color. However, the more I worked with them, the more I came to appreciate the subtle variation in color and grain pattern. The streaking mentioned earlier was very prominent in several of the boards, but it didn't appear until I cut into their interior when tapering the pieces for the vase. Ultimately, I realized that an inspection of the end grain can provide clues to what I might find inside.

The pieces I resawed for the back of the psaltery stayed remarkably flat, even when set aside to "relax" for a couple of days. Joinery, sanding, and finishing all went well. I used spray lacquer on the psaltery more for its tonal qualities than for appearance. I prefer the wiping varnish I used for the vase for how it brings out the color in the wood. ■

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What is a hybrid saw?

Q: *I've been leaning toward buying a "hybrid" model table saw, but I'm not really sure what that means. I want something for my small shop rather than job-site work, and can't afford to spend a ton of money. So what is a hybrid saw, and should I consider one?*

Frank Lee
St. Charles, MO

A: *A hybrid table saw refers to a design that combines features from typical cabinet saws and traditional contractor saws. A cabinet saw is designed to stand up to the rigors of professional use. Its heavy-duty blade carriage, which connects to the cabinet with substantial trunnions and supports a powerful 3- or 5-hp motor, sits entirely within the cabinet, giving the saw its name. This configuration of totally enclosed internal mechanisms results in an efficient transfer of power and decent dust collection. The fact that the blade carriage connects to the cabinet also facilitates squaring the independently mounted table to the blade, which is an essential adjustment for accurate cutting. A cabinet saw is generally considered a "stationary" machine due to its heft, and requires a 240-volt circuit.*

A traditional contractor saw—so-named because it was designed for jobsite use—is a more economical, somewhat lighter-weight machine with less-hefty internals. Its motor hangs from a mounting that projects from the base's open back (which thwarts dust collection). This arrangement allows easy removal of the heavy motor for machine transport to a jobsite, but the long drive belt that extends from the motor to the blade carriage compromises power transmission and can induce vibration. On the plus side, the 1½- to 2-hp dual-voltage motor requires only a ubiquitous 120-volt outlet. However, because the blade carriage bolts to the underside of the table, the table-to-blade adjustment can be problematic.

A hybrid saw is basically a contractor saw wrapped in an enclosed cabinet. Because its 1½- to 2-hp motor is inside the cabinet, the shorter drive belt makes for more efficient power transmission and less vibration than a traditional contractor saw while still plugging into a 120-volt outlet. The enclosed cabinet also aids dust collection, while the contractor-saw-grade motor and (typically table-mounted) internals are perfectly capable of handling all but the heaviest table saw tasks. Although you wouldn't call it "portable," a hybrid is light enough to muscle around without too much trouble, and some models even come equipped with casters. All of this adds up to an affordable saw that's well-suited to most small shops. It might be just what you need. ■

Paul Anthony
Author of *Taunton's Complete Illustrated Guide to Tablesaws*

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Photos: Manufacturers

Buyer's **Guide**

Hot New Tools (p. 12)

1. Rikon 10" Contractor Saw ..... #167680, **$1099.00**
2. Easy Wood Tools Easy Mini Hollower #1 ..... #167922, **$99.99**
3. Easy Wood Tools Easy Mini Hollower #2 ..... #167923, **$99.99**
4. Easy Wood Tools Easy Mini Hollower #3 ..... #167924, **$99.99**

3-in-1 Shooting Board (p. 26)

1. Melamine Board ¾ × 48 × 96" ..... *Lowes.com*, **$30.48**
2. MDF ¾ × 24 × 48" ..... #159760, **$21.50**
3. MDF ½ × 24 × 48" ..... #159761, **$16.50**

Bowed Psaltry (p. 35)

1. Standard zither pins (50 needed) ..... *harpkit.com*, zpin, **$.40 ea.**
2. Tuning Key for zither pins (2 needed) ..... *harpkit.com*, clockkey, **$4.25 ea.**
3. Bulk Music Wire #3, .012"-dia. (50') ..... *harpkit.com*, wire012, **$6.50**
4. Extra Finished Bow ..... *harpkit.com*, bpbowfin, **$39.00**
5. Dulcimer soundboard wood ..... *stewmac.com*, 3583, **$26.45**
6. Natural wood binding (two lengths needed) ..... *stewmac.com*, 2025, **Varies**
7. Titebond Liquid Hide Glue 8 oz. ..... #153818, **$7.99**
8. WoodRiver Digital Caliper Carbon Fiber Composite Vernier 6" 150 mm. ..... #162750, **$24.59**
9. Fisch 3/16" Chrome-Vanadium Steel Brad Point Drill Bit ..... #854362, **$5.09**
10. Nicholson Double Extra Slim Taper File, 5" ..... #154707, **$6.99**

6 Tips for Router Resuscitation (p. 45)

1. Boeshield Blade and Bit Cleaner, 8 oz. Pump Spray ..... #128479, **$11.99**
2. Bostik BladeCote Aerosol, 10¾ oz. ..... #124626, **$23.99**

Bevel-Edge Inlay (p. 57)

1. Spectape Double-faced Tape, 1" × 36 yds. ..... #15D25, **$28.49**
2. Whiteside Left Hand Down Cut Spiral Bit ⅛" D, ½" CL, ¼" SH ..... #405100, **$24.06**

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A CRAFTSMAN'S Legacy

Eric Gorges has been the host of *A Craftsman's Legacy* since it began in 2014. After a health crisis caused him to reevaluate his life, he knew he wanted to work with his hands and he loved motorcycles, so he signed on as an apprentice with one of the best metal shapers in the country. In 1999, he opened a custom motorcycle shop, Voodoo Choppers, in Detroit, Michigan, where he lives today.

Eric's passion for making things by hand led to the idea for his national television series where he showcases men and women who are specialists in their handcrafts. Eric has also written a book, *A Craftsman's Legacy*.

www.craftsmanslegacy.com

THE WOODSHOP

Woodcraft is pleased to partner with woodturner Carl Jacobson of TheWoodshop.TV. Carl started woodworking as a young boy with his grandfather and then developed a love for turning as an adult after seeing a turned project in a friend's shop.

When he couldn't find a how-to video for duck calls in the early days of YouTube, he decided to use his passion to share and instruct the craft in his own video, which led him eventually to start his own YouTube channel and instructional website.

His mobile shop allows him to travel around the country to teach, demonstrate and promote woodturning, while inspiring others to give it a try.

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Details Details

A home for the devil and a reflection of the gods

By Paul Anthony

Details matter. Just think about the time you were inconvenienced because someone mistyped an address, sending you miles astray. Or maybe some factory employee forgot to include a crucial part in a "needs some assembly" toy that your daughter was *so* looking forward to playing with on Christmas morning. Or perhaps someone sleepily forwarded your off-color joke to your church group. Ouch.

On the other hand, it's sweet when something's neat. Who doesn't love concise, accurate directions? Or thoughtful packaging. (Extra screws! Alright!) Or a well-crafted private joke circumspectly e-mailed as NSFW.

Same thing with woodworking. It's the little things that count, and that add up to a remarkable piece. I had an epiphany early in my woodworking career when making a small utilitarian cabinet that wasn't intended to be anything special. But I was between commissions and decided, just for grins, to take the time to make it well. I cut my case miters with precision, selected nice straight-grained stock for the door stiles and rails, and composed the door panel to yield uplifting cathedral grain. Because I had the time, I added a simple shop-made pull before judiciously sanding everything, taking care to maintain crisp, consistent arrises. After applying finish, I was mildly stunned at how this basic little cabinet seemed to glow with beauty and character.

It's important to remember that every little aspect of a piece carries some level of importance, from its overall proportions, profile, and type of wood to its smoothness, moldings, and quality of hardware. Altogether, a piece either takes your eyes for a pleasure cruise or leads them clumsily down a briar path.

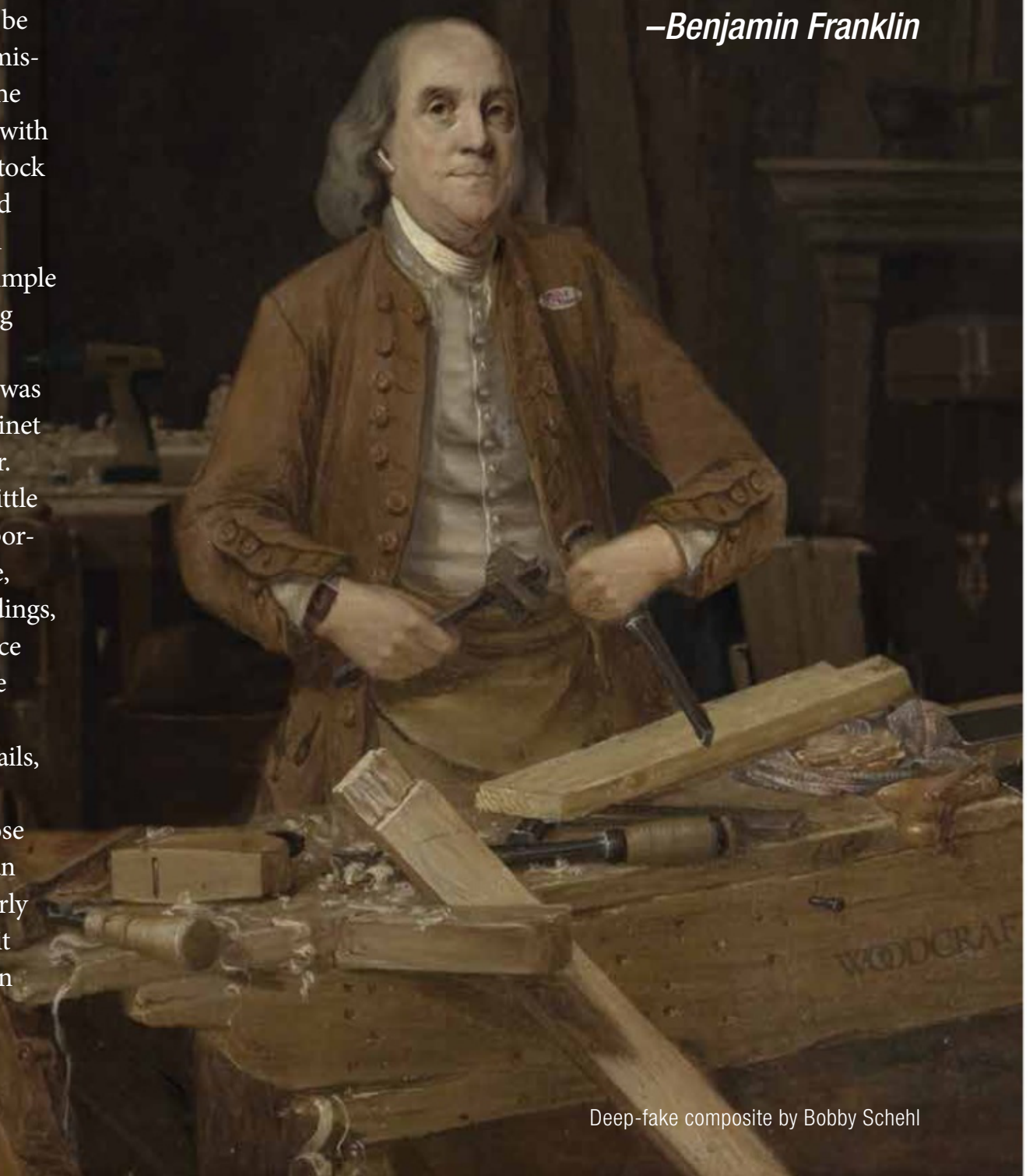
It's often said that the devil is in the details, and it's true that when trying to solve a problem or perhaps design a multi-purpose piece of furniture, it's the minutiae that can bog you down. And all it takes is one poorly conceived aspect of something to render it burn pile fodder. On the other hand, when you get everything worked out just so, the gods smile, and all is right for once.

It's okay that most people probably can't appreciate your detailing in depth. Just as you don't realize that it's the bass line descending to a minor 3rd chord that chokes you up every time you listen to your favorite song, people might not discern that it's the finely orchestrated grain composition of your piece that delights their eyes. No matter; it does the trick, and it's the trick that matters.

So take Mr. Franklin's comment to heart, though he was not, in fact, a woodworker. If you scrutinize our painting here, you'll realize that it's been cleverly composited. Just check out the details! ■

"Details are but trifles, but details make for perfection, and perfection is no trifle."

–Benjamin Franklin



Deep-fake composite by Bobby Schehl

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